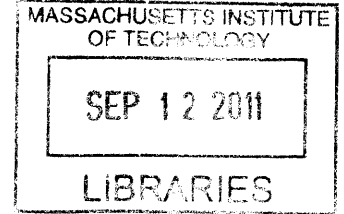


Governance Mechanisms for Infrastructure Public-Private Partnerships: Focus on India

by

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Submitted to the Engineering Systems Division on August 5,
2011 in Partial Fulfillment of the Requirements for the
Degree of Master of Science in Technology and Policy

ABSTRACT

Infrastructure PPPs encounter unexpected changes in the technological, economic, social and political environments over their long lifetimes. They require governance frameworks that enable them to continue to deliver services efficiently and effectively when faced with such uncertainties. This thesis compares and contrasts alternative governance mechanisms that have been tried and tested over time and across geographies, with a focus on India.

The usual governance mechanisms based on contracts or independent regulatory agencies appear to be insufficient in the face of turbulence. Contractual frameworks, wherein the public and private partners enter into long-term contracts that allocate risks, specify performance levels, tariffs and other terms of agreement, are effective in soliciting investment from the private sector. However, since all possible future scenarios and associated contingencies cannot be specified *a priori*, contracts are incomplete and contractual governance by itself inadequate. Regulatory frameworks, wherein independent regulators exercise discretion in setting tariffs and service levels in order to respond to changes over time are expensive and inefficient. Moreover, they are inadequate by themselves in the complex institutional environments that characterize infrastructure in countries such as India.

Most critically, the thesis finds that governance based on contracts and regulation seems to emphasize, institutionalize and reinforce antagonistic relationships between public and private 'partners'. To respond to unforeseen changes, however, it is necessary to move the focus away from arms-length relationships towards structures that emphasize real partnership. Based on case studies of successful PPPs in India, the thesis identifies best practices in engaging public sector partners and key stakeholders in projects, for instance through financial partnerships or representation on the project companies' Board of Directors. It finds that such structural mechanisms are effective supplements to the usual governance frameworks.

Finally, the thesis proposes that the model of infrastructure delivery using Independent Public Authorities holds promise for infrastructure delivery in India. The ability of IPAs to mobilize private investment, engage public sector partners and internalize negotiations calls for further exploration of their suitability in Indian conditions.

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Abbreviations

AAI – Airports Authority of India

AERA – Airports Economic Regulatory Authority

BOT – Build-Operate-Transfer

CIAL – Cochin International Airport Limited

CERC – Central Electricity Regulatory Commission

DEA – Department of Economic Affairs

GOI – Government of India

GONCTD – Government of the National Capital Territory of Delhi

IPA – Independent Public Authority

IRA – Independent Regulatory Agency

JV – Joint Venture

MCA – Model Concession Agreement

NHAI – National Highway Authority of India

NHDP – National Highway Development Program

PGCIL – Power Grid Corporation of India Limited

PPA – Power Purchase Agreement

PPP – Public-Private Partnership

PSC – Public Sector Comparator

RFP – Request for Proposal

RFQ – Request for Qualification

TNUDF – Tamil Nadu Urban Development Fund

VFM – Value for Money

Introduction

Though India has one of the highest GDP growth rates in the world (average rate of 8% since 2002-03), it ranks 75th globally in terms of infrastructure development (KPMG, 2006). The country's future economic growth and the overall quality of life of its citizens are threatened by its continuing inability to install and manage infrastructure assets.

Infrastructure business in India has a history of underinvestment and public-sector dominance in ownership and delivery. However, owing to the poor quality of existing assets, large gaps between supply and demand in most sectors, financial limitations, and overall inefficiency, the current and subsequent national Five Year Plans call for a significant increase in investment and greater private sector involvement in financing and delivery. Total spending on infrastructure during the Tenth Five Year Plan (2002-07) amounted to \$204 billion,¹ 24.5% of which came from the private sector. The Mid-Term Appraisal for the Eleventh Five Year Plan projects a cumulative investment of \$456 billion during the Plan Period (2007-12), with 36.2% coming from the private sector (Government of India, Planning Commission, 2011). Initial projections for the Twelfth Plan (2012-17) envision total investments of \$1025 billion with a 50% private sector share (Government of India, Ministry of Finance, 2011a).

The government has emphasized that much of this increased private involvement will be in the form of public-private partnerships (PPPs). In fact, India has already become the top destination in the world for PPPs with 740 reported projects as of July 2011 across all major infrastructure sectors at various stages of completion with a total projected cost of \$84 billion. Central and state governments have dedicated considerable resources towards establishing institutional and financial support towards the formulation, appraisal, approval and management of PPPs. Forms of support include fast-track processing; financial support as grants, interest free loans, long term debt facilities, and equity investments; and standardization of documents such as Requests for Proposal, Requests for Qualification and Model Concession Agreements across sectors.

Much of this support has been limited to up-front project preparation and has paid less attention to governance of PPP projects over their long lifetimes. However, the business of infrastructure is about delivering essential public services over time, not simply constructing physical assets within ex-ante estimates of time and budget. Success can't be measured only in terms of number of projects with contractual agreements, financial closure, or even construction of assets within time and budget. Real success is about delivery of the public service sustainably over time. Projects in India, however, face challenges both during delivery and operations.

¹ Assuming an exchange rate of 45 Rs/\$; based on Government of India, Planning Commission (2007).

Indeed, an analysis of 894 projects across 17 infrastructure sectors in India between April 1992 and March 2009 found that 40% of project experienced cost over-runs and 82% experienced schedule over-runs (Singh, 2010). A progress report issued in October 2010 by the Ministry of Statistics and Programme Implementation illustrates the same message: delivering infrastructure is extremely challenging. Out of the 559 projects, 14 were ahead of schedule, 117 were on schedule, and 293 were delayed, causing cost over-runs in excess of \$15 billion (Government of India, Ministry of Statistics and Programme Implementation, Central Statistical Office, 2010). Issues that repeatedly plague infrastructure business in India include delays and litigations over land acquisition, multiplicity of required clearances from different sources, lack of a structured and reliable policy framework, shortage of funds, and inadequate inputs such as labor and materials.

Though descriptive statistics are not readily available (and harder to estimate), infrastructure projects face numerous challenges over their operational lives in addition to these challenges in initial delivery. Case studies of infrastructure projects from different sectors and geographies in India illustrate that despite best efforts to identify and allocate key risks apparent at the time of contractual agreement, changes in the political, economic, social and/or technical environment surrounding these projects can have major impacts at different stages of the project.

For instance, the Dabhol power plant's experience shows that that political changes can potentially lead to project cancellation; the Coimbatore road project shows that projects often suffer from financial difficulties owing to public opposition; and the Tirupur waste project shows that unexpected changes could lead to service disruptions and associated environmental and health problems.

The central focus of this thesis is to compare and contrast governance mechanisms in terms of their ability to solicit private investment up front and reliably deliver public services over time in the face of unforeseen changes. This dual need underscores the importance of the third 'P' in PPP: 'partnership'.

Chapter 1 motivates the need for such governance mechanisms by establishing that infrastructure projects routinely suffer on account of unexpected events such as public opposition, political opportunism and demand uncertainty. It presents a number of cases across geographies and sectors within India that elucidate the inevitability of unforeseen changes.

Chapter 2 evaluates the practice that currently dominates project governance: reliance on long-term contracts. At the heart of this practice is the assumption that all major risks (in terms of likelihood and magnitude of impacts) and desired service levels can be precisely defined *a priori* and that risk allocation frameworks can then be designed to incentivize both parties to achieve the project's objectives consistently over time. However, contracts are inevitably incomplete and often require renegotiation and/or reliance on arbitration or the rule of law (in courts) in

the face of differences between project partners. Such a confrontational framework is unlikely to be sufficient by itself as a governance mechanism.

An alternative to locking project partners into prescriptive agreements for long periods of time is to allow Independent Regulatory Authorities (IRAs) to periodically review and adjust key parameters given observations over time. Chapter 3 thus turns attention toward short-term, relational contracts and discretionary regulation.

Proponents of regulatory governance propose that independent regulators can simultaneously pursue the interests of consumers and investors while remaining free from political influence. Such an approach provides the necessary flexibility to deal with uncertainties over time and prevents contractual renegotiations in which partners to a PPP have incentives to act opportunistically. However, the contentious relationship between regulators and private companies does not emphasize true partnership. Rather, it incentivizes private parties to withhold the information that regulators need in order to develop effective rules and entails long administrative and legal delays.

Chapter 4 examines successful Indian infrastructure PPPs across sectors in search of alternatives to such combative arrangements. It attempts to identify mechanisms by virtue of which issues can be resolved before they become contractual and the partnership can be sustained and even strengthened over time. It emphasizes the need to focus on developing true 'partnerships' via greater involvement of the public sector partner and other key stakeholders in project structuring and operations.

Chapter 5 identifies a governance structure that formalizes some of the tactical solutions identified in Chapter 4. It finds that Independent Public Authorities (IPAs) have the potential to deliver services through turbulence over time. Though IPAs are not a governance panacea, they represent true partnerships with the ability to bring project partners to the table to work through issues and differences. Their ability to mobilize private investment, engage public sector partners and internalize negotiations calls for further exploration of their suitability in Indian conditions.

Chapter 1: Motivation

Infrastructure projects are characterized by large sunk costs, long gestation periods, and highly uncertain returns based on several assumptions (regulatory environments, technology, costs, demand levels, etc.). In order to establish the business case and solicit investment, project developers need to make projections about the future. However, only one thing is certain – some of their assumptions about the political, economic, regulatory, technical and social aspects surrounding an infrastructure project will inevitably be incorrect and there will certainly be factors that impact the project that they will have not thought of *a priori*.

Indeed, in the General Counsels' Roundtable held at Stanford University to examine the managerial and institutional reasons for the failure of private infrastructure projects in emerging markets, one participant shared, "The only thing that is predictable, is that over a 20 year life, the situation in these countries is going to change (Orr and Metzger, 2005)." Indeed, a review of operational experience with 390 PPP projects delivered under the Private Finance Initiative (PFI) program in England affirms this intuition: "...it is inevitable over the course of 25 to 30 years of operation that changes will be needed to the services and assets provided (U.K. National Audit Office, 2008)."

The experience of infrastructure PPPs in Latin America through the 1990s tells a similar story: change is inevitable and flexibility to adjust and adapt to changing environments is essential. Analyzing a dataset from the World Bank covering 307 concession projects in the sectors of transport and water in five countries (Argentina, Brazil, Chile, Colombia and Mexico) between 1989 and 2000, Guasch and Straub (2006) find that more than half of these projects were renegotiated, on average 3.5 year after the signing of the contract.

The need to acknowledge that critical conditions surrounding a project will change over time is evident.

Findings From Troubled Cases

This chapter identifies and characterizes the most relevant long-term uncertainties that are particularly relevant for infrastructure projects in India. It takes inspiration from actual cases where such uncertainties have had a large impact on the infrastructure asset and associated public service.

The information on case studies has been compiled largely based on data from publications of the PPP Cell of the Department of Economic Affairs (DEA) in the

Ministry of Finance of the Government of India², Mahalingam, A. (2010), Delhi, V. S. K. et al. (2010), material provided as part of the “Management, Finance, and Regulation of Public Infrastructure” course at Harvard Kennedy School³, newspaper/magazine articles, consultant reports, conference proceedings, and other secondary sources.

Table 1 outlines the cases explored in this thesis of projects that suffered on account of unforeseen changes. The subsequent discussion presents three detailed case studies representing the different types of unforeseen changes that affect projects over time. Figure 1 summarizes findings from the other detailed case studies, which can be found in Appendix 4.

²Government of India, Ministry of Finance, “Public-Private Partnerships in India”, <http://www.pppinindia.com/>. Last checked July 15, 2011.

³ Harvard Kennedy School, PED-209.

Table 1: Troubled Projects in India

No.	Case	Sector	Source of Change(s)	Impact on Project	Award Date	Change Date(s)
1	Delhi Airport	Airport	Political - Institution of a new Regulator	Potentially Devastating	2006	2011
2	Dabhol Power Plant	Power	Political - Change in leadership; Public Opposition - high tariffs	Financial losses; Loss of reputation due to Expropriation	1992	1995; 1998; 2001; 2005
3	Karur Bridge	Roads	Political - Change in municipal government	Project canceled without compensation	1997	2005
4	East Coast Road	Roads	Political - Reneging on promise to increase tolls by 8%; Regulatory Banning industrial activity	High debt service costs; Had to mobilize revenues from other project	2000	2002/03
5	Tirupur Solid Waste Management	Waste	Political - New laws on waste management	Waste piling up in Tirupur	2000	Soon after construction
6	Coimbtore Bypass Toll Road	Roads	Political reneging / Public opposition - Refusal to pay tolls	Difficult to break even	1997	Four years into operations
7	Latur Water Supply	Water	Public opposition based on 'right to water' sentiment	Delayed by over a year; Future uncertain	2006	Immediate
8	Timarpur-Okhla Waste Management	Waste	Public opposition - Environmental grounds	Delayed by over a year; Future uncertain	2008	During Construction
9	Delhi Water Privatization	Water	Public opposition based on 'right to water' sentiment	Privatization cancelled	2005	2005
10	Narmada Hydropower	Power	Public opposition - Resettlement and rehabilitation	Decades of delay in project commissioning	1979	Multiple and ongoing
11	Tirupur Water Supply	Water	Macroeconomic, environmental legislative, technological advances	Revenues = 38% of projections; Exhausted debt service reserve fund	2000	2009

Cases Studies of Troubled PPPs

Dabhol Power Plant⁴: Showcasing The Politics of Infrastructure Projects

“Many of India’s problems in this regard can be summed up in the five-letter word, Enron (U.S. Congress, House, Committee on Government Reform, 2002)”

Basics

Shortly after ‘liberalization’ of the Indian Power sector, Enron was to become the first foreign developer to conclude a large-scale power project in India. The project involved supplying 2,500 MW of power in two phases from a dual fuel (gas and oil) plant to India’s most industrial state with a total envisioned cost of \$2.89 billion. The project company (Dabhol Power Corporation, DPC) initially involved equity investments from US infrastructure giants such as Enron (80%), General Electric and Bechtel (10% each) with MSEB purchasing 15% of Enron’s equity at a later stage. Table 2 summarizes the sequence of major events related to the project

⁴ Author, based on data from Wells (1997a), Wells (1997b) and Palepu *et al.* (1996) unless otherwise specified.

Table 2: Dabhol Power Corporation: Sequence of Events

Date	Event
1991	Economic and Financial Reforms in India undertaken under the leadership of a new Prime Minister and a new Finance Minister.
1992	Enron and MSEB sign MoU to build Dabhol project.
1993	Dabhol Power Company and MSEB sign Power Purchase Agreement (PPA) with option on second phase to be exercised by July 1995.
1995 (Feb.)	Financial closure realized with expected commissioning date at end of 1997.
1995 (July)	The Opposition comes into power in the state on a platform of throwing Enron into the Arabian sea; The Munde Committee issues a critical report that recommends scrapping the Dabhol project. State government cancels agreement in July.
1995 (Aug - Dec)	Enron seeks \$300 million in compensation through arbitration. State government alleges fraud and misrepresentation.
1996	Negotiations resume - contracts renegotiated, Phase I expanded, state bound to both Phases.
1998	MSEB buys 15% equity stake from Enron.
1999 (May)	Phase I starts generating power (740 MW); second phase units expected to start in June and October 2001.
2000 (July)	Electricity price from Dabhol = Rs 7.80/KWh (four times regular rate)
2000(Dec.)	Unaffordable electricity bill of \$22 million for MSEB.
2001	Maharashtra stops paying. Enron enters into arbitration and halts construction on 90% complete Phase II.
2001	MSEB-Enron to renegotiate the contracts at lower prices, Enron refuses and demands \$2.3 billion (to cover costs of investment and debt).
2001	Enron scandal in the US → project on hold
2005	Project taken over by NTPC, GAIL and Government of Maharashtra; Payments made to GE and Bechtel.
2006	Phase I renamed Ratnagiri Gas and Power Pvt. Ltd started operation in May after a hiatus of five years.

Source: Author, based on data from: (1) Wells Jr., L. T. (1997), "Enron Development Corporation: The Dabhol Power Project in Maharashtra, India (A)," HBS No. 797085; (2) Wells Jr., L. T. (1997), "Enron Development Corporation: The Dabhol Power Project in Maharashtra, India (B)," HBS No. 797086; and (3) Palepu, K. G., Rangan, V. K. and Srinivasan, S. (1996), "Enron Development Corporation: The Dabhol Power Project in Maharashtra, India (C)," HBS No. 596101

Initial Agreement

Enron and its partners spent significant resources in order to win themselves a favorable deal in partnership with the most credible and creditworthy of all State Electricity Boards: Maharashtra State Electricity Board (MSEB) in the most progressive industrial state in India. The project lead from Enron admitted that Enron spent close to \$20 million to 'educate' their Indian counterparts on the benefits of private power delivery (U.S. Congress, House, Committee on Government Reform, 2002). Through multiple rounds of negotiation, the consortium managed to secure very favorable terms and conditions and to protect themselves against major foreseeable risks. In fact, the deal was considered by many, including the World Bank as being "one sided" in favor of DPC and "too good to be true" (EPW Editorial, 2005). Particular tenets in the agreements that contributed to this reputation included:

- **Fuel supply:** Agreement to use imported LNG instead of locally available coal: This was to help Enron since its subsidiary had an agreement to develop enough LNG for export to fuel 10,000 MW of power.
- **Supporting infrastructure:** Contractual obligations for public sector counterpart: MSEB to provide land, water, power, communication, approach road, and transmission lines from power station to its power grid.
- **Transfer of commercial and exchange rate risks:** 20 year take contract, under which MSEB was to pay for at-least 90% of the installed generation capacity at high power prices (about four times prevailing electricity tariffs, resulting in return on equity estimates of 26.52%) regardless of whether the electricity was actually used. MSEB was required to bear all exchange rate risk.
- **Counterparty risk mitigation:** Guarantees from the Maharashtra State government and further sovereign guaranteed from Government of India in case of default by MSEB.
- **Breach of contract termination fees:** Enron was covered in case of termination before or after commencement of commercial operation.
- **Further protection against sovereign risk:** \$298 million in commercial export credit loans guaranteed by the US Export-Import Bank and \$100 million loan from Overseas Private Investment Corporation (OPIC), a US agency that provided political risk insurance.

Unforeseen Impacts

Despite the World Bank's warnings of excess capacity and non-justified expense, the initial agreement was struck due to new Prime Minister Narasimha Rao's desire to sell his economic restructuring plan to the people of India.

In 1995, a new coalition of the nationalist Bharatiya Janata Party (BJP) and the Hindu nationalist Shiv Sena replaced the Congress state government that had been responsible for entering into the Dabhol contract. A formal review committee for the project concluded (among other things) that the price of power was too high and MSEB was under unreasonable payment obligations under the original agreement owing to an exchange rate increases from Rs. 32/\$ to Rs 46/\$ and an oil price increase from \$15/bbl to \$35/bbl. It recommended total capital cost savings of \$588 million from the government's perspective, all of which was to be borne by the private partner. The allowed return on equity was also reduced.

The incoming government repudiated the deal and forced Enron to agree to a revised deal that would reduce power rates, capital costs and other expenditures, and switch to a locally produced fuel. Table 3 summarizes these changes:

Table 3: Dabhol Power Corporation: Original and Renegotiated Deals

	Original (1993)	Revised (1996)
Capital Cost (Billion \$)		
(Phase 1+2)	2.84	2.51
Capacity (MW)		
Phase I	695	740
Phase II	2015	2184
Unit Capital Cost (Million \$/MW)		
With Re-Gasification Facility	1.41	1.15
Without Re-Gasification Facility	1.16	0.92
Capital Recovery Charge US cents/kWh	3.69	2.44

Source: Data excerpted from Parikh, K. S. (2001), "Thinking through the Enron Issue", *Economic and Political Weekly*, Vol. 36, No. 17, p. 1466, Table 1.

Despite this renegotiation, problems continued because of the basic non-sustainability of the contractual agreements. After MSEB faced unaffordable electricity bills, the project went to international arbitration with claims from DPC of opportunistic behavior on part of MSEB and counter claims from MSEB of misrepresentation of facts and cost escalation on part of DPC. Sovereign guarantees were initially not honored by the state or the central governments since the matter was in dispute. Upon declaration of Enron's fraudulent activities back in the U.S. and

its subsequent bankruptcy, Bechtel and GE acquired Enron's 65% stake and received settlement compensation from the Indian government. Amounts overdue to 19 overseas lenders were also settled at a discount (Loo *et al.*, 2008).

This example shows how political realities can manifest into unexpected adverse impacts over time regardless of contractual safeguards.

Coimbatore Bypass Toll Road: Public Opposition Leads to Low Demand

Basics

The city of Coimbatore experienced heavy congestion and long traffic delays, owing largely to a National Highway passing through the city. To ease the situation, the government envisioned the construction of a bypass road but lacked the funds to do so. Further, the low projected revenues from the bypass road meant that the project was not considered viable on its own. The Government of Tamil Nadu thus decided to expand and toll a neighboring bridge and include the toll revenues as part of the financial equation for the bypass road project. A tripartite concession agreement was signed between the Ministry of Surface Transport (Government of India), Tamil Nadu State Government and private company L&T Transportation Infrastructure Limited (LTTIL) in October 1997 for the same.

Unforeseen Impacts

Users of the bridge were upset at a toll being charged for a facility that they had previously used for free, and protested against payment of tolls. Some users resorted to active opposition by leaving their vehicles at the bridge to block all traffic. As a result, the average toll collection at the bridge was less than Rs. 75,000 per day as against the projected daily revenue of Rs. 1.8 lakh to Rs. 2.0 lakh (Raghuram and Deepa, 2002).

Furthermore, state-run buses lobbied for and won a decision to lower the tariff rates, which in turn placed enormous pressure on the concessionaire to break-even on this project. Although the initial agreement clearly specified that the state government would absorb risks due to non-payment of tolls, the government refused to take "action towards ensuring toll compliance or compensating for the losses (Raghuram and Deepa, 2002)." In the face of losses and rising interest payment obligations, the private concessionaire felt compelled to request the government to take over the project.

The Tirupur Water Supply Project: Successful Completion but Low Demand

Basics

In 2000, a 30-year concession was awarded to New Tirupur Area Development Corporation Limited (NTADCL) - a special purpose vehicle established to implement the first water sector related project under the public-private partnership framework in the country.

In the Tripur area, “shortage of water supply and inadequate infrastructure for collection, treatment and disposal of industrial / domestic wastewater were the major bottlenecks for the growth of the industries (Infrastructure Leasing & Financial Services, 2005b).” Under the agreement, NTADCL was to treat and supply 185 million liters of water per day from the Cauvery river to the dyeing and bleaching industries and around 800,000 domestic consumers.

The project was completed on time and within budget and was celebrated as an example of a PPP success and upheld as a “viable model for implementing other projects in the sector (Tamil Nadu Water Investment Company Limited, 2010).” Project developer IL&FS claimed that the project enabled the government to leverage its investment by about 100 times and that “accelerated investments due to the multiplier effect would further this leveraging to about 5000 (Infrastructure Leasing & Financial Services, 2005b).” It celebrated the “innovative structuring and prudent allocation of risks” and termed the successful commissioning of the project as “an outstanding achievement in the sector and a benchmark project”. However, despite this early declaration of success, the project faced challenges owing to changing circumstances during implementation.

Unforeseen Impacts

By 2009, the projects revenues fell to only 38% of the pre-project forecasts and the debt reserve fund had been exhausted (Mahalingam and Kapur, 2009). This was mainly due to:

- A decrease in demand for textile exports owing to the global recession
- Environmental legislation leading to the forced closure of several units

- Adequate rainfall over several years incentivizing textile owners to drill their own bore-wells to extract groundwater at lower costs
- Advances in technology leading to lower water intensity in the industry

Thus, though demand risk was perceived as very low since the main users were already paying similar rates for lower quality water, the project confronted several challenges on account of unforeseen demand and policy shocks.

Figure 1: Troubled Projects in India

Delhi International Airport Limited: Regulatory and Policy Flip-Flops

Karur Bridge Project: Bad Forecasts and New Government Opportunism

East Coast Road Project: Government Reneges on Promises

Tirupur Solid Waste Management Project⁵: Waste Today, Gone Tomorrow

Latur Water Supply Project: The “Right” To Water Incites Agitation

⁵ Since the sector does not have a formal regulator, I consider laws governing the ‘rules of the game’ in the sector as a form of regulation.

Timarpur-Okhla Integrated Municipal Solid Waste Management Project: Not In My Back-Yard

New Delhi Water: Public Opposition Crushes Private Participation Effort

Narmada Dams: Public Opposition Leads to Big Changes and Long Delays

Common Uncertainties

These case studies of infrastructure projects from different sectors and geographies in India expose the reality that despite best efforts to identify and allocate key risks apparent at the time of contractual agreement, conditions surrounding projects are bound to change over time. Surprises are inevitable and adjustment to these unforeseen changes is key to project survival and success. Political, public opposition, and revenue uncertainties seem to be particularly relevant in the case of India owing to their frequency and severity of impact. These factors are formulated in the subsequent discussion.

Political

Relevant Cases: Delhi International Airport, Dabhol Power Plant, Karur Bridge Project, East Coast Road Project, Coimbatore Bypass Toll Road.

Since they deliver essential public services over many years and are considered strategic assets, infrastructure projects are inherently characterized by an active government role at various stages of project conceptualization, development, delivery and operation/maintenance. Doh and Ramamurti (2003) characterize the main roles of the public sector in infrastructure PPPs as “sponsor/investor; consumer/customer; rule-maker/regulator; and mediator/moderator of opposition political and non-governmental interests”. In PPP projects, government usually also plays the role of enabler/partner by agreeing to provide access to land, water, electricity and removing other bottlenecks to smooth project delivery. Through these multiple stages and avenues of involvement, public parties are a significant source of risk to infrastructure PPPs.

Common avenues through which public parties affect projects are:

- **Changing the ‘rules of the game’:** Government action or inaction in setting or changing the ‘rules of the game’ governing a project can have a material adverse impact on the project. Examples include change of law, regulations, taxes, and incentives; negation or cancellation of license and approval; non-allowance for agreed tariff adjustment formula or regime. For instance, as the World Bank reports in relation to Indian State Electricity Regulatory Commissions (SERCs), “...with the enactment of the Electricity Act, 2003, [power producers] are supposed to be monitored and regulated by independent SERCs. However, in practice, no investor can be sure if the regulator will adjust prices, or when, or the extent to which non-action (or injurious action) will be defended on the grounds that social factors (especially, “affordability”) need to be taken into account (The World Bank, 2006).”

- **Reneging on specific commitments:** Commitments can take a number of forms including purchase of the infrastructural service under guaranteed off-take agreements, provision of termination payments, subsidies or sovereign guarantees, input supply agreements (such as for water, waste, coal and gas), procurement of land, clearances, permits and licenses, etc. These uncertainties are especially relevant in an environment marked by changes in government and political actions of interest groups (Doh and Ramamurti, 2003).

It does not come as a surprise that in the latest Overall Project Finance Ratings published by Business Monitor International (2011a), India scores seventh out of thirteen countries assessed in the Asia Pacific Region. Moreover, it only comes in ahead of Cambodia, Pakistan and Indonesia in terms of legal and regulatory risks, which fall under political risk in the framework presented herein.

The reasons for why public partners adversely interfere in the business of infrastructure in the Indian context, along with some examples are presented herein:

Temptations for Opportunism

In infrastructure PPPs, public partners initially need private investors and thus offer attractive terms. But once projects are operational, the investors require a long periods to recover their investments while the public partners have already secured what they need (Woodhouse, 2005). Such agreements thus present obsolescing bargains and consequent incentives for opportunism,⁶ since public partners have incentives to force changes in the terms of the original agreement – either gradually (a practice commonly referred to as ‘creeping expropriation’) or suddenly.

The incentives for opportunistic behavior are strong when the post contractual agreement environment differs from what was originally envisioned. Differences in actual vs. forecasted traffic, in the cost and time involved in land acquisition or environmental restoration, in the availability of key inputs such as raw materials, electricity, or water, etc., or in the macroeconomic environment all fall under this category.

Literature related to concession agreements in Latin America has best covered examples of opportunistic behavior. The cancellation of water concessions in Cochabamba (2001) and La Paz (2005), Bolivia and Argentina’s unilateral reduction in utility tariffs (such as for Aguas Argentinas) in the wake of a financial crisis in 2002 are good examples. The takeover of the Second Stage Expressway in Bangkok (1993) is a high profile example of political opportunism closer to home. In India, there have been multiple cases of reneging and even termination of power purchase agreements in Karnataka, Andhra Pradesh, and Tamil Nadu (The World Bank,

⁶ for a strategic game theoretic model of opportunism, see Moszoro (2011).

2006). The Karur Bridge project previously outlined in this chapter is a good example in this respect.

Regulatory Flux

The regulatory environments surrounding different infrastructure sectors in India are under various stages of development (see Chapter 3 and Appendix 3) and constantly evolving. India's history with power sector policy is a good example of frequent changes in the 'rules of the game.' As Dubash and Rajan (2001) explain, "the goalposts of success in the sector have moved perceptibly, from electricity as a vehicle for social and economic development to narrow financial success." These changing goalposts manifest themselves as changing rules.

Starting in the 1970s, multiple states de-metered and heavily subsidized electricity for agricultural customers to win votes, and hiked industrial and residential electricity rates to cover the resulting financial shortfall. Starting in 1991, the sector instituted attractive policies including tax holidays, selective counter-guarantees, high guaranteed returns on investment and additional bonuses to entice foreign investment for independent power projects. Realizing the extravagance of these experiments, an independent national electricity regulatory commission and independent state electricity regulatory commissions were set up under the Electricity Regulatory Commission Act of 1998. The Act sought to rationalize electricity tariffs and eliminate subsidies (Lamb, 2006). Thereafter, the Electricity Act was passed in 2003 as an overarching framework legislation that consolidated and replaced all previous legislation.

In addition to these large, sweeping changes in direction, there have been numerous changes in rules and regulations involving the allowed rate of return (for instance, return on equity in private power projects was lowered from 16% to 14% for the period 2004-09 and has been increased again), taxes and subsidies, depreciation rules, allowances for foreign investment, etc. that have large impacts on the project value. Lamb (2006) provides a good discussion of renegotiation in India's power sector including a number of cases affected by regulatory changes. (See Chapter 3 for further details on the development of the regulatory environment for the Indian Power sector.)

The case of the recently commissioned Delhi International Airport, otherwise celebrated as an example of a PPP success story, illustrates the potential devastating effect of regulatory uncertainty.

Overlapping Authorities

Infrastructure projects require clearances from a number of central, state and local government bodies. The time taken to obtain all requisite approvals varies between 18 months and four-five years. This multiplicity of rival and competitive bureaucracies is a big threat to infrastructure projects.

In the power sector, for instance, numerous agencies have authority over various aspects of a project (Sharma and Vohra, 2008). The Central Electricity Authority (CEA) establishes generation, transmission and distribution standards; the Central Electricity Regulatory Commission (CERC) enforces tariff norms for central generation plants; state regulators issue tariff orders, licenses, etc. at the state level; the New Appellate Tribunal handles appeals on regulatory decisions; central and state pollution control boards ensure compliance with emission standards; and other national, state and municipal level ministries agencies and departments such as state irrigation departments, forest departments, Ministry of Environment and Forests, municipal water boards, civil aviation departments, Ministry of Petroleum, Ministry of Coal, etc. play other roles. At any point in time for any reason, any of these authorities could change rules and force the project to adjust.

A World Bank review of Indian infrastructure reports: "In spite of many states having introduced, on paper, 'single window clearance', the fact remains that when most projects apply for approvals at the state-level, these have to go through multiple clearances at various levels (The World Bank, 2006)." Getting a project off the ground requires "joint and timely efforts of the departments involved. However, interdependence of efforts means that it is easy for departments to shirk responsibility and pass the blame on to others... Laxity on the part of just one department or dereliction of duty by a few officials can hold up the entire project (Singh, 2010)."

Pure Politics / Political Symbolism

"Governments continue to engage in a pervasive practice of selective and disruptive recontracting of legally binding agreements, especially when there are shifts in political parties or ruling governments (Doh and Ramamurti, 2003)."

There are frequent changes in leadership during the lifetime of a project and sometimes during the development and construction phases themselves. For instance, during the 5 years of construction of the Cochin airport, "CIAL officials had to deal with three Civil Aviation Ministers, four Civil Aviation Secretaries, four Chairmen of AAI at Central Government, and three Chief Ministers, four Transport Ministers and four Transport Secretaries at the State Government (Akintoye and Beck, 2009)." Such changes often bring with them changes in political ideology, ultimately manifesting into changes in public sector commitments in PPPs.

Akintoye and Beck (2009) explain: "In a democratic country like India, a change in government after elections can be an important risk factor. Large projects that are initiated by the incumbent government and those that are still in the development phase are usually reviewed by the new government....it therefore becomes important to have a structure that facilitates political commitment at the highest level"

Such motivations were particularly evident in the case of the Dabhol Power Plant, wherein the BJP ran the election for state government largely based on its promise to “throw Enron into the Arabian sea” after the Congress government had opened up the economy to foreign private investors and structured the initial deal with Enron (U.S. Congress, House, Committee on Government Reform, 2002).

Public Opposition

Relevant Cases: Delhi Water, Narmada Hydropower, Timarpur-Okhla Integrated Municipal Solid Waste Management, Latur Water Supply

Gómez-Ibáñez (2007) explains that customers of infrastructure services “are often heterogeneous groups with different initial conditions and interests (Gómez-Ibáñez, 2008)”. This problem is intensified in regimes where cross-subsidization (creating winners and losers) is prevalent, as is the case in India. Thus, conflicts are bound to arise owing to differences in service levels, tariffs, coverage, etc.

In addition to this technical reason, a democratic society such as India is especially susceptible to outspoken public protests and demonstrations, which may have devastating impacts on infrastructure projects. These may be politically motivated and organized (for instance, by NGOs), represent genuine concerns of the local communities that may be adversely impacted by the projects (for instance, facility users or nearby residents affected by pollution, land dispossession, natural resource depletion etc.), or involve deeper issues of a sense of a public “right” over having basic services provided to them and a sense of national pride (in cases involving foreign players). As Mahalingam (2010) comments “Social pressures from activists protesting against inequitable resettlement, environmental degradation, and so on also leads to difficulties in implementing PPP projects.”

One of the most popular international examples of public opposition to PPPs leading to project cancellation is that of water services in Cochabamba, Bolivia. The private concessionaire was given full rights to the entire city’s water supply and alternative well-established water sources were to be phased out. Furthermore, tariffs were to rise since the concessionaire was allowed to charge tariffs to recover all capital costs. Protests started as soon as the private concessionaire began operations in November 1999. After six months of roadblocks, strikes, and public demonstrations, the Bolivian government cancelled the concession contract (Levitt *et al.*, 2009).

A few high profile examples of public unrest leading to the cancellation or delay of projects with private participation in India include the Timarpur-Okhla Integrated Municipal Solid Waste Management Project (environmental grounds), the Latur Water Supply Project (ideological grounds), the Coimbatore bypass toll road (economic grounds), the Narmada Hydropower projects (ideological, religious, ethnic, environmental and economic grounds) and the Delhi Water Privatization effort (ideological and economic grounds).

Outspoken public figures against private participation in infrastructure, especially in projects involving foreign corporations include Vandana Shiva, Sunita Narain, Medha Patkar and Arundhati Roy. These 'environmentalists' have massive followings and considerable clout. When such projects get really politicized, even members of the popular Indian film industry (Bollywood) do not miss out on an opportunity for populism (popular Bollywood actor Aamir Khan got heavily involved with the Narmada Bachao Andolan).

Demand

Relevant Cases: Tirupur Water Supply, Vadodara Halol Toll Road, Delhi-Noida Toll Bridge, Coimbatore Bypass Toll Road, Rajiv Gandhi Salai Road

Demand forecasts are especially important for road projects in which capital and operating cost recovery depends upon tolls from road usage. However, the same rationale applies to power projects and other infrastructure projects that depend upon user charges for cost recovery and profits over time.

In a study of 87 toll road projects, the rating agency Standard and Poor's (2004) found that "toll road forecasts have, on average, overestimated traffic by 20%-30%...The range stretches from projects whose traffic was only 15% of the original forecast to projects that exceeded their forecasts by more than 50%." An earlier study by the same organization concluded "a meaningful approach to adjusting the output of traffic and revenue models should be incorporated into the analysis."

In a study by a dataset of 307 Latin American projects with private participation, Guasch *et al.* (2005) found that the most quoted reasons for the renegotiation calls were the need to adjust tariffs or redefine investment, often in the light of demand levels that appeared to be significantly lower than was initially expected. Indeed, highway traffic forecasts have generally been too optimistic, with subsequent traffic shortfall of 60% in Mexico and 40% in Colombia. This was probably due to the willingness to make concessions more attractive to investors.

Despite the fact that toll road PPPs are very common in India under the BOT route, numerous projects have suffered from overconfidence on the reliability of forecast estimates and lack of mechanisms within the project framework to deal with traffic demand uncertainty. Some high profile local examples include the Delhi-Noida-Delhi Toll Bridge (revenue for the collection of tolls fell below break-even levels in the initial years), the Vadodara-Halol Toll Road Project (actual thoroughfare was 30% of the original forecast), the Coimbatore Bypass Toll Road Project (toll collection revenues were only 35% of the projected revenues), the Rajiv Gandhi Salai Road Project (agitations and violent protests were reported), the Tirupur Water Supply Project and many others.

Summary

Examination of infrastructure project cases from different geographies and sectors within India has established that **changes in the political, economic, social and/or technical environment surrounding these projects are inevitable and can have major impacts at different stages of the project.** The cases of Dabhol power in Maharashtra, Karur bridge and Delhi water privatization are proof that such changes can be potentially devastating leading to project cancellation. Latur water, Narmada hydropower, and Timarpur-Okhla waste show that projects often suffer from inordinate delays owing to unexpected developments. Other projects, such as Tirupur waste, show that unexpected changes could lead to service disruptions and associated environmental and health problems.

In terms of timeline, some projects experience changes before or soon after the project award date (Tirupur waste, Timarpur-Okhla, Latur water, Delhi water, some projects in Narmada dams), some soon after construction and early in the operations stage (DIAL, East Cost Road) and some well into operations (Tirupur water, Dabhol power, Karur bridge, Coimbatore bypass road, some projects in Narmada dams).

The uncertainties that were found to have the highest frequency and severity of impact are political (owing to opportunistic temptations, regulatory flux, overlapping authorities and political symbolism), public opposition (on environmental, socio-economic, health, ethical or moral grounds), and demand/revenue related (owing to unrealistic and inaccurate demand forecasts).

Thus, structuring projects for stability and to recover investments in the midst of changing technologies, policies, and public demands over decades is critical. Indeed, based upon a review of sixty infrastructure projects, Miller and Lessard (2000) find that “turbulence – not technical difficulties, external effects, or complications – is the real cause of difficulties in projects” and that “only the presence of governance capacity...can provide some protection (Miller and Lessard, 2000).” Indian academics studying PPPs have identified the same need. For instance, Mahalingam and Kapur (2009) highlight that the “ability to monitor the project and steer it through turbulences that it might encounter over its lifecycle” is a key element of a successful PPP program.

The subsequent chapters present various mechanisms to deal with such turbulence.

Chapter 2: Contractual Governance

Infrastructure projects are characterized by high up-front investments, strategic value, asset specificity and long gestation periods before achieving return on investment. Thus once the asset is constructed, the private partner is in danger of opportunistic behavior on behalf of the public partner, who has an incentive to renege on original commitments since it is less dependent on making the project functional. On the other hand, since the private partner now enjoys a monopoly position over the delivery of a key public service and since coordination of prior technical and managerial knowledge is often vital in such projects, the public partner is also in danger of counterparty opportunism. Partners in infrastructure PPPs (both public and private) will only participate in the project if they are confident that the counterparty will not behave opportunistically over the life of the project. A common way of instilling such confidence in the partners while holding them true to their commitments is through long-term contractual agreements. Such contractual arrangements are discussed herein with a special focus on India's PPP contracts.

The Concept

In most infrastructure PPPs, contract serve as “the vehicle for tangibly distributing benefits and risks (Garvin, 2009)” between the public and the private party and specifying obligations of each party over a project's life (typically 20-50 years). They are structured to balance the interests of the public and the private partner and neither can unilaterally change any of their provisions. They are vital “not just as a bidding document but as the foundation for the management of the contract throughout the life of the PPP”⁷.

The public partner (such as a Ministry) or an independent third party (such as a regulator) ensures compliance with the specifications and standards and outlines a schedule of payments to incentivize the private party to invest (Gómez-Ibáñez, 2008). In cases of differing opinion, either party can appeal to the courts or to a contractually specified independent third party (arbitrator, regulator, etc.) if they cannot themselves come to a mutually agreeable solution. Contracts are thus by nature adversarial.

At the heart of the practice of drafting long-term contracts is the assumption that all major risks (in terms of likelihood and magnitude of impacts) and desired service levels can be precisely defined *a priori* and that risk allocation frameworks can then

⁷ Government of India, Ministry of Finance, Department of Economic Affairs, “First Draft of Key Project Documents,” PPP Toolkit for Improving PPP Decision Making Processes, <http://toolkit.pppinindia.com/urban-transport/module2-fdokpd.php?links=fdokpd1>. Last checked March 04, 2011.

be designed to incentivize both parties to achieve the project's objectives consistently over time.

In fact, "the transfer of risk through contractual frameworks often is the basis for the decision to deliver public services by a PPP arrangement and movement of assets off the public sector balance sheet (Garvin, 2009)." Since infrastructure PPPs are usually undertaken by special purpose companies on a project finance basis (without recourse to balance sheets), financiers closely scrutinize all risks associated with the revenue stream. Such projects thus require much deliberation and a high level of confidence in the project and the surrounding environment.

However, contracts cannot possibly account for every possible contingency since "unpredictable, incalculable events are inevitable (Garvin, 2009)." Such uncertainties challenge the efficacy of contractual PPP arrangements. Indeed, a participant in The General Counsels' Roundtable at Stanford University recognized that the reason for the relatively consistent contractual breakdowns of PPP contracts in Latin America in the 1990s was that "ex-ante attempts to identify and mitigate risks failed to prevent project-threatening unforeseen costs and delays (Orr and Metzger, 2005)."

Thus, though long-term concession contracts are drafted with the intension of providing stability over time and preventing opportunistic behavior, their inherent incompleteness and consequent shortcomings needs to be recognized.

Types

Concession contracts usually take one of two forms:

Classical Contracts

These contracts are rigid as they "presume to describe, in advance, all relevant future contingencies and to provide specific remedies for them (Gómez-Ibáñez, 2003)." They require considerable up-front preparation and are "likely to be an unrealistic ideal for all but the simplest and shortest relationships (Gómez-Ibáñez, 2003)."

They put little emphasis on contingencies and are thus likely to require renegotiation when the conditions affecting the viability of a PPP project change dramatically. Such inflexibility is a big shortcoming of classical contracts, especially in the context of rapidly evolving technological, economic and political environments.

Neoclassical Contracts

These contracts are similar to classical contracts, but are designed to address the unpredictable future. They "clearly spell out appropriate actions and compensations

under alternative scenarios (Chan, 2010)” based upon the risks that are apparent *a priori*. Further, they “acknowledge the possibility of incompleteness and include provisions for a third party, usually an arbitrator of some sort, to resolve certain classes of disputes (Chan, 2010).” However, they require significant up-front preparation and remain inflexible since “the circumstances under which arbitration is allowed, the factors the arbitrator can consider, and the scope of the remedies that he can order are often carefully prescribed (Gómez-Ibáñez, 2003).” Thus, while neo-classical contracts can handle apparent risks with contingency clauses, they are much less effective at dealing with unexpected risks.

Both types of concession contracts are inflexible and based on the assumption that risks can be comprehensively described at the outset. However, over the 20-30 year lifetimes of typical PPP projects, contracts can't account for every possible contingency (Garvin, 2009). There are certain to be technological, sociopolitical or economic changes that will affect project economics and cause even well structured concession contracts to be renegotiated. Furthermore, since the objective functions of the public and private party in a PPP are different, there are bound to be clashes of opinion over time.

Contracts are by nature adversarial. They are bound to be incomplete and thus inadequate by themselves for PPP governance over time.

Pathways In Case of Contractual Incompleteness

When contracts turn out to be incomplete, the public party has to choose a way forward among undesirable options:

Enforce/Honor

The terms of the contract may become unfavorable to the public or the private party or to both owing to the unexpected change(s). Moreover, it may no longer serve the public purpose. The first option is for the public partner to honor the original terms of the contract.

Example: Noida Toll Bridge

The \$100 million concession in 1997 to build, operate and maintain a bridge between Delhi and Noida was the first toll road and one of the first PPP projects in India. The project was completed within budget and ahead of schedule but is best known for being one-sided in favor of the private party. The concessionaire's involvement in writing up the technical specifications and determining the reimbursable costs along with the specific contractual guarantee of recovering total project costs plus a 20% return on the entire value of the project contribute to creating such a reputation. The contract is unsustainable, but the costs of

terminating the contract are disproportionately high. Thus, the public partners are 'stuck' honoring an inflexible and undesirable initial agreement.

Renegotiate

The second option is to renegotiate the contract in the presence of information asymmetry and at the cost of hurting credibility for future PPPs. Furthermore, "if the contract had to be renegotiated the results would depend on the relative bargaining positions of the two parties at the time, and there would be no guarantee that it would be fair to rather consumers or investors (Gómez-Ibáñez, 2003)."

Example: Dabhol Power Corporation

The DPC project concession was renegotiated (capital costs and tariffs were adjusted downwards) in 1995 under a new elected state government, and again in 2001. Details of the original and renegotiated deal can be found in the detailed case study of the Dabhol Power Corporation in Chapter 1.

Re-bid

The public partner may rebid the project at the cost of long delays, litigation and/or service disruption without confidence that other private parties would be interested in the project.

Example: Chennai Solid Waste Management Project

In the 1990s, the Corporation of Chennai (COC) decided to privatize solid waste collection services in select wards of the city. The concession persisted successfully through the three-year concession period after which it was rebid. The incumbent was not the winning bidder and the new operator took time to mobilize resources, during which garbage was piling up on the streets with serious health effects (Delhi *et al.*, 2010).

Example: Port of Miami Tunnel

In February 2008, Florida selected the Miami Access Tunnel (MAT) consortium as the best value proposer from a group of three short-listed bidders after a competitive bidding process for the \$1 billion tunnel development project⁸. Owing to a proposed change in equity participation within the winning consortium, the state of Florida proposed to rebid the stalled project. However, Miami-Dade County mayor Carlos Alvarez fought this proposal, arguing that MAT would pursue legal action, which would tie up the project in litigation for years. Furthermore, the project would lose out on \$400 million of cheap debt financing that MAT had already secured (Podkul, 2010). Owing to these dangers of rebidding, differences

⁸ Port of Miami Tunnel, "Project History", Port of Miami Tunnel Company website, <http://www.portofmiamitunnel.com/project-overview/project-history/>. Last checked March 02, 2011.

between the parties were negotiated and MAT received a Notice to Proceed in October 2009.

Expropriate

Finally, the public partner may expropriate the project while still being subject to budget constraints, having low confidence of achieving desired performance levels, and tarnishing reputation locally and internationally (raising the cost of debt for all PPPs in the country).

Example: Karur Bridge Project

This 14-year DBOT agreement suffered from low traffic and toll collections and disagreement over contractual obligations. The Highways and Rural Works Department took over the bridge, restored it for public use, and stopped the collection of tolls in the public interest. As Mahalingam (2010) summarizes: "...a newly elected municipal government unilaterally cancelled the concession agreement on the pretext of a damaged approach road without compensating the concessionaire".

Each of these outcomes is associated with negative consequences for the particular project and/or for the country's PPP initiative in general. Furthermore, in a dispute each party is subject to the discretion of the courts, which may or may not be free from outside influence.

Thus, "contracts work only if they are reasonably complete and if the legal system that enforces them is reasonably fair and efficient (Gómez-Ibáñez, 2003)."

Flexibility in Contracts

Some provisions can be included in contracts in order to make them more flexible and able to respond to certain types of uncertainties and changes over time.

Based on his review of 1000 concession contracts from across Latin America, Guasch (2004) concludes that contracts need to be more flexible. He suggests that contracts should clearly define the guidelines to adjust and review tariffs and contain clear triggers for renegotiation, such as in cases of large fluctuations whereby project or environmental parameters (such as demand or macroeconomic indicators) cross certain threshold values.

Mahalingam (2010) elaborates along the same lines as he advocates for a framework under which 'a process would be created wherein a concerned set of clauses could be re-examined by a panel of participants through a specified process under a set of "trigger" conditions'. He offers that this could be done taking "into account preferred social and political processes in the local context such as seeking recourse to the judiciary or specially appointed tribunals depending upon prevailing

local practices”. Such flexible contracts “could lead to projects that were structured more sustainable, and to a situation wherein both the public and private sectors were willing to engage with each other on PPP projects with an understanding that the contracts could be re-examined in the event of extenuating circumstances and that neither side would necessarily have to solely bear the brunt of such risks.”

Based on their review of large construction projects from around the world, Miller and Lessard (2000) echo these sentiments as well: “There is a need to develop flexible contractual arrangements in the form of rendezvous clauses that establish *a priori* the terms and conditions under which agreements will be renegotiated.”

Some examples of specific contractual provisions that acknowledge the prevalence of uncertainties that regularly impact projects and instill elements of flexibility into otherwise rigid contracts are:

Flexible hand-back date

Concession contracts last for a pre-specified time period (usually 20-50 years). However, the hand-over date (the date when the contract ends) can be left as an adjustable parameter for cases where traffic levels are lower/higher than expected. BOT (Toll) concessions under the National Highway Development Program (NHDP) in India have such provisions (see Table 4).

Competing facilities

Most investments in infrastructure PPPs are recovered through user fees and are thus highly dependent on demand and under constant threat from the possibility of existence of competing facilities in future. Contractual provisions such as those providing the concessionaire a ‘right of first refusal’ on future competing facilities or those ensuring higher tariff rates at future competing facilities can protect against this risk. For instance, Delhi International Airport Limited (DIAL) enjoys a right of first refusal in case an alternative airport is proposed in a 150 km radius from the existing airport and DIAL’s bid is within 10% of the most competitive bid (Pandey *et al.*, 2010). As another example, the National Highway Authority of India (NHAI) provides projects under the NHDP a contractual commitment that a competing toll-way will have 25% higher tolls (Government of India, Ministry of Road Transport and Highways, National Highway Authority of India, 2011).

Revenue sharing

Public parties have incentives to renege on their contractual agreements and expropriate PPPs in case they perceive that private parties are enjoying unjustifiably high payoffs. Thus, some concession contracts include revenue sharing agreements under which the public partner receives a portion of the revenue once certain levels of return are met. For instance, under the I-495 High Occupancy Toll (HOT) Lanes project in Virginia, the public sector partner’s (Virginia Department of

Transport) entitlement starts at 5% where IRR is over 12.98%, rises to 15% when IRR is over 14.5%, and 40% when the IRR exceeds 16% (Guasch, 2004).

Financing structure

The perceived risk in infrastructure PPPs is higher in the early stages of the project and falls after construction. Thus, the interest rates they have to pay on raising debt are higher in the initial stages of the project and lower after construction. Projects can thus benefit from restructuring their debt as they remove certain categories of risks over time. Since the consequent benefits to the private sector from restructuring can be seen as windfall gains by the public sector and perceived as unfair, contracts often outline mechanisms to share the benefits of financial restructuring. For instance, the Office of Government Commerce in the UK requires that Private Finance Initiative (PFI) contracts signed from July 2002 onwards “provide for public authorities to receive 50 per cent of any gains arising from debt refinancing (U.K. National Audit Office, 2006).”

Scope of work

Very often, the nature of the required infrastructure service, and consequently the scope of a PPP, changes over time. Contracts can be designed to account for this possibility and prescribe ways in which the modified work is to be delivered and compensated. For instance, contracts prepared by the National Highway Authority of India (NHAI) allow for the private partner to be paid back on a cost plus basis (Government of India, Ministry of Road Transport and Highways, National Highway Authority of India, 2011). In the UK as well, the private partner is compensated for small changes on a cost plus basis. However, if there are large changes in scope, the additional services are bid in the open market (U.K. National Audit Office, 2008).

Other changes or contract modification

Contracts often contain provisions for review/modification of contractual agreements in case certain pre-specified triggers are set off or milestones are achieved. In water concessions, for instance, the private provider may be paid a certain rate for water provision while expanding services to backward communities and a different rate once a predetermined level of access is achieved.

Termination or suspension

Contracts require careful management to ensure that the private party delivers the infrastructure service as per the original agreement. Contracts may have explicit termination or suspension clauses carefully outlining different levels of actions that the appropriate public body may take against the private partner corresponding to different levels of deterioration in service. For instance, NHAI concessions under the NHDP provide for “termination of the agreement if the average daily traffic in any accounting year exceeds the design capacity and continues to exceed for three

subsequent accounting years (Government of India, Ministry of Road Transport and Highways, National Highway Authority of India, 2011).”

This is by no means a comprehensive list as numerous other adjustment mechanisms and flexibility clauses have been applied in concessions around the world. The list provided here simply illustrates that contracts can be made more flexible in order to respond to uncertainties that can be easily anticipated but not precisely characterized.

Concessions in India

The PPP Cell within the Department of Economic Affairs (DEA) in the Ministry of Finance in India, and other PPP Cells at state levels have prepared sector-specific Model Concession Agreements (MCAs). These standardized contractual documents lay down the terminologies related to risks, liabilities, performance standards, and dispute resolution frameworks. They strive to enable optimal risk allocation and to provide clarity in obligation of both parties and provisions for penalty on accounts of breach of contract.

The National Highway Authority of India (NHAI) has prepared MCAs for Highways⁹ corresponding to a number of PPP types (BOT (Toll), BOT (Annuity), etc.) and the Shipping Ministry has done the same for Ports¹⁰. NHAI’s BOT (Toll) model concession is discussed herein as an example of a typical long-term contractual agreement.

Sample Concession Agreement: National Highway Authority of India (NHAI)

The National Highway Development Program (NHDP) is one of the largest road development programs to be undertaken by a single authority in the world and involves widening, upgrading and rehabilitation of about 54,000 km of roads across the country, entailing an estimated investment of more than INR 3,00,000 Crore (USD 60 billion). The National Highways Authority of India (NHAI) is mandated to implement the NHDP. Projects covering 15,784 km have already been completed and another 10,357 km are under progress. The rest 28,313 km under the NHDP are still to be awarded (Government of India, Ministry of Road Transport and Highways, National Highway Authority of India, 2011).

NHAI has decided that PPPs are the main mode of project delivery for future phases of NHDP. More than 60% of the projected investment requirement for the NHDP is

⁹ A sample is available at NHAI’s website: <http://www.nhai.org/annuity.pdf>. Last checked January 19, 2011.

¹⁰ A sample is available at the Shipping Ministry’s website: <http://shipping.gov.in/writereaddata/linkimages/mca896116248.pdf>. Last checked January 19, 2011.

to be privately financed, through Build Operate and Transfer (BOT)-Annuity (investment by firm and return through semi-annual pre-determined payments from NHAI as per bid) and Build Operate and Transfer (BOT)-Toll modes (investment by firm and return through levy and retention of user fees). The concessions are crafted to target an Internal Rate of Return (IRR) on equity for BOT-Annuity projects of 14-16% and for BOT-Toll projects of 18-20%.

Risk Allocation

As an underlying principle, risks are allocated to the parties that “are best able to manage them (Government of India, Ministry of Finance, Department of Economic Affairs (2010a).” Thus, the commercial and technical risks relating to construction, operation and maintenance are allocated to the concessionaire. Other commercial risks, such as the rate of growth of traffic, are also allocated to the concessionaire.

The model agreement also specifies NHAI’s obligations. Among other things, NHAI is responsible to acquire all the land required till the Appointment Date and ensure that it is free from encumbrances. The government is also supposed to carry out all preparatory works and meet the costs of obtaining major clearances required for road projects such as environmental, forest, air and water pollution, rehabilitation and resettlement of displaced families, techno-economic, etc.

Fixed Provisions

Fixed provisions are included to allow for the natural evolution of performance standards and tariffs. In case there are no unexpected changes, such provisions are intended to be sufficient to foster projects through concession periods.

The model concession agreement for BOT (toll) PPPs specifies that the base toll rates are to rise at a pre-determined rate of 3% per year + 40% of the rise in the Weighted Price Index. The model concession also contains a flexibility clause that allows for extension or reduction of the concession period in the event the actual traffic falls short or exceeds the target traffic. NHAI’s Model Concession Agreements contains the following provisions (Government of India, Ministry of Road Transport and Highways, National Highway Authority of India, 2011):

Table 4: Provisions For Adjustment In BOT (Toll) PPPs

Actual Traffic	Change in Concession Period for Every 1% of Variation	Cap on Variation
Less than Target	Increased by 1.5%	20%
Above Target	Reduced by 0.75%	10%

Source: Government of India, Ministry of Road Transport and Highways, National Highway Authority of India (2011), "Guidelines for Investment in Road Sector (July 2011)", p. 26, Variation in Traffic, <http://www.nhai.org/>. Last checked July 19, 2011.

Recognition of Uncertainty, Provisions for Flexibility and Contract Management

A host of factors, such as large jumps in costs, public opposition, macroeconomic shocks, rule changes, changes in the political environment, etc. could impact the project over its lifetime. Thus, a contract needs to have provisions keeping in mind the need to adjust in case such circumstances are encountered. Contract management teams are typically constituted within the sponsoring agency and charged with the task to carry out the following functions in this regard:

- **Flexibility:** The PPP Cell acknowledges the need for change and flexibility over the life of the PPP. Specific contractual provisions and contract management practices that it fosters include:
 - *Change of Scope:* Typically in India, changes in scope are dealt with in the following manner¹¹:
 - The concessionaire bears the cost up to an aggregate pre-specified ceiling (for example, 0.25% of the total project cost in national highways) while the sponsor bears any additional costs.
 - The concessionaire can nullify a change in scope order if it (a) causes cumulative costs relating to all change in scope orders in three preceding years to exceed a pre-specified ceiling of the total project cost (5% in case of roads) or (b) by itself exceeds a pre-specified ceiling of the total project cost (20% in case of roads) at any time during the concession period.

¹¹ Government of India, Ministry of Finance, Department of Economic Affairs, "Other Issues Related to Contract Management", PPP Cell, Department of Economic Affairs, <http://toolkit.pppinindia.com/ports/module2-p4-oirtcm-cos.php?links=oirtcm1d>. Last Accessed January 17, 2011.

- **Contract Amendment:** In order to maintain the balance of risks and rewards, certain contractual amendments are likely to be necessary over the life of a concession. Therefore, a contractual framework to guide contract amendment is important:
 - Regular: Regular reviews can be scheduled at preset intervals to re-consider key elements of a contract that are uncertain and susceptible to change over time.
 - Extraordinary: Reviews can take place in case there are large changes in the project environment outside of the control of the concessionaire.
- **Dispute Resolution:** Adverse impacts on account of political opportunism and public opposition are classified as “force majeure” risks to be shared between the two parties. In the environment of an arms-length relationship of the kind fostered by contracts, disputes are bound to arise in case a force majeure risk is in fact realized. Thus, elaborate dispute resolution mechanisms need to be designed into contracts as well.

The model agreement includes a dispute resolution procedure that parties are required to observe in case of a dispute in relation to the concession contract. It encourages the parties to resolve the dispute amicably or with the help of an Independent Engineer as mediator, failing which the parties are required to resort to Arbitration. Each party is free to nominate an arbitrator and the two nominees appoint a presiding arbitrator.

- **Asset Transfer at the End of Life:** Reviewing asset conditions at the end of life, comparing against criteria outlined in the contractual agreement and implementing penalties as per contractual agreements in case of a divergence.

Summary of the Indian (Contractual) Approach

Led by the PPP Cell in the DEA, India has adopted a contractual approach to governing PPPs. There is considerable support at the central level and at the state level in various states to guide project sponsors through the PPP identification, preparation, development, procurement and management stages. The emphasis of this approach is on using a risk allocation framework to optimize the collective resources of the private and public partner and provide value for money to the public partner. Guidance documents and tools provided as part of the PPP Toolkit reflect best practices from around the globe and are likely to be helpful to project sponsors in terms of bringing important risks to their attention, but seem to be inadequate in guarding against future uncertainties.

Model RFQs, RFPs and MCAs hold the promise to streamline the PPP process and flexibility clauses and carefully crafted dispute resolution mechanisms provide for frameworks to respond to unexpected changes over time. **However, the**

relationship between the private and public partner remains arms-length and incentives for a true partnership seem to remain weak.

Summary - Advantages and Limitations of Contractual Governance

Large investment requirements and asset specificity (immobility) of infrastructure projects makes them prone to opportunistic behavior. Long-term concessions based on contracts are a mechanism to attract private investment in infrastructure as they carefully outline responsibilities and obligations for the public and private party over a period of time to allow for recovery of investment. The tendency for opportunistic behavior is controlled if the parties have recourse to an independent and efficient judicial system.

However, technical challenges, political sensitivity, and changing dynamics of the economic and social environment create a high level of uncertainty and pose strong challenges to contracts to withstand the tests of time. In spite of best efforts on the part of project sponsors and partners to create strategies to cope with anticipated risks, constraints, and issues, projects facing turbulence often enter “spirals of disintegration” and go from “euphoria to a degenerative nightmare” (Miller and Lessard, 2000). Even the most comprehensive efforts on the part of the framers of the contractual agreement turn out to be inadequate in the presence of uncertainties over time.

Moreover, owing to the essential nature of public services that they deliver, infrastructure projects, especially those with private sector involvement, are always in the eye of the media and the public at large. Thus, structuring projects for stability and to recover investments in the midst of changing technologies, policies, and public demands over decades is a critical but difficult task. Indeed, India’s erstwhile Minister of Civil Aviation articulated that the key challenge for PPP infrastructure projects is “How to manage the partnership through a tightly-framed concession agreement over a 20–30 year period, in a rapidly changing environment (Government of India, Ministry of Finance, Government of India, 2007).”

In summary, contracts must be long-term to limit expropriation but this limits flexibility. Long-term contracts are thus successful in attracting investment and ensuring service delivery over time in case the surrounding environment is stable, but inadequate by themselves in the presence of significant turbulence. Particular advantages and limitations of the use of long-term contracts as the main governance mechanism of public-private partnerships are outlined herein.

Advantages

- Fixing obligations prevents opportunistic behavior and promises stability to attract private finance.
- Long-term contracts increase the likelihood and improve the terms of long-term debt financing.
- Risk identification and allocation is a useful exercise: The emphasis on risk is valuable since allocation of risks to the party most willing and able to assume the risk at the lowest cost leads to greater efficiency and responsiveness.
- Clear specification of service levels, tariffs and a risk allocation framework allow for a level playing field for private investors. Thus the benefits of competitive tendering can be fully exploited under such an arrangement. This is particularly important in a democratic society such as India since transparency leads to a perceptions of fairness.

Limitations

- **Not a True Partnership:** The relationship between the private and public partner remains arms-length and incentives for a true partnership seem to remain weak. Thus, required changes are likely to confront differing objectives and partners are unlikely to resolve issues in a way that produces the best outcome for the project.
- **Resource Drain:** Since long-term contracts are meant to comprehensively specify obligations, responsibilities and contingencies over long periods of time, they take a considerable amount of time, money and expertise to develop. Gómez-Ibáñez (2003) notes, "...identifying all the risks and negotiating appropriate contingencies is time consuming, costly, and impractical." For instance, the Tirupur project in Tamil Nadu – the first privately financed water and sewerage project in the country – took more than ten years from concept to financial closure (Asian Development Bank, 2006).
- **Inevitable Incompleteness and Inflexibility:** Gómez-Ibáñez (2003) notes, "A central limitation of long-term contracts is the possibility that the contract may prove to be incomplete or become obsolete if circumstances change." Since desired end results and performance levels are difficult to specify under rapidly changing technologies, consumer demands and standards, some parts of contractual agreements may become unworkable over time for one or both parties. In such situations, parties to the contract face the choice

of living with unsatisfactory terms or exposing themselves to opportunism by renegotiating the contract.

- **Misleading Risk Management Frameworks:** Though efficient risk-allocation is touted as a key strength of long-term contracts, this exercise often simply creates an illusion of efficiency. Garvin (2009) points out "...often the public sector retains more risks or pays a higher premium for risks than anticipated..." This happens because the public partner is ultimately accountable to the public for infrastructure service delivery. Additionally, owing to contractual rigidity, unidentified risks also rest with the public sector partner. Based upon a review of sixty projects, Miller and Lessard (2000) find "The same long-term contracts that reduce market and supply risks for independent power producers can block efforts to respond to market realities." They further report that "strategies implemented to deal with anticipated risks were not necessarily effective in dealing with unexpected events; in fact, they often hampered the capacity to deal with them."
- **Opportunistic Bidding:** In multi-stage long-term projects, coordination of prior technical and managerial knowledge is often vital (Chan, 2010). Switching private partner mid-way through project delivery is likely to result in delaying the project and in cost over-runs. Thus, elimination of the incumbent is unlikely and investors thus have an incentive to submit a low bid, secure the rights to develop the project, and renegotiate the terms at a later stage. This incentive is heightened in the case of politically sensitive projects in which the government pressures the public partner to successfully deliver the project under a fixed schedule.

The Asian Development Bank (2006) brings attention to this problem: "Bidders often offer below-cost prices to win the contract in anticipation of later renegotiation. A concession agreement should cover all possible causes of later adjustments, leaving minimum room for renegotiation." It notes that over 60% of 1000 concessions awarded in the 1990s in Latin American were renegotiated within three years, often owing to opportunistic bidding.

Williamson's (1979) account of contractual governance from the point of view of transaction-cost economics summarizes the conclusions nicely:

"Increasing the degree of uncertainty makes it more imperative that the parties devise a machinery to "work things out"-since contractual gaps will be larger and the occasions for sequential adaptations will increase in number and importance as the degree of uncertainty increases."

Subsequent chapters explore mechanisms that can enable PPPs to "work things out" over time.

Chapter 3: Regulatory Governance

Chapter 2 establishes that contracts are incomplete since they cannot foresee all the changes that projects will need to go through over time. When unexpected events do occur, the private provider and the public partner renegotiate contracts. This exercise is subject to opportunism and breeds corruption. Uncertainty around the outcome of these negotiations deters investors from participating in PPPs.

Some, including the Indian Planning Commission make the case for setting up Independent Regulatory Agencies (IRAs) to be able to govern these relationships over time. Indeed, experience from Latin America with concessions shows that presence of a regulator reduces opportunistic behavior (Gómez-Ibáñez, 2008). This strategy merits exploration. This chapter starts with a discussion of the general idea of discretionary regulation and identifies the conditions for regulators to be effective in guiding PPPs through turbulent times. It then explores the regulatory framework for infrastructure projects across sectors in India. It finds that this form of governance still does not emphasize true 'partnership' has other shortcomings that render it insufficient as a governance mechanism for Indian PPPs.

The Concept

An alternative to trying to prescribe service levels and tariff-setting mechanisms over long period of time through contracts is to allow independent regulators to determine these as information evolves over time. Leading authors have pointed out that "...discretionary regulation may be the best solution where the circumstances are too complex or unstable to draft a complete contract (Gómez-Ibáñez, 2003)." Others have taken more extreme positions: "unless there is an assurance against expropriation through regulatory commitment, investments won't take place (Ghosh and Kathuria, 2011)."

Proponents of regulatory governance propose that independent regulators can simultaneously pursue the interests of consumers and investors while remaining free from political influence. In their view, such an approach provides the necessary flexibility to deal with uncertainties over time and prevents contractual renegotiations in which partners to a PPP have incentives to act opportunistically.

Indeed, the Planning Commission under the Government of India has emphasized that setting up a regulatory system is a critical component of creating the investor-friendly environment required to mobilize private investment. The concepts of relational contracts and IRAs are presented herein.

Relational Contracts

Instead of locking project partners into prescriptive paths, relational contracts allow for the ability to periodically review and adjust agreements given observations over time. They are based on the idea that no matter how hard we try, we cannot adequately account for all the factors that may affect infrastructure projects over time. Thus, the relational contract does not seek to estimate every possible future course that the project may take over its life and every contingency the contract thus needs to develop. Rather, it entrusts a regulatory authority or an independent regulator with to use discretion in estimating prices, service and quality standards as required.

This is the most flexible type of contract, which “anticipates that the relationship between the parties will have to adapt over time in unforeseeable ways. It relies on renegotiation between the parties as the remedy, and provides a general framework for those negotiations rather than specific remedies for identified contingencies (Gómez-Ibáñez, 2003).”

Relational contracts are commonly used around the world for BOT projects involving toll roads. They acknowledge that demand forecasts are simply forecasts and these can be improved over time based on experience. Thus, instead of determining tariffs for the entire lifetime of a toll road based on long-term traffic forecasts, relational contracts would prescribe tariffs for a short time period (3-5 years) and allow for review of the tariffs at the end of each period based on the latest usage information. These contracts usually also specify tolerance values (such as maximum % change) such that the changes from one period to the next are not drastic.

Independent Regulatory Agencies and Discretionary Regulation

For the periodic reviews to be effective, they need to be presided over by an independent third party. Independent Regulatory Agencies (IRAs) are especially well suited for these positions.

Dubash (2008) provides a comprehensive discussion around various theories and motivations behind setting up IRAs and the roles that they play:

1. **Public Interest:** As per this viewpoint, the goal of regulation is to increase allocative efficiency in pursuit of the “common good.” This approach supposes that regulators are simply agents of the public interest and assumes that neutral and competent regulators can reliably choose a single correct answer to regulatory problems by optimizing between the goals of economic efficiency and achievement of alternative social values.

2. **Private Interest:** The proponents of this view argue that regulators emerge to “serve the private interests of individuals or organized groups”. Thus, regulators develop increasingly close relationships with industry and are subject to capture by special interest groups. These groups could include public sector bodies, in cases where infrastructure services are primarily delivered by public enterprises. According to this view, ‘regulators exist to limit the scope for arbitrary administrative action, thereby creating conditions favorable for investment’.
3. **Stakeholder Approach:** Regulators are expected to achieve a balance among the interests of different stakeholder groups. The legitimacy of regulators is tied to how well they do so.

The legislation that gives rise to the regulatory body usually contains certain guidelines and procedures that the regulator needs to follow in order to arrive at a decision. However, such legislation often leaves ample ground for the regulator to enjoy substantial freedom in carrying out his duties. Indeed: **“The basic advantage of discretionary regulation is its flexibility, enabling it to adapt to changing and unforeseen circumstances (Gómez-Ibáñez, 2003).”**

IRAs first surfaced in the United States through the Administrative Procedures Act (1956). These bodies fall under the executive branch of government, but are supposed to be insulated from political influence. There are important lessons to be learnt from the American experience with successful provision of electricity services over many years in the presence of regulators.

The critical factor for the success of a regulatory institution is balance between autonomy and accountability.

1. **Autonomy:** Functional autonomy in day-to-day activities while allowing the Ministry to issue only broad policy guidelines and directives. “Selection, appointment and removal of the chairperson and members should to be insulated against any perceived interference or manipulation (Government of India, Planning Commission, The Secretariat for the Committee on Infrastructure, 2008).”
2. **Legitimacy / Accountability:** It is challenging, but critical to make autonomous regulatory institutions accountable. The modes of responsibility that need to be established are:
 - i. *Legislative accountability:* The regulator should be directly responsible to the legislature for the ways in which it chooses to administer the policy guidelines set by the legislature. The legislature should always be able to exercise oversight over the regulator, except to avoid clashes of jurisdiction for cases where the decisions of the regulator are open to appeal before an appellate tribunal.

- ii. *Democratic accountability*: The regulator should rest decision-making on publically articulated rationale and the regulator's decisions should be open to public scrutiny to ensure legitimacy in the eyes of people at large. This would also serve as an effective safeguard against regulatory capture by special interests.

The US has been successful in achieving this balance and reasonable compliance by regulators to Congress' legislative objectives. One reason for this success is that the US Congress reserves the power to cut funding for non-performers and directly monitors administrative activity in case it needs to exercise this power. Additionally, rule making is controlled by an administrative procedure that requires description of the content of proposed rules to the public in an accessible language ("notice") and solicitation of views of all interested parties ("comment"). From the experience in the US and other areas around the world, best practices in achieving regulatory autonomy and accountability simultaneously are presented herein.

Institutional Framework for Regulatory Success

1. **Budgeting**: Give the regulatory body a substantial budget while subjecting it to budget reviews to be conducted by the legislature.
2. **Regulator Appointment**: These include guidelines for choosing the right person (people) for the job such that they are able to effectively balance competing interests without falling prey to opportunistic behavior, and ensuring autonomy once selected.
 - i. *Appoint for fixed durations*: Appointment of regulators for fixed durations and provisions for removal from office only for specific and limited causes so that they can make decisions that might be unpopular in the short run without fear of political influence. This was the case with the Public Utilities Commissions set up in the US during the first half of the twentieth century.
 - ii. *Appoint to staggered terms*: Staggered terms in relation to political appointments so as to mitigate the power of the appointer.
 - iii. *Choose the right person (people)*: Characteristics of a good regulator include:
 - a. Sector-specific technical expertise
 - b. Good reputation to earn respect from legislators, industry participations, adjudicators and the general public
 - c. Political dexterity and the ability to "distinguish between political considerations and others that are politicized masks for rents, wastage and theft, to recognize the limits of government administration and to be alert enough to take advantage of the few opportunities for political entrepreneurship (Morris, 2002)."

3. **Participatory approach to rulemaking:** These refer to civil society's ability to engage in decision-making. They include Requirements for issuance of public notice before issuance of new rules, public deliberation/hearings, written comments in the face of questions and opposition, and written justification for proposed and final decisions.
 - i. *Notice and comment:* The affected industries and generally concerned public can be effectively engaged by providing notices before the issuance of a new regulation (30 days in the US for electricity regulation) and setting aside reasonable time-periods and avenues such as open discussion meetings (such as town hall meetings in the US) to solicit comments for all interested or affected parties.
 - ii. *Open access to information:* Democratic accountability can be achieved in part by requiring the regulator to publish rules online or in a public register.
 - iii. *Require periodic reports:* Legislative accountability can be achieved by requiring the regulator to submit written reports on the previous year's activities and on the rationale behind the strategy proposed for the forthcoming year.
4. **Substantive Guidance:** Even in the presence of robust regulatory procedures that ensure transparency and build accountability and credibility, regulators still require "some basis on which alternative competing interests are to be weighed and prioritized (Dubash, 2008)." For instance, the UK's "Utilities Act of 2000 makes consumer protection the primary duty of the regulator (Dubash, 2008)." Similarly, the pursuit of public interest was the avowed reason for why many states in the United States replaced regulation by municipal concession contracts with regulation by public utility commissions (Gómez-Ibáñez, 2003). Such legislation is currently missing, but required in the case of India.

Regulation in India

Indian policy makers have long argued in favor of setting up IRAs to govern infrastructure. The Planning Commission has made this intention clear: "The command and control mode of governance that relied on state ownership of infrastructure services is gradually moving towards a new mode of regulatory governance where public private partnerships and private sector participation require governmental priorities to be achieved through independent regulation and the law of contract (Government of India, Planning Commission, The Secretariat for the Committee on Infrastructure, 2008)."

Thus, India is witnessing a transformation from an environment where policy making, legislation, and ownership of enterprises converged in a Department or

Ministry to one in which these functions are dispersed. However, this transformation remains largely incomplete and asymmetrical across sectors. Table 5 depicts the current regulatory environment across sectors in India:

Table 5: Asymmetric Regulation Across Infrastructure Sectors in India

Sector	Regulation
Roads	No regulatory authority; National Highway Authority of India (NHAI) acts as the regulator as well as the operator.
Railways	No regulatory authority; Indian Railways acts as the regulator as well as the operator.
Ports	Tariff Authority for Major Ports (TAMP) has the sole function of tariff setting. Investors and users have no recourse to an independent regulator on other matters such as dispute resolution, performance standards, consumer protection and competition.
Airports	Airports Economic Regulatory Authority (AERA) recently set up to determine tariff structure for aeronautical services, development fees for major airports and passenger service fees, and to monitor the performance standards relating to quality, continuity, and reliability of service (Rastogi, 2007). Separate agencies regulate safety and technical aspects.
Power	Regulatory Commissions at the Center (CERC) and State (SERCs) levels with extensive functions and powers.
Telecom	Telecom Regulatory Authority of India (TRAI) is responsible for regulating telecom and internet service providers.
Water Supply and Sanitation	No regulatory authority; responsibility of Urban Local Bodies
Waste Management	No regulatory authority; responsibility of Urban Local Bodies

Source: Based on data from Government of India, Planning Commission, The Secretariat for the Committee on Infrastructure (2008), "Approach to Regulation of Infrastructure," http://infrastructure.gov.in/event_Regulation_Law_and_Policy_final.pdf. Last checked March 23, 2011.

It is clear from Table 5 that the evolution of regulatory institutions across infrastructure sectors lacks a common regulatory philosophy. Even among sectors that have independent regulators, there are significant points of departure. These include:

- **Scope:** For instance, electricity regulator has extensive powers (rule making, enforcement, imposition of penalties, etc.) while port regulator can only set tariffs, that too with restricted powers.
- **Avenue for appeal:** The telecom and electricity sectors have appellate tribunals while such specialized forums of appeal are missing in other sectors.
- **Tenure of regulators:** Varies between 3 years to 5 years across sectors.
- **Reappointment rules:** Generally members of regulatory commissions or appellate tribunals cannot be reappointed but for the electricity appellate tribunal, they can be reappointed for another 3-year period.
- **Selection process:** Presence or absence selection committee, prescription of qualifications, etc.

This current regulatory environment, where different infrastructure sectors face different rules, has been framed by “political constraints and ministerial preferences (Government of India, Planning Commission, The Secretariat for the Committee on Infrastructure, 2008).” Moreover, India has experienced divergent outcomes even among the sectors where IRAs have been set up and vested with significant powers – telecommunications and electricity. These experiences are outlined in Appendix 3 and implications for the future of PPP governance through regulation in India’s infrastructure sectors are discussed in the summary of advantages and limitations in the subsequent section.

Summary

The current regulatory framework in India lacks synchronization across sectors and creates (instead of removes) avenues of uncertainty owing to structural issues, political influence and lack of competence among regulators.

The history of telecom and electricity regulation in India (see Appendix 3) suggests that while they have experienced success on some levels, they are heavily influenced by political motivations and suffer from a host of other shortcomings. The key lessons are:

Advantages

- **Regulators provide for flexibility under uncertainty:** Regulatory governance holds the promise to overcome one they key shortcoming of long-term contracts – the inability to respond to unanticipated risks. Independent regulators can simultaneously pursue the interests of consumers and investors by smoothening out the effects of such risks by calling for small changes over time.
- **Regulators provide insulation from political influence:** Regulators can limit the scope for arbitrary administrative action, thereby creating conditions favorable for investment. They can protect both public and private parties from opportunistic behavior.
- **Regulators promote transparency and public participation:** By regularly publishing the latest regulations along-with explanatory notes for the rationale behind the orders, regulators provide the public with insight into project governance. Additionally, issuing public notices, holding public hearings on proposed rules, publishing market-monitoring reports, meeting minutes, public tenders, and maintaining a detailed record of regulatory proceedings electronically encourages and enables public participation.

Limitations

- **Confrontational rather than cooperative:** Much like contracts, regulatory frameworks are for the most part adversarial and thus often result in litigation and drawn out conflicts. In reference to global experience with such systems, Lofstedt and Vogel (2001) report, “There has been a great deal of inefficiency...including constant suits and countersuits and regulation being driven by public opinion...” Regulators often make rules in the presence of information asymmetries and then levy fines for non-compliance. Regulatory systems are thus prone to the “regulate, litigate, regulate, litigate syndrome (Kelly, 1988 as cited in Coglianesi, 1997, p. 1265).” Lofstedt and Vogel (2001) conclude, “There is more to gain by working together rather than opposing each other.”
- **Focus on procedure rather than project:** The effectiveness of regulatory governance is often shackled by well intentioned, but time consuming, cumbersome procedures. These include requirements for issuance of public notice before issuance of new rules, public deliberation/hearings, written comments in the face of questions and opposition, and written justification for proposed and final decisions. These render the system expensive and inefficient.

- **Regulators are weak:** Regulators seem to either not have extensive powers (port regulator) or are effectively extensions of public agencies out to achieve political motives while laying off accountability onto a third party (electricity regulators).
- **Governments are not supportive:** Relationships between governments and regulatory bodies have been unsteady and not very constructive and governments have often been found to be unresponsive and/or opposed to regulators. For example, the crucial position of Chairman of the CERC was left vacant for over a year (Bhatiani, 2002) while the Department of Telecommunications was against the institution of an independent telecom regulator and even appealed its decisions in court.
- **Maintaining independence is challenging** in an institutional context characterized by public ownership of service providers in most sectors; the existence of a few large and dominant private firms if at all; a limited pool of skilled individuals capable of assuming the roles of regulator or staff; limited public familiarity with regulatory processes; and the nascent state of civil society (Dubash, 2008).
- **Public engagement and transparency are limited:** For instance, Ghosh and Kathuria (2011) have argued for a significant increase in participation of public interest groups in the regulatory decision-making process to meet concerns about the legitimacy and accountability of independent regulators. In addition, Dubash (2008) has called for robust procedures of transparency and participation, and a reorientation of electricity regulatory institutions to being “an active site of political debate, rather than an island in a sea of politics”.
- **Regulation is technically challenging:** Notwithstanding particular difficulties in India, discretionary regulation is technically challenging. “Under cost of service regulation as developed in the United States, for example, the regulator is supposed to set tariffs high enough to cover the costs of an efficient firm, including operating expenses, depreciation and a reasonable rate of return on invested capital (Gómez-Ibáñez, 2003).” To make this calculation, the regulator needs to have confidence in the reported costs, assess whether the investments made are prudent, and determine other critical information such as discount rates on debt and required rates of return on equity, which are often very difficult to determine.
- **Substantive guidance is absent** while it is particularly important since there is usually not a clear economically correct answer to regulatory issues. At the moment, regulators “make back-door adjustments to accommodate social and political pressures” into regulatory decisions. A clear substantive framework that forces “explicit and transparent consideration of trade-offs and alternatives” is needed (Dubash, 2008).

In summary, though setting up independent regulatory agencies is frequently touted as a way to improve infrastructure project outcomes, this traditionally prescribed reform has achieved mixed success in India at best. Public authorities have largely failed to safeguard the independence and subjectivity of regulators.

Thus, infrastructure projects are unlikely to achieve the double imperative of ensuring financial sustainability and of meeting user needs and social objectives under a framework of regulatory governance alone. Tankha *et al.* (2010) note:

“Where institutions are unfavorable and are difficult to change, additional pathways and strategies for improving sector performance warrant exploration.”

The subsequent chapter discusses such alternative strategies, collectively referred to as structural governance.

Chapter 4: What Works?

The third 'P' in PPP emphasizes partnership. However, as discussed in Chapters 2 and 3, the usual forms of PPP governance based on contracts or regulatory bodies seem to emphasize, institutionalize and reinforce an antagonistic relationship between the public and the private sector 'partners'. In practice, "PPPs do not involve the intensive cooperation required in the ideal model (Spiering and Dewulf, 2006)." Thus, neither contractual nor regulatory governance mechanisms suffice in institutionalizing an environment where infrastructure projects can adjust to unanticipated changes over time and achieve the dual imperative of ensuring financial sustainability while meeting user needs and social objectives.

Formal agreements under contractual frameworks provide private partners with the confidence of having recourse to the courts but are inadequate in an environment characterized by turbulence and subject to renegotiation in adverse conditions. More flexible (relational) contracts and regulatory governance accommodates a changing environment but does not provide adequate insulation against political influence. Both frameworks are confrontational and fail to emphasize real commitment to partnership.

Under the traditional frameworks, during project structuring, the public and private sector partners negotiate risk allocation frameworks and work through the details of economics, obligations, and responsibilities. Each partner attempts to get the best deal possible for itself. During the design phase, the public partner typically plays big boss by approving drawings and recommending changes. For instance, in the Delhi International Airport project, AAI rejected and completely changed the private partner's original design. The private company (GMR) wanted to give the airport façade a red sandstone structure like the Red Fort in Delhi but the government asked for a glass-and-steel look instead. The airport layout changed extensively as a result (Jain *et al.*, 2006).

During the construction phase, the public partner attempts to scrutinize and control costs even in the presence of information asymmetry. During the longest stage of the partnership – operations, the public partner simply plays the role of a watchdog, ensuring that the performance standards originally established are adhered to. Generally even such oversight is limited. Finally, during the hand-over stage at the end of the PPPs life, the public partner scrutinizes the conditions of the infrastructure assets against contractual specifications. The degree of partnership seems to wither and that of antagonism between the parties seems to intensify over time.

Contrasting against such a depiction of PPPs is a situation in which issues can be resolved before they become contractual and the partnership is sustained and even strengthened over time. This chapter commences with an examination of successful Indian infrastructure PPPs in search of such alternatives.

Findings from Successful PPPs

Cochin Airport

Basics

The Cochin International Airport Limited (CIAL) in Kerala was the first major airport in India built with private sector investment. The head of the district administration, V. J. Kurien, incorporated CIAL in 1994 to build, operate and maintain an international standard airport at Cochin. Upon incorporation, Kurien relinquished his role as head of district administration and took charge as managing director of CIAL. After initial problems with fundraising, CIAL was able to raise initial financing in the form of short term loans and long term debt backed by a guarantee from the government of Kerala, and eventually equity from the state government amounting to a 41% stake. The rest of the equity was raised largely from the primary users of the new airport – high net worth individuals and industrialists, primarily Non-Resident Indians (NRIs) numbering 10,000 from over 30 countries who regularly traveled in and out of Kerala (15% of Kerala's population in 2000 was working abroad).

Uncertainties

1. **Financing:** Initially, the Airports Authority of India (AAI) and the Director General of Civil Aviation refused to invest in a new international airport at Cochin despite the identified need.
2. **Politics:** "During the 5 years of construction of the airport, CIAL officials had to deal with three Civil Aviation Ministers, four Civil Aviation Secretaries, four Chairmen of AAI at Central Government, and three Chief Ministers, four Transport Ministers and four Transport Secretaries at the State Government (Akintoye and Beck, 2009, p. 110)."

Key Success Factors

Despite lack of clarity on policies, issues and regulations concerning Greenfield airport construction and operations, financing issues and political chaos at the center and state levels, CIAL has been consistently generating profits since 2002-03 (four year after the inaugural flight) after an initial hick-up owing to lower than expected demand. The key reasons include:

1. **Public Sector Management:** Involvement of the Chief Minister of the State as the Chairman of the Board in CIAL was a big factor in mitigating political risk. In India, "large projects that are initiated by the incumbent government and those that are still in the development phase are usually reviewed by the new government (Akintoye and Beck, 2009, p. 118)." The magnitude of political risk is heavily reduced by having the Chief Minister of the State as Chairman of CIAL,

since no Chief Minister, regardless of party, would like to see a project fail under their direct oversight.

Equally important in successful navigation of a constantly changing political environment was having the previous head of the district administration as Managing Director of CIAL. Kurien lobbied effectively for political support for the project through regime changes and was successful in reducing risks during such transition periods. He successfully managed political differences between the state and central governments and his leadership solicited additional investment from the state government as well as from private investors.

2. **Stakeholder Engagement:** “To create a favorable impression among different stakeholders, publicity and communication regarding the airport project were directly handled by the Managing Director, which helped in quickly responding to the queries and concerns (Akintoye and Beck, 2009, p. 120).” Aggressive advertising, a public relations drive, and special perks encouraged financial support from potential users of the airport. Such broad based support prevented the project from being delayed from land acquisition issues and other public interest litigations.
3. **Wide Equity Base:** Initial financing from the government and from a few NRIs encouraged other individuals to invest in CIAL. CIAL was thus able to raise 62% of its equity from public sources (with the Government of Kerala as the largest shareholder with a 41% stake) and the remaining 38% from private sources (with NRIs accounting for 25% of equity investment) (Akintoye and Beck, 2009). Inclusion of key players such as Air India (national flight carrier) and BPCL (fuel supplier) proved to be a good strategy to mitigate risks and secure incentives to increase service levels from the airport.

Hassan-Mangalore Railway Project

Basics

The Indian Railways along-with Government of Karnataka formed a consortium – Hassan-Mangalore Railway Development Company Limited – to upgrade a rail line between the cities of Hassan and Mangalore in the state of Karnataka. Each party contributed 40% of the required funds as equity, raised 9% as equity each from New Mangalore Port Trust and Mineral Enterprises Ltd. and 2% from Karnataka Rail Development Corporation (K-RIDE) (Raghuram and Gangwar, 2010). This was one of the first railway PPPs in India and the line has been operating since 2006.

Uncertainties

1. **Revenue:** The project consortium proposed that significant capacity for passenger traffic would exist on the trains. However, passenger fares in India usually do not cover operational costs and are subsidized by freight traffic (Delhi

et al., 2010). Moreover, interdivisional and inter-zonal issues, availability of motive power, availability of crew, train routing problems, and other issues complicate freight movement as well. In fact, “During the first 11 months of operation, only 1.6 mt freight moved, as against the forecast of about 6 mt (Raghuram and Gangwar, 2010).” Thus, revenue was much lower than expected.

2. **Bureaucratic:** The Indian Railways are mandated to follow certain bureaucratic procedures that lead to project delays. The need to coordinate a number of agencies leads to low efficiency and potential breakdown (Delhi *et al.*, 2010).

Key Success Factors

Including upstream and downstream stakeholders, government officials, interconnection operators, etc. as board members and managers helped the project achieve efficient service delivery and profitability in the second year of operations.

Stakeholder Inclusion in Project Management: The project employed an innovative strategy of offering positions in their board to key stakeholders. The managers of different rail division in the region were given board positions, which improved the overall efficiency of freight movement. The organization managing a port connected by the project was also given a board position, which led to the adoption of new technical applications resulting in reduced spillage and increased competitiveness of the rail system compared against land-based transport. The experienced Indian Railways took care of operations and the Government of Karnataka, which was best positioned to deal with political issues, was also offered a board position. “This strategy helped balance the interests of the various stakeholders, and this project is proceeding profitably (Delhi *et al.*, 2010).”

Alandur Sewerage Project and Alandur Solid Waste Management Project

Basics

These projects correspond to Alandur Municipality’s efforts towards building a world-class sewerage infrastructure and meeting its growing solid waste management needs. For both projects, AM engaged the Tamil Nadu Urban Development Fund in structuring concession agreements.

Uncertainties

Municipal Worker Unrest / Local Agitation: The businesses of solid waste collection, management, treatment and disposal traditionally fall under the purview of Municipal Corporations and employ a number of workers united under labor unions. These unions usually vehemently oppose privatization of such services since this threatens their jobs. For instance, labor unions representing municipal workers filed a legal suit against the Corporation of Chennai as they prepared the bid documents for privatizing these “essential services” (Delhi *et al.*, 2010). Things were

even more serious at Tirupur, where local villagers prevented vehicles from entering treatment plants and threatened the lives of workers in the plants. Similar opposition and agitation were expected in Alandur.

Key Success Factors

- 1. Public Sector Champion:** The Alandur Sewerage Project (ASP) “demonstrated that ‘political will and quick decisions make projects happen’. The political leadership and strong advocacy for the project provided by the chairman and council of the municipality proved to be critical element of the success. While strong support for the sewerage system within Alandur existed, political will was essential to convince the customers and citizens to pay a significant share of the cost and accept the entry of the private sector (Government of India, Ministry of Finance, Department of Economic Affairs, PPP Cell, 2010).”
- 2. Stakeholder Consultation and Financial Involvement:** The municipality and the state government conducted an aggressive public outreach campaign for the sewerage project to convince stakeholders of the benefits of the project. Based on extensive stakeholder engagement and results of a ‘Willingness to Pay’ survey, they solicited and succeeded in collecting one-time deposits in the form of connection charges from the citizens of Alandur amounting to 29% of the required funding. In this regard, the PPP Cell in DEA notes that community awareness, support and on-going cooperation were critical for the success of the project (Government of India, Ministry of Finance, Department of Economic Affairs, PPP Cell, 2010).
- 3. Stakeholder Inclusion in Project Management and Oversight:** During the development of the solid waste management project, existing municipal workers were assured job security and given alternative assignments. Additionally, the local community was involved in monitoring the performance of the private operator via participation from prominent citizens and Resident Welfare Associations, and the populace was educated on the need for segregating waste and aiding the private waste collection company.

To maintain support for the sewerage project, a citizen’s committee was formed and it met frequently to review the status of the project, monitor performance of the BOT contractor and provide a forum in which citizens could air their concerns. As of 2009, the project had been running without incidents or protests for three years (Mahalingam and Kapur, 2009).

These projects “establish that close involvement of all stakeholders / departments at the key decision-making stages of the project, as also for review and monitoring, is critical to ensuring that the project stays on-track (Government of India, Ministry of Finance, Department of Economic Affairs, PPP Cell, 2010).”

Bhiwandi Electricity Distribution

Even among India's crumbling infrastructure sectors, the power sector stands out like a black sheep. Two decades of economic reform, beginning with the experiment with Independent Power Producers as part of the 1991 economic liberalization, have not resulted in much improvement in the technical or financial position of the power sector.

Despite this weak institutional environment characterized by heavy political interference, government opportunism and competitive populism, the Bhiwandi Electricity Distribution system has been successful in involving a private operator through a Distribution Franchise agreement. Plagued by high levels of power theft and collusion between big users (textile mills) and the state electricity board (SEB) officials, Bhiwandi circle used to be the worst performing of Maharashtra's 40 power distribution circles. Post-reform, it is considered as one of the state's best performers.

Basics

In 2007, the state distribution company, Mahadiscom signed a distribution franchise agreement with Torrent Power on a "right to use" basis (i.e., ownership of assets remain with Mahadiscom) for 10 years. The agreement obliged Torrent Power to invest a minimum of \$2.8 million per year for the first five years and supply power to the circle under the same terms and conditions established by the state regulator for Mahadiscom while meeting progressive performance targets. The PPP has been a resounding success as the private operator has turned an annual loss of \$7 million into a \$10 million profit and has surpassed all targets of reduction in Aggregate Technical and Commercial losses and hours of load shedding and increase in tariff collection efficiency. Table 6 summarizes circle characteristics before and after private sector participation, along with Torrent Power's original performance targets where known.

Table 6: Bhiwandi Circle Electricity Distribution Franchise Turn-Around

Service Parameter	Performance		
	Original (2006-07)	Year III Target (2008-09)	Actual (2008-09)
Load Shedding (hours/day)	8.0	N/A	3.5
Transformer Failure Rate (%)	40	N/A	7.5
Metering (% of total customers)	23	N/A	95
Number of Interruptions (per customer per year)	52.9	N/A	10.3
Average Interruption (hours)	22.4	N/A	3.45
AT&C Losses	58%	44%	24%
Collection Efficiency	66%	80%	95%

Source: Author, based on data from: Tankha, S., Misal, A. B. and Fuller, B. W. (2010), "Getting Reforms Done in Inhospitable Institutional Environments: Untying a Gordian Knot in India's Power Distribution Sector," *Energy Policy*, Vol. 38, pp. 7121-7129.

Distribution losses alone came down from 43% in April 2006 to 19% in December 2008 (Prayas Pune, 2009). Thus, by every measure, this PPP has been a resounding success.

Uncertainties

Political and Public: Bhiwandi is a major textile hub, accounting for 33% of the power looms nationwide. Pre-reform, companies operating these power looms, accounting for a third of the total power consumed in Bhiwandi, regularly pilfered power from the grid. They engaged private linesmen and bribed government-employment linesmen to connect them illegally to the network. Local politicians did not object to this arrangement and partook in this collusion since these mills were the main source of employment in Bhiwandi. This imbedded system proved resilient over the years and any efforts to alter the system faced opposition from the illegal linesmen and officials of the electricity board to protect employment, power loom owners and operators to keep costs low, and local politicians to sustain popularity and power. Bhiwandi's status as the worst performing circle in Maharashtra made it even more challenging for the private operator to succeed.

Key Success Factors

In addition to technical improvements, there were key structural factors that led to the project's success. Foremost among them were the facts that the franchisee reduced the costs of reform for the various stakeholders and created instead of limited economic opportunities for key interest groups.

Stakeholder Involvement: A critical feature of Torrent Power's strategy was to include all key stakeholders in crafting a solution to the circle's problems.

- **Customers:** It reduced transaction costs for customers to regularize their connections by organizing special camps in different neighborhoods to sanction new connections on the spot instead of soliciting people to the central office.
- **Private Linesmen:** The franchisee tackled power theft through the use of private linesmen by bringing them within the new formal institutional structure. It recruited these linesmen, who were previously illegally connecting people to Mahadiscom's network to perform maintenance and theft prevention jobs for itself. By mainstreaming rather than marginalizing these linesmen, the franchisee a) gained access to their technical and tacit expertise and b) created support for this project in a group that was previously a critical component of the nexus of corruption.
- **Labor Unions:** The franchisee prevented potential protests by labor unions comprised of state electricity board employees by protecting their key interests of keeping their jobs. More than 100 Mahadiscom employees were deputed to the franchisee for a term of three years, extendable contingent on performance. These employees enjoyed pay-for-performance perks in addition to the service conditions they enjoyed at the state electricity board.

Tankha, Misal and Fuller (2010) note that the distribution franchise contract did not include any innovative or special clauses to ensure credible commitment on part of the government. Rather, they report that the success of reforms in this perverse institutional environment was the result of "a complex interplay of strategic choices, careful research of the stakeholders, coalition building, and shepherding as the reforms are formulated and implemented across multiple levels and domains of governance."

Lessons

It is important at the outset to recognize that projects face different levels of technical, political, economic, financial and social conditions. Each project presents its own unique set of challenges and opportunities. Thus, a tactic that works in one project may be completely ineffective in another. However, lessons can be drawn from elements of strategies that have repeatedly worked across projects. These lessons, garnered from the case studies discussed in this chapter and others cases are presented herein.

Public – Private 'Partnership': Emphasis on the Third 'P'

Three models of such a partnership are discussed herein in order of increasing apparent effectiveness.

Strong Political Champion

Since “large path-breaking projects require active hand-holding from the government throughout the project planning and execution stages (Government of India, Ministry of Finance, Department of Economic Affairs, PPP Cell, 2010),” they necessarily involve a number of public agencies, some of which are often at odds with the private sector and even with each other. Moreover, as discussed in Chapter 1, large projects involving private companies are subject to intense public opposition.

Thus, the success of PPPs is often contingent not upon the careful design of precise contractual relationships between private and public partners, but upon the unwavering support of a strong political champion. The history of private sector participation in India abounds with examples where support from top political leaders has been essential in moving forward the case for private participation. Some of these are:

- **The emergence of Gujarat:** Owing to Chief Minister Narendra Modi’s unwavering support for private involvement, Gujarat is consistently seen as India’s most progressive state and as a role model for the entire country.
- **Electricity Reforms in Delhi:** Chief Minister Sheila Dixit’s continued support for privatization of electricity distribution companies was successful.
- **Cochin Airport:** Involvement of the state’s Chief Minister as the Chairman of the Airport’s Board of Directors helped the project navigate the political landscape and secure financing from the government, banks and from the general public.
- **Sewage and Solid Waste Management PPPs in Alandur:** The political leadership and strong advocacy for the project provided by the Chairman of the municipality proved to be a critical element of success.

However, even the most honest efforts on the part of the strongest political champions are often not enough for the success of private participation in infrastructure. The failed water reforms of Delhi despite Chief Minister Sheila Dixit’s best efforts and the unsuccessful privatization of the Hyderabad Metropolitan Water Supply and Sewerage Board despite advocacy from popular Chief Minister Chandrababu Naidu are cases in point.

Joint Venture: Public Equity

Joint equity participation by the private and public partner in infrastructure projects is a way to improve the outcome of the project. In Joint Ventures, “the emphasis is on togetherness” and co-responsibility as “risks, revenues and losses are shared”

(Spiering and Dewulf, 2006). The motives for both public and private partners are different from concessions, where the focus is on risk transfer, not sharing.

Theoretical support includes the ideas that joint ventures increase economic efficiency (Moszoro, 2010) relative to projects delivered completely using private or public equity; that co-ownership fosters better governance over time (Orr and Metzger, 2005); and that having 'skin-in-the-game' reduces incentives for opportunism for both partners (Moszoro, 2011). These arguments are presented in turn:

- **Economic Efficiency:** Moszoro (2010) argues, "a mixed capital structure allows to internalize both the cost of capital advantage of the public sector and the knowledge advantage of the private sector."

Moszoro's economic model to determine the optimal private share in a PPP project finds that "percentage of savings achieved on the investment thanks to the private sector participation in the project and the interest rate spread of the private sector over the rate available to the public sector" are the two important criteria in determining the nature of the optimal capital participation among the two parties.

- **Governance:** Experts participating in a roundtable discussion around PPPs at Stanford University (Orr and Metzger, 2005) suggest that Joint Ventures can better manage unexpected changes over time since:
 - i. The public partner is a participant in the project with a direct and material economic interest and a "shared economic destiny (Orr, 2006)."
 - ii. JVs enable the public sector's continuous participation in decision making
 - iii. Public sector involvement in JVs reduces public opposition
- **Opportunism:** Given that the public partner has a stake in the success of the company entering into a PPP, it would have a lower incentive to behave opportunistically. Indeed, employing a game theoretic model to study opportunism in infrastructure PPPs, Moszoro (2011) found that welfare in public-private joint ventures should be bigger than in the case of either public or regulated private monopolies.

Joint Ventures have been successfully used in India to deliver infrastructure PPPs, such as in:

- **Electricity Transmission Projects:** As of July 2011, at-least six joint venture projects with 74% private equity participation and 26% participation by public company PGCIL, are under various stages of development (Pilai, 2011).

- **Airports:** Recent major airports such as Delhi International Airport Ltd., Mumbai Airport, and Hyderabad Airport are being delivered as joint ventures with AAI and state governments as public partners.
- **Urban Development:** Sewerage / water / waste projects are regularly delivered as joint ventures with municipal governments as the public partners.

However, as the case study of DIAL in Appendix 4 shows, JVs are not always successful and still subject to opportunism. Major bottlenecks remain in such arrangements as a consequence of the tensions between a large number of public and private parties on account of different interests, resources, perceptions, and working methods. Close inter-organizational collaboration can thus get too complicated and difficult to manage. Furthermore, the public sector partner in the PPP may not have any influence on other public parties that interfere in the PPP's business and may even be at odds with it.

Public Sector Partner Management Role

Involving public sector partners in decision-making relating to the project over time by including them as part of the project company's management or governance committees has been proven to be effective in navigating the tests of time. This form of governance diminishes the likelihood of negative political behavior.

Infrastructure projects require coordinated management of community and stakeholder communications so that the project is embraced. They need buy-in from various Ministries and Departments, not only during the initial structuring but also over time as the project conditions and realities change.

Public terms in office are shorter than project lifetimes and sometimes even the time needed for project delivery. Thus, PPPs that do not invite active public partner involvement lack the required endurance of relationship and the feeling of shared responsibility. Moreover, in the face of altering political parties, incoming public figures may even have incentive to see the efforts of the previous partner fail, unless their own skin is on the line.

The Cochin Airport case examined in this chapter is a prime example of a situation in which the public sector retains decision-making capacity over time. Headed by the previous head of district administration in the Managing Director's role and the Chief Minister of the state as Chairman of the board, the project was able to successfully navigate financial adversity, regime changes and political differences between the state and central governments. Similarly, operations management by Indian Railways and board positions for the Government of Karnataka and other public agencies critical to service delivery contributed to the success of the Hassan-Mangalore railway line.

This strategy appears to be the strongest at maintaining a focus on true partnership and aligning public and private partner interests over time.

Stakeholder Participation

Infrastructure projects ultimately exist to provide essential public services and their sustainability depends upon their ability to do so. Going through a transformation from delivery of infrastructure services by the public sector to one in which the private sector becomes a major participant entails changes in lifestyle and economic wellbeing for a number of stakeholders across society. Stakeholder participation is thus important and involves the identification of key stakeholders, assessment of stakeholder interests, influence and importance, and development of a participation strategy.

The PPP Cell in the Ministry of Finance recognizes the importance of stakeholder engagement:

“Effective communication of project benefits to various stakeholders and mobilizing public support is one of the key lessons to be drawn from India’s PPP experience to date. Absence of a buy-in from the people at large can lead to significant hurdles in various stages of a project such as during land acquisition because of the displacement of people, or during project operations due resistance to collection of revenues in the form of toll, charges or tariffs. Public support is thus critical...(Government of India, Ministry of Finance, Department of Economic Affairs, PPP Cell, 2010).”

This section identifies key stakeholders that the private sector and their public sector partners must not overlook to successfully realize their goals. It highlights practices that have worked in India in engaging them to produce positive outcomes.

Key stakeholder groups include:

- **Users** of the infrastructure service who are concerned about rising tariffs;
- **Displaced managers, civil servants and workers** (unionized and non-unionized) who enjoyed years of service in public sector bodies and are concerned about job security, benefits, retraining options, finding other jobs and opportunities for retirement;
- **Trade unions** that want to sustain their influence on local politics;
- **Local politicians** who support illicit activities to gain and sustain public office;

- **Displaced land-owners** who often do not have the required documents to prove ownership;
- **Nearby residents** who are often affected by externalities such as noise, pollution, odor, etc.; and
- **Special interest groups** such as NGOs and civil society organizations who speak out and mobilize the masses on genuine and substantial or often doctored issues of public interest.

Other stakeholder groups that may be critical depending on the specific situation include journalists and the media, private investors and the general public. The following framework to build a stakeholder governance strategy takes inspiration from Calabrese (2008), who discusses stakeholder communication strategies based on successful and unsuccessful efforts on part of The World Bank to encourage private participation in infrastructure around the world:

Figure 2: Building a Stakeholder Inclusion Strategy

Consultation

For stakeholders who are not particularly critical to the success of a PPP project and do not have substantial influence on the project outcome, simple consultation has proven to be an effective strategy. The goals of this strategy are to disseminate information and to build popular support for the project. The emphasis is on building trust because co-operation must be maintained for a long time over the terms of several municipal, state and central governments.

Strategies such as disseminating information through newspapers, magazines, radio and television programs; conducting plays and creating songs, etc. in local languages and sensitive to local cultures to explain the benefits of the project, have been employed to enlist popular support.

Involvement and Oversight

Stakeholders who are more important and relevant to a project, and may have significant influence on its success need to be engaged beyond simple consultation. Strategies include stakeholder involvement in PPP requirement specification and prioritization, oversight over PPP activities and establishment of open communication channels and compliant redressal systems, and offering ancillary benefits that the stakeholders consider important. Particular tactics that have worked include:

- **Surveys:** These include information-gathering surveys such as 'willingness-to-pay' conducted at the PPP development stages. Other critical feedback that is important at the development stage includes exploration of what the stakeholders desire most (creating jobs, updating quality of service, decreasing tariffs, reducing corruption, and increasing transparency?) Highlighting the importance of such surveys, Jingfeng Yuan *et al.* (2009) note that specification of the requirements from each stakeholder's perspective of the expected performance levels from the PPP project is the first principle in a performance management system. Additional and periodic opinion polls and surveys down the road to gauge customer satisfaction with an eye towards improvement of service are equally important.
- **Oversight:** Creation of citizen watchdog committees and groups that monitor and verify the performance of the private partner over time. Structures for compliant registration and addressal need to compliment the creation of such committees such that key stakeholders feel that their voice is heard and their efforts have an impact. For instance, Husk Power Systems, an innovative social enterprise that promotes decentralized power generation and distribution in remote villages of India, actively engages the local village government bodies (panchayats) when setting up operations and includes them in project oversight (Bairiganjan *et al.*, 2010).
- **Ancillary benefits:** Offering essential services that benefit large groups of people but are not related to the project, for instance, setting up educational institutions, health clinics, etc., is an effective strategy to win popular support. For example, Husk Power Systems sponsors the education of more than 250 children in private schools and trains women in making incense sticks. The corporate social responsibility arm of Husk Power Systems, Samta Samriddhi Foundation, "hopes to train a team of women in each cluster to audit the work of HPS, manage the schools adopted, and conduct awareness

programs on issues pertaining to electricity, public health and environment (Baruah, 2010).”

Two cases discussed in Appendix 5 – one from India and one from Ghana – have successfully incorporated these two levels of stakeholder governance.

True Participation and Ownership

For the most critical stakeholders, ones that are both important and have significant influence, offers of employment, involvement in ownership and efforts to enlist participation in management have proven to be effective governance strategies.

- **Employment:** Civil servants, public managers, and unionized workers are usually important and influential stakeholders for infrastructure PPPs. There are a number of cases where their support has been enlisted by putting their technical and tacit skills to good use. The Electricity Distribution Franchise in Bhiwandi discussed in this chapter is a case in point. Another example is that of DESI Power, which provides electricity to households and small businesses in off-grid villages via biomass-based power plants. “The company builds a power plant and sells electricity through a local entrepreneur responsible for sales, billing, and collection. DESI Power entrepreneurs determine their own pricing model and fee structure and charge a monthly rate based on the number of bulbs each household or shop uses. The entrepreneur installs a circuit breaker to ensure that the households do not exceed their monthly limits (Bairiganjan *et al.*, 2010).”
- **Ownership:** Similar to enlisting equity participation on account of the public-sector partner, financial contributions from key stakeholders in return for ownership rights can be encouraged. For instance, the financing plan of the Cochin International Airport involved significant equity participation from a key stakeholder - NRIs traveling frequently to and from Kerala. In addition to ownership in the special purpose vehicle, these NRIs were conferred special rights and privileges such as separate lines, lounges, etc. Projects in the urban sector (water, sewerage, waste management) in Tamil Nadu have also regularly employed this strategy of enlisting stakeholders as co-financiers.
- **Board Representation:** A further boost to stakeholder involvement can be given in the form of board membership, such that the stakeholder group can directly influence overall project governance and major decisions through voting rights. The Hassan-Mangalore project, for instance, gave key upstream and downstream stakeholders positions on the company’s board.

Summary

The literature on public-private partnerships, indeed the practices of most Indian international agencies promoting PPPs at a local, regional or national level, emphasize the creation of complete contracts as a means of governing the relationships between various parties. Independent Regulatory Agencies are often touted as complementary to contractual agreements (to ensure adherence to contractual terms), or as an alternative form of governance (discretionary regulation). However, in addition to the inherent limitations of such forms of governance (see Chapters 2 and 3 for a full discussion), in developing countries such as India, credible commitment to contractual agreements from the public partner and true regulatory independence are unlikely. Moreover, such arms-length relationships don't truly transform into real partnerships. Contracts and regulatory agencies are thus insufficient governance frameworks in such institutional environments.

The cases and discussion in this chapter have identified ways to engage public partners over the life of a PPP to complement traditional forms of governance. Strategies in this regard have included soliciting support from a strong political champion and engaging public sector partners financially and in the management of PPPs. Retaining key public sector partners on the boards of project companies has proven to truly emphasize 'partnership' as the public partner helps the PPP navigate complex political environments over time.

Careful research on stakeholders and development of strategies for stakeholders across different levels of importance and influence has also proven effective at "untangling the nexus of political interference and rent-seeking that characterizes low-performing infrastructure systems (Tankha *et al.*, 2010)." Strategies in this regard progress from consultations with stakeholders of low importance and influence to greater involvement and oversight on account of more significant stakeholders, and finally to true partnership via management roles and co-ownership for the key stakeholders.

These structural mechanisms do not undermine the importance of contractual and/or regulatory forms of governance but are, in fact, complementary to these traditional forms of governance.

Next, the thesis presents an interesting case of public-private partnerships from North America: the Independent Public Authority model, which provides a structure that incorporates many of the tactical changes identified in the current chapter. It draws parallels with a uniquely successful project in India – the Delhi Metro Rail Corporation – and arrives at lessons for a way forward.

Chapter 5: Independent Public Authorities: A Viable Model for India?

One of the key motivations for the use of PPPs to deliver projects, perhaps the most important and relevant in the case of developing countries such as India is to take big projects off the public budget. On the other hand, the case studies discussed in this thesis highlight the importance of involving public sector partners during project operations for effective service delivery and management through turbulence. Independent Public Authorities (IPAs) in the United States, United Kingdom, Australia and Canada have incorporated both these aspects and successfully delivered infrastructure projects for decades. Such structures seem to have the potential to incorporate the tactical lessons identified in Chapter 4 and provide the governance that projects in India need.

The key feature of IPAs is that they are government-owned but run like independent businesses. They internalize negotiations between private and public parties that are usually subject to cumbersome administrative and legal procedures under alternative governance frameworks such as regulation. Thus, they are leaner and more effective at controlling decision-making cost and time. Moreover, minimal reliance on formal procedures that are contentious by nature builds a sense of real partnership and fosters commitment among parties to come to the table and resolve issues that arise owing to inevitable turbulence over the course of a project. Close involvement of public partners in the operational stages removes the information asymmetries that often lead to regulatory inefficiencies. Such close involvement and cooperation reduces incentives for parties to act purely in their selfish interest and thus reduces counterproductive practices such as withholding information and finding roundabout ways to meet contractual and regulatory obligations. This allows service providers to maintain focus on efficient and effective service delivery.

Background: IPAs in North America

Operating off-budget, IPAs carry out essential public functions at the municipal, state, regional, or national level; they are involved in housing, development, water, sewerage, airports, etc. For instance, the Port Authority of New York and New Jersey (NYPA) has been responsible for creating and maintaining much of the transportation infrastructure in that region. IPAs perform “the necessary tasks that the public sector can’t perform and the private sector won’t.”¹² They are described as “neither fully private nor fully public” and are commonly referred to as quasi-autonomous non-governmental organizations or “quangos” in the United Kingdom and government-sponsored enterprises (GSEs) in the United States (Andre, 2010).

¹² John Strahinich, “Inside the Shadow Government,” Boston Magazine (November 1989); quoted in Hogarty (2002).

IPAs “are influential organizations that serve commercial as well as societal purposes, create return for stockholders, contract with businesses, and compete in the private sector (Andre, 2010).” They target the needs of specific groups (for instance, the California Public Employees’ Retirement System, Calpers) or fulfill specific functions (for instance, the Federal National Mortgage Association, Fannie Mae). Since they take on a variety of forms and functions, they are collectively referred to as the “gray-sector” or the “fourth branch of government”. In the US, at the federal level, there are approximately 50 GSEs (Andre, 2010) and many more at the state level, with Massachusetts alone having more than 500 (Hogarty, 2002).

IPA’s were originally set up “to clean up government and to improve the efficiency of public services”, and to curb patronage and corruption (Hogarty, 2002). Their managers are supposed to be impartial and efficient, and insulated from partisan politics and from the direct control of elected officials. These organizations are thus meant to reflect characteristics such as independence, expertise, and entrepreneurial energy. Political leaders (such as a Governor or a Mayor) appoint their boards but the board members’ terms of office are generally intentionally staggered from those of their appointing masters to limit political influence and maintain independence.

These entities are usually structured to finance large-scale public works projects without having to raise taxes and without having to access funds from the state budget. Although they sometimes enjoy support in the form of subsidies, they usually make the users pay for such facilities rather than the taxpayers, and are allowed to spend it at their discretion. They “are not shackled by the constraints of the state’s personnel system” and “although these agencies are subject to open-meeting laws, they are exempt from civil service rules, contract bidding procedures, and the state’s borrowing cap” (Hogarty, 2002). Thus, they are identical to user-fee based PPPs with the private company replaced by an Independent Public Authority / Company.

Case Study: US Airports

The Boston Logan Airport – the largest commercial airport in the New England region – is owned and operated by the Massachusetts Port Authority (Massport). The Port Authority of New York and New Jersey and SEATAC in Seattle manage airports in their region. Similar arrangements where authorities own and (often) manage airports exist in other parts of the country.

US airports successfully harness some of the most desirable features of private participation – private financing and efficient management – while remaining publically owned.

Their management, financial and governance features mitigate the costs typically associated with public ownership of airports (such as overinvestment and lack of managerial effort) and the distorted investment incentives of a regulated private airport operator, while securing the public interest.

Management Features

Public owners set the framework for private investments and management by negotiating legally binding contracts (concessions, leases, operations contracts, etc.) with airlines and other private partners. The private partners provide most of the services at these airports while the “airport operator’s role is limited to basic aeronautical facilities and services (Padova, 2007).” The private sector’s efficiencies are harnessed since the number of transactions directly managed by public bureaucrats is limited.

Financial Features

US airports owned by IPAs have no share capital, pay no dividends, and no corporate taxes. They often do not depend upon subsidies or grants and are financially independent. Their sources of finance typically include:

- **Revenue bonds:** These are tax-exempt commercial bonds secured exclusively by revenues from airlines and non-aviation companies or future income from passenger facility charges. They are generally used to finance large capital improvement programs.
- **Airline rates and non-aviation income:** Use-and-lease agreements specify the terms and conditions for the use of airport facilities. Additionally, revenues from non-aviation sources are usually at the authorities’ spending discretion, as is the case with Boston Logan airport.
- **Passenger facility charges (PFCs) or user charges:** In 1990, the federal government started allowing airports to impose a charge on passengers to reduce airport dependency on bond financing and use-and-lease agreements with airlines, contingent upon approval by the Federal Aviation Administration.
- **Federal grants** from the Federal Airport and Airways Trust Fund: These favor small airports whose access to bond financing is limited.

Occasionally, entire terminals are privately financed and managed, such as at JFK in New York, Chicago O’Hare, and Detroit (Padova, 2007). The use of project finance (non-recourse finance where the payback of debt comes from and is secured solely by asset generated revenues) is very common in such arrangements. For instance, Delta Airlines used project financing to invest in its dedicated terminal facility at Boston Logan airport.

Governance Features

The governance frameworks for US airports enable them to mobilize private finance and engage the efficiencies of private sector management while maintaining a central focus on customer and wider public interests over time. In their analysis of US airports based on transaction cost economics, Fuhr and Beckers (2007) concluded that such arrangements economize both on the ex-ante coordinative requirements in the stage of planning and constructing terminal facilities, as well as on ex-post safeguarding problems during the operating stage.

US airports seem to combine elements from the three forms of governance discussed in this thesis – structural, regulatory and contractual.

- **Structural:** A Board of Directors appointed by political leaders governs the Independent Public Agency that owns and operates the airport. For instance, “the Governor of Massachusetts appoints the seven members of the Massport Board of Directors to staggered seven-year terms (Leo, 2011).” The Board includes members that represent the interests of key interest groups to minimize disturbance and solve potential issues internally. For instance, the Business Manager for the Massachusetts Laborers' District Council serves on Massport's Board of Directors. He also serves as trustee for the New England Laborers' Training Trust Fund, and the New England Laborers' Labor-Management Cooperation Trust, representing 15,000 construction laborers and 7,500 municipal public service workers. His presence effectively addresses concerns regarding opposition from labor unions. Furthermore, the staggering and financial non-reliance on the state provide insulation from immediate political pressures.

Close budget management and calibration (along-with mid-year adjustments), and regular performance evaluations keep performances in check. Further, authorities that receive state support have stringent transparency and public sector engagement requirements.

The role of public agencies is limited to “(i) coordination of investments and operation of the runway system or general airport assets, (ii) facilitation of private arrangements in the terminal area by setting standards and rules, (iii) management or marketing of facilities if private terminal investments fails, and (iv) safeguarding airline competition (Fuhr and Beckers, 2007).” US airports are thus able to harness private management skills and efficiency while maintaining close public oversight without undue political interference.

Furthermore, since major activities are usually financed by revenue bonds, capital markets exert substantial control and oversight of activities of the public owners and the private partners.

- **Regulation:** US airports that receive federal funds are subject to economic regulation, even if they are publically owned and managed. They are subject to local regulations and ordinances, as well as statutory regulations enacted by Congress and policy statements issued by the Federal Aviation Administration (FAA). The federal policy requires fees and charges to be “based on historic costs, fair and reasonable, and not just unjustly discriminatory (Padova, 2007).” Further, “statutory requirements on airport revenues prohibit the owners from diverting revenue to non-airport purposes. Although cases are not frequent, airport operators have faced, and lost, legal challenges when users have perceived that fees and charges are unjustly discriminatory or that revenues have been diverted from airport purposes (Padova, 2007).”
- **Contractual:** The general conditions for the use of airport infrastructure are established in multilaterally negotiated master use-and-lease agreements. The US institutional environment grants airports and airlines substantial freedom to design contractual and financing arrangements to govern transactions in their relationship (Fuhr and Beckers, 2007). These contractual relationships (usually long-term leases) allocate responsibilities to the parties best able and more suitable to carrying them out.

Contractual clauses allow for efficient asset utilization and adequate protection from capture by public or private sector interests. For instance, the Logan airport has an “airport-wide preferential gate use policy” and “all long-term leases contain gate recapture and forced sublet provisions” (Erie *et al.*, 2006). To ensure competition, carriers are substitutable for almost all origin-and-destination routes served from Logan airport. Thus, airport investments are indeed non-specific to a particular carrier or business model. Similarly, contracts protect private sector interests by allowing them to recover their investments over long periods of time and allowing for independence in decision-making.

In summary, independent public agency ownership and involvement in broad management issues ensures accountability to the public and, along with regulation, maintains a focus on customer and public needs; independence from political influence enables a strong business ethic; and private sector participation protected by contracts provides ready access to finance and to efficiency in project delivery and management.

Airports in Canada have also successfully harnessed private sector financing and efficiencies along with public ownership, oversight and management through Independent Public Agencies.

Case Study: Canadian Airports¹³

Through the 1980s, airports in Canada were the responsibility of the Canadian Air Transportation Administration (CATA), a division of Transport Canada. Investments were made out of the Treasury's capital fund, revenues were credited to the Consolidated Revenue Fund, and airports were not required to be self-financing or to even break-even. Thus, public sector managers had no incentives to control costs or increase revenues.

However, rising demand led to airport congestion and the need to invest in additional capacity and increase the productivity of existing facilities. The National Airports Policy of 1994 provided for the transfer of management and operations of airports on long-term leases to self-financing, not-for-profit, non-share-capital airport authorities called Local Airport Authorities (LAA) and Canadian Airport Authorities (CAA); corporate entities that do not pay income tax.

To serve the interests of the community, Transport Canada reserved the right to audit the authorities' records and procedures at any time and subject them to a periodic performance review. To maintain transparency and to broaden accountability, CAAs face stringent public disclosure requirements under the Public Accountability Principles established in 1994, and are required to hold public meetings after every fiscal year-end. To strengthen community involvement, a Community Consultative Committee, which includes airline industry representatives, meets twice a year to discuss matters relating to the airport.

Indian Analogy: The Delhi Metro Rail Corporation

The Delhi Metro Rail Corporation (DMRC) – a public sector company responsible for constructing, operating, and maintaining the metro rail system in the capital city – is analogous to an Independent Public Authority and thus makes for an interesting case study.

Basics

DMRC was formed in May 1995 with equal equity participation of the Government of India and the Government of the National Capital Territory of Delhi to provide a rail-based transport system to alleviate Delhi's ever growing transport congestion and vehicular pollution. It started in 2002 with an 8.5 km link and extended to over 150 km by 2010, proving to be the backbone of the public transport system in the city with almost 1.5 million daily passengers (Hazarika, 2010).

DMRC has been an unprecedented success across multiple dimensions. In addition to relieving traffic on Delhi roads, reducing travel time and pollution, the project is

¹³ Author, based on data from Padova (2007).

clearly a financial success: “the financial internal rate of return on investments in the Metro is estimated as 17 percent while the economic rate of return is 24 percent (Murty *et al.*, 2006).” In a country where a study of 894 infrastructure projects (1992-2009) revealed that 40% of projects experienced cost over-runs and 82% experienced schedule over-runs (Singh, 2010), the fact that the first phase of the project was delivered on budget and nearly three years ahead of schedule invites attention (Lakshman, 2007).

Structure

The DMRC, headed by civil servant and civil engineer Shri E. Sreedharan as Managing Director (MD) established and has always maintained a “we mean business” culture based on punctuality, honesty and strict adherence to deadlines – attributes that are not regularly used to describe public companies in India (Delhi Metro Rail Corporation, 2011). Much as in North American IPAs, the effectiveness of DMRC stems from its autonomy and singular focus on business goals, free from the influence of political or bureaucratic motivations.

The highest decision making body of the DMRC is its Board of Directors, which is composed of 16 members including five nominees each from GOI and GONCTD and 6 Functional Directors (senior officers with wide ranging experience in the government sector and possess top order administrative, financial and technical skills). For effective discharge of his functions, the Board of Directors has delegated most of the powers to the MD, who is responsible for the day-to-day management of the company. Functional Directors and other Officers and Staff of the Company support the MD.

Autonomy of the DMRC was critical in this environment of heavy politicization and public sector participation. Indeed, DMRC ensured autonomy in the recruitment process, promotions and contract awarding. Mr. Sreedharan had complete freedom to recruit people of his choice and build a team. He hired young professionals, mostly in the age group of 18 to 30 years, after conducting a thorough examination of their track records and conducting personal interviews. He established systems and processes that emphasized accountability. DMRC took a stand that any change in any decision would be made only if it was required from a technical or professional angle and not simply because somebody wanted it.

Actual decision-making power in DMRC very much resides in the hand of one person – the Managing Director – and the leadership of this government bureaucrat has been touted as one of the main reasons for the success of the project (Lakshman, 2007).

Leveraging Private Sector Expertise

DMRC has involved significant local and international private sector participation across functions such as planning, design, technology provision, construction and

management. It engaged an international consortium of consultants to oversee the work. Further it involved local and multi-national corporations via competitive bidding for design-bid-build contracts. Each bid required at least one Indian partner to ensure technology absorption by Indian firms and for localization and re-engineering of technology.

For its initial phases, DMRC established a simple and transparent procurement process that removed all traces of subjectivity from tender evaluation. The MD was given complete autonomy on all matters and was the last authority on tenders. As a result, the average duration of major tenders was 19 days compared with a norm of three to nine months (Lakshman, 2007).

“Sreedharan scoured the world for top companies with extensive experience in the field. Pacific Consultants International from Japan advised on the engineering matters, Korea's Rotem and Japan's Mitsubishi supplied the initial shipment of coaches, while France's Alstom led the consortium responsible for the design of the automatic train control system (Lakshman, 2007).”

DMRC's Property Development Wing engaged private companies via a number of contractual mechanisms. It awarded 6-12 year licenses for spaces within station buildings for commuter related vendors such as ATMs, refreshment kiosks and magazine stands; 30-year concessions for commercial developments on vacant land pockets adjacent to MRTS stations; long-term lease (50-90 yrs) on land pockets, in depots, etc. not immediately needed for operational structures; and advertisements within stations, on DMRC structures between stations, and within DMRC's commuter trains.

Thus, DMRC successfully blended government resources and oversight with private sector financing (the Japan Bank for International Cooperation was the single largest source of financing with a 60% share), expertise and efficiency.

Although DMRC has predominantly used EPC contracts to engage the private sector in the past, it has also recently used the PPP model for the recently commissioned airport extension by engaging a consortium of private operators under a 30-year revenue sharing cum license-fee arrangement.

Enlisting Public Sector Support

Since this is a high profile project, it experienced a “jurisdictional tug of war between the central, state and city governments over which level has ultimate control over urban mass rapid transit (Siemiatycki, 2006).” Realization of the system was impeded for 30 years by political antagonism between the Central and the Delhi Union Territory governments over which level of government deserves political credit for initiating the project, and who should have managerial control over the system. The conflict was exacerbated by the fact that the BJP party

controlled the Central government, while the Capital Union Territory government of Delhi was in the political hands of the rival Congress Party (Siemiatycki, 2006).

However, participation from GOI and GNCTD in the form of equity and presence on the Board of Directors of DMRC helped the public company win overall government support at all levels and a number of special favors ((Azad and Singla, 2010) and (Goyal, 2007)):

- In order to **smoothen the land acquisition process**, The Delhi Metro Railway (Operation & Maintenance) Act, 2002 was enacted, superseding the local municipal laws of Delhi and the lower courts were barred from issuing stay orders. A group of lawyers was engaged to make sure that the courts did not grant such stay orders. Most of the land for property development was made available to DMRC on 99-year lease at nominal rents corresponding to inter-departmental transfer rates.
- **All utilities were diverted** well in advance so as to ensure minimum inconvenience to the general public. Community interaction programs were organized to inform and seek solutions from the public.
- DMRC got prompt **access to uninterrupted electricity** from Delhi Transco at subsidized rates to lower energy costs.
- **Alternate traffic arrangements** were made for the roads affected by the construction with the assistance of the Indian Institute of Technology, Delhi. This was done by building new roads or by widening of existing roads.
- Delhi Metro was also given the critical **freedom from political interference**. For example there was no pressure to provide employment.
- The equity partners (GOI/GONCTD) provided an **interest free subordinate loan** to cover the cost of land equivalent to Rs. 2180 million, to be repaid within a long span of 25 years.
- The bulk of the funding from the project came from overseas and the government of India agreed to bear the **exchange rate risk**.
- DMRC is **exempted from payment of income tax**, capital gains tax, property tax and customs duty on imports
- DMRC is permitted to **generate revenue through property development** for up-to 20 years.

External Stakeholder Engagement

DMRC constituted a number of efforts to generate support among its customers and the general public. These included:

- **Information and Consultation:** With only one precedent in the country (Calcutta), an underground metro is a new proposition for the people of India and especially for the people of Delhi, most of who had never experienced a metro before. To raise awareness, generate goodwill and build a sense of excitement about the new system, DMRC undertook an extensive public awareness and education campaign to introduce the virtues of the project to the people of Delhi and India. It trumpeted the project as a catalyst of societal change and encouraged conceptualization of the Delhi Metro beyond just a mode of transport as a vehicle for societal transformation.

“Achieving this goal included an exhibit at the International Trade Fair in Central Delhi, the formation of a Yahoo news group, the staging of street theatre in central locations, the distribution of metro information door to door, education programs in schools and colleges, and radio advertisements in multiple linguistic dialects (Siemiatycki, 2006).”

The metro has been featured in Bollywood films, played host to international dignitaries such as Prince Charles and Japanese Prime Minister Junichiro Koizumi, had visits from local children with cancer, been on the cutting edge of using technology to mitigate environmental degradation, and implemented an HIV/ AIDS awareness program for migrant workers involved in its construction. “The metro was presented in the media as being universally endorsed by all of the key politicians, which reinforced an image of the metro as the pride of Delhi (Siemiatycki, 2006).”

In summary, the dimensions upon which the iconic image of the Delhi Metro was constructed are:

- Tangible benefits including congestion reduction, environmental amelioration and increased safety;
 - The optics of political consensus;
 - An image of a company that cares about the well-being of the community;
 - The metro as a vehicle for enabling a broader urban transformation.
- **Involvement and Oversight:** DMRC has set up a Vigilance Unit to handle all vigilance matters relating to the company. The functions of vigilance in DMRC are to conduct preventive checks, to investigate the complaints from various sources and to investigate in detail the issues raised through intensive examinations. The vigilance unit also advises system improvement wherever

necessary to improve the administrative functioning of DMRC, and arranges vigilance awareness programs from time to time.

- **True Partnership:** Consolidated housing for displaced homeowners - A number of poor households and slums were razed as part of land allocation for DMRC. The company provided these displaced homeowners and squatters with more consolidated housing units that improved their livelihoods. Uprisings against land acquisition that are typically associated with infrastructure projects in India were thus avoided.

Is this a Replicable Model?

The Delhi Metro has become a symbol of hope for the future of Delhi, and a tangible vehicle for social transformation that will one day operate in cities across the entire country. DMRC is serving as a consultant to 28 projects with clients including state governments (governments of Haryana, Andhra Pradesh, Tamil Nadu, West Bengal, Kerala, Gujarat), other metro rail project companies (Mumbai, Pune, Bangalore, Hyderabad, etc.), development agencies (Ghaziabad Development Agency, Punjab Industrial Development Board, Haryana Urban Development Agency) and private infrastructure developers (GMR, Nippon Koei Co., IDEck, etc.) (Delhi Metro Rail Corporation, 2011).

Similar models to develop metro projects are coming up in Chennai and Bangalore and in parts of Mumbai. The majority of the Mumbai metro project and the entire Hyderabad metro project will be delivered under PPP route with minority equity stakes for the state governments.

The key success factors for DMRC include public ownership and management that helped navigate special interest groups, balance opposing political motivations, and helped garner a number of special provisions; aggressive promotion that helped build understanding of the project's benefits and a shared desire for the project's success, and private participation through the stages of planning, design, construction, procurement, management and operations that resulted in high levels of efficiency. The fact that DMRC is run like a business relying on internal negotiation procedures and compromises instead of lawyers has brought it success.

Summary

IPAs are "influential organizations that serve commercial as well as societal purposes, create return for stockholders, contract with businesses, and compete in the private sector (Andre, 2010)." Their main advantages and limitations are discussed herein.

Advantages

- **Focus on partnership:** By internalizing negotiations and decision making procedures, IPAs focus on an environment fostering partnership as opposed to other contentious governance frameworks. They incorporate most of the best practices in structural governance identified in Chapter 4. Public ownership and close involvement in project delivery and operations mitigates information asymmetries between public and private partners, promotes collaboration, and builds an environment in which each party is willing to resolve issues internally in the best interest of the project. Such an arrangement, along-with involvement of key stakeholders insulates IPAs from opposition from special interest groups and from the general public to a large extent.
- **Balancing accountability and autonomy:** IPAs internalize major decisions, such as those related to capital investments, safety and security upgrades, etc. With appropriate leadership, IPAs thus successfully maintain a balance between autonomy and accountability. This balance is often disturbed under regulatory arrangements that are characterized by adversarial regulatory hearings and negotiations that take focus away from the project.
- **Protection of the public interest:** A Board of Directors appointed by elected officials to staggered terms governs the activities of an IPA. Their mandates usually emphasize promotion of the public interest as the main priority. Further, health, safety, environmental and economic regulations may be applicable to IPAs.
- **Access to independent financing:** IPAs are usually self sufficient as they finance their infrastructure (and other) activities by raising revenue bonds, charging user fees, and mobilizing private investment in return for managerial and operational independence via long-term contracts. Thus, as seen in the case of IPA owned and operated airports such as Boston Logan International Airport, such infrastructure assets require no recourse to state budget, no need for taxes, no/limited need for subsidies.
- **Leveraging private sector efficiency:** Since IPAs usually involve revenue bond financing and private investment, capital markets and private companies exert substantial control over their projects. Indeed, Fuhr and Beckers (2007) report “cost inefficiencies in airport operation are limited as public agencies rely heavily on the private sector to operate the airport.”
- **Insulation from political interference:** Non-coterminous terms for Board members limits political control over the functioning of these agencies and allows for the maintenance of relative independence and a business-like focus.

- **Prevention of opportunistic behavior:** Strong contractual and structural governance frameworks protect the interests of private and public partners as well as those of users and the general public.
- **Freedom from binding constraints:** Public agencies are usually subject to staffing rules (hiring and firing, special reservations for under-represented communities, etc.), communications protocol, administrative, financial, legal, and other cumbersome requirements that thwart seamless project delivery. IPAs are largely relieved of such requirements and allowed to run as businesses.

Limitations

Though IPAs offer the significant advantages discussed above, they need to be carefully designed to be responsive rather than corrupt and must exist in a supportive institutional framework. Else, we “risk moving toward the development of a larger, less transparent gray sector with unknown implications for organizational accountability and unpredictable societal repercussions (Andre, 2010).”

- **IPAs can become power brokers** since they are ultimately backed by the state yet out of the state’s direct control. They can get “infused with politics rather than professionalism” and become “too political to succeed” (Donlan, 2009) and “too big to fail” (Andre, 2010). This is especially the case when these agencies are not subject to economic regulation, as is the case with CAAs and LAAs in Canada. Even in cases where regulators exist, IPAs can become so powerful so as to influence the design of their own regulators. These are dangers that need to be carefully guarded against, especially in a complex political environment marked by rampant corruption, such as that of India.
- **Accountability vs. autonomy:** Though this is an inherent advantage of the IPA model, it can also turn out to be a big limitation in some cases. Referring to the tough balance between autonomy and accountability, Hogarty (2002) remarks “...those who run these authorities find themselves faced with a perplexing paradox.” He continues “Strung between the opposite poles of autonomy and accountability, (leaders of IPAs) must efficiently sort out, accommodate, and integrate these conflicting demands. It is a very difficult balancing act, to say the least.” Andre (2010) elaborates “where independence is incomplete and accountability indirect, conflict can only be endemic.” This is especially the case when legislation or the lease agreements do not impose external reviews, approvals, or appeal processes on the prices they set for airport services such as parking, rent, landing, terminal use, etc., as is the case with CAAs and LAAs in Canada.
- **Dependent on quality of leadership:** Hogarty (2002) provides accounts of the effects of changing leadership and the importance of personalities in two of

Massachusetts' important authorities – Masspike and Massport over a their multi-decade histories. He concludes, “like other actors in the political game, those in charge of authorities have to concern themselves with political realities” and “integrate conflicting demands.” Similarly, a large part of DMRC's success has been accredited to the Chairman – Mr. Sreedharan and observers have expressed reservations about repeating the success story under a similar model elsewhere. For instance, referencing the proposed Jaipur metro, Mehta (2010) reports: “We cannot create another Sreedharan here to implement the project” and may land up with huge cost and time over runs.

In this regard, Independent Public Authorities potentially suffer from the same limitations as those that Independent Regulatory Agencies have faced in India. The success or failure of these agencies seems to be heavily contextual and dependent upon the strength and independence of the organizations' leadership.

In summary, IPAs seem to retain the discipline of contracts and regulators while eliminating problems associated with those arms length relationships. They eliminate the asymmetry of information that commonly leads to inefficiency in regulations. Furthermore, they are not tied down by procedural requirements that plague regulators and can employ a “no-nonsense” attitude. Additionally, they do not suffer from lack of substantive guidance since they do not depend upon (often missing) legislation, but on specific functional mandates to guide their behavior. Thus, unlike regulators, they focus on well-defined goals rather than try to optimize among changing demands with respect to a complex web of environmental, social and economic goals. Finally, they are more accountable than regulators since they are directly financially responsible for their decisions.

However, IPAs are not a governance panacea for infrastructure PPPs. They need to be carefully designed to be responsive rather than corrupt and must exist in a supportive institutional framework. Since they are ultimately government backed but still out of the government's direct control, they are prone to becoming power brokers. Especially in the precarious institutional, political and social environments that characterize infrastructure in India, the success of an IPA would particularly depend upon the quality of its leadership, which would have to integrate and balance conflicting demands.

Conclusions

Exploration of a number of infrastructure PPPs from across sectors and geographies in India illustrates that changing conditions over long asset lives can potentially derail infrastructure PPPs. Technological, economic, regulatory, political and social uncertainties that cause such destabilizing changes motivate the need for alternative governance mechanisms.

Long-term contracts are a commonly used mechanism to govern the relationship between private and public partners. In fact, India has developed institutional frameworks at both the central and state government levels to foster contract-based governance. Contracts specify each party's obligations over long time periods and are meant to identify and allocate risks to the party best able to manage them. Additionally, they often contain trigger mechanisms that instill in them a measure of flexibility to adjust to changes over time. They are thus expected to solicit private investment and provide for stability in partnerships.

However, this thesis finds that contracts are inadequate by themselves as governance frameworks. They are incomplete and may become obsolete since there are bound to be surprises during the long lifetimes of infrastructure projects. Since they are also by nature adversarial, they are not conducive to cooperative issue resolution in the face of turbulence. Parties to an obsolete contract end up having to choose among undesirable options. Honoring the original contractual terms is generally against both parties' interests in altered circumstances; renegotiation is subject to opportunism and the outcome dependent upon relative bargaining positions; re-bidding entails long delays and inefficiencies in the presence of information asymmetry; and expropriation tarnishes reputations locally and internationally.

An alternative to contracts that lock partners in to unsustainable adversarial partnerships for long time periods is the system of discretionary regulation wherein independent regulators adjust key parameters as information evolves over time. Indeed, the Indian Planning Commission has emphasized that setting up a regulatory system is a critical component of the dual effort to mobilize private investment while safeguarding the public interest.

However, much like contracts, regulatory frameworks are adversarial and often result in long drawn conflicts and litigation. In addition to being litigious, they are expensive and inefficient since they are bound by cumbersome procedures such as notice and comment requirements, public deliberations, written justifications for new and proposed rules, etc. Though well intentioned, such practices distract from a focus on partnership.

Regulatory governance is particularly problematic in India where "political constraints and ministerial preferences" have created an asymmetric regulatory

environment across sectors (Government of India, Planning Commission, The Secretariat for the Committee on Infrastructure, 2008). In the context of dominance of infrastructure sectors by public companies and a handful of large and powerful private corporations (if at all), maintaining independence from special interests is particularly difficult. A limited pool of skilled individuals capable of assuming the roles of regulator or staff; limited public familiarity with regulatory processes; and the nascent state of civil society (Dubash, 2008) further compound problems related to regulatory governance.

Owing to the inadequacy of the dominant governance mechanisms, the thesis has searched for alternative tactics through an analysis of successful infrastructure PPPs from India. It establishes that focusing on the third 'P' in PPP via engagement of public sector partners in decision-making over time goes a long way in enabling projects to navigate the tests of time.

It finds that the public sector partners can be effectively engaged by soliciting support from strong political leaders, through equity participation, or via inclusion in the project company's management or governance committees. Further, it finds that engaging stakeholders is particularly important to affect change in infrastructure sectors characterized by the vicious cycle of poor service levels, low willingness to pay and inadequate funds for improvement. It outlines strategies for stakeholders' participation based on their level of influence and importance. These progress from consultation and oversight to close involvement via employment, equity participation and board representation.

The thesis concludes by presenting the case of Independent Public Authorities, which are government-owned entities that run like independent businesses. They leverage private finance at the same time as securing the public interest and provide a structure that incorporates many of the governance tactics identified in Chapter 4. They internalize negotiations between private and public parties and thus foster true cooperation rather than contentious relationships between partners. The thesis encourages further exploration of the suitability of IPAs to provide the governance that projects in India need.

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Appendix 1: Infrastructure in India

India has experienced impressive economic growth in the past two decades not because of, but in spite of the state of its infrastructure. The country possesses the second largest road network, the fourth largest rail network, and the fifth largest installed power generation capacity globally, but existing infrastructure is sub-par and inadequate in meeting demand. Moreover, delivering new projects is extremely challenging. The country's continuing inability to install and manage infrastructure assets threatens its future economic growth prospects. Indeed, "The World Economic Forum's Global Competitiveness Report, 2008-09 has identified inadequate infrastructure as the biggest impediment to doing business in India (Gulati, 2009)."

A number of reports on infrastructure projects in India concerning central, state and municipal level infrastructure highlight these difficulties. Singh (2010) analyzed a dataset of 894 projects completed April 1992 – March 2009, covering 17 infrastructure sectors and found that 40% of project experienced cost over-runs and 82% experienced schedule over-runs. A progress report issued in October 2010 by the Ministry of Statistics and Program Implementation which monitors the progress in Central sector projects costing Rs. 150 crore and above on a monthly basis, indicates that out of 559 projects, 14 were ahead of schedule, 117 were on schedule, and 293 were delayed (Government of India, Ministry of Statistics and Programme Implementation, Central Statistical Office, 2010). The situation at the state level is not much better. For instance, losses suffered by State Electricity Boards (SEBs) amount to roughly 1% of national GDP annually (Government of India, Ministry of Finance, 2011a). At the municipal level, a recent rating by the Ministry of Urban Development reveals that 190 out of 423 municipalities in India are on the brink of environmental disaster, 229 are judged in need of major improvement, only 4 make it to safe levels, and none to the highest standard (Government of India, Ministry of Finance, 2011a).

Owing to the poor quality of existing assets, large gaps between supply and demand in most sectors, and difficulty in implementation of new projects, India's infrastructure has consistently ranked behind those of competing developing nations such as Brazil and China.

Table 7: Infrastructure Development Ratings: International Comparison

	Brazil	China	India
2001-05 Rating	5.4/10	4.5/10	3.1/10
2001-05 Ranking	47	55	75
2006-10 Rating	5.9/10	5.4/10	4.1/10
2006-10 Ranking	49	54	75

Source: KPMG (2006), "Public Private Participation in Indian Infrastructure. Poised for Growth: A Background Note," www.ibef.org/download/India_Infrastructure.pdf. Last checked June 11, 2011.

Problems

Some of the issues that repeatedly plague infrastructure business in India include the lack of a structured regulatory and policy framework, delays in land acquisition, shifting of utilities, environmental and inter-ministerial clearances, shortage of funds, litigations over land acquisition, etc.

1. **Uneven Regulatory and Policy Frameworks:** India lacks a "common regulatory philosophy guiding the evolution of regulatory institutions (Government of India, Planning Commission, The Secretariat for the Committee on Infrastructure, 2008)." As discussed in Chapter 4, only the Telecommunications and Electricity industries have experience with Independent Regulatory Institutions. In addition, the Airports sector has a new regulator (Aera) and the Ports sector has a regulator whose role is limited to setting tariffs. The other sectors are still under the control of National Ministries and State Departments. Even among sectors that have independent regulators, there are significant points of departure in scope, rules, practices and legitimacy.
2. **Land Acquisition:** Since most tracts of land in India lack clear title deeds and farmers are increasingly opposed to use of land for industrial and infrastructural uses, land acquisition is consistently cited as one of the biggest hurdles for infrastructure development. In most projects, either project commencement or project execution is delayed for want of land clearances. For instance, "70 per cent of delays in the country's highway building program stem from difficulties both in acquiring land and then obtaining permissions to use it for the intended purpose (Kazmin, 2009)."

The Chairman of India's Planning Commission – Montek Singh Ahluwalia (2011) expresses concern over this "major problem which needs urgent attention." He brings attention to two major issues: 1) The "hopelessly

outdated” Land Acquisitions Act (1894), which “provides for highly inadequate levels of compensation often well below true market prices,” and 2) Non-transparent mechanisms for grant of permissions for land development, which “inevitably lead to suspicion of corruption and cronyism.” Lack of coordination between central bodies, states and local authorities further compound the difficulties.

For a detailed discussion of the problems associated with land acquisition in India and a comprehensive discussion around suggested remedies to the problem, please see *India Infrastructure Report 2009* (Mohanty *et al.*, eds., 2009), which is entirely dedicated to this issue.

- 3. Multiple Clearances and Nebulous Bureaucracy:** Infrastructure projects in India require active cooperation across several departments. For example, project implementation, shifting of power lines, water lines, sewer lines, cutting of trees, environmental clearances and other such activities are performed by different departments. Thus, timely project delivery depends upon joint and timely efforts across departments; laxity on the part of just one department or dereliction of duty by a few officials can hold up the entire project. “However, interdependence of efforts means that it is easy for departments to shirk responsibility and pass the blame on to others. So, in addition to intra-organizational failures, infrastructure projects in India are vulnerable to inter-organization failures (Singh, 2010).”

The World Bank (2006) reports that the time taken to obtain all the requisite approvals for an infrastructure project in India can vary between 18 months to as much as four to five years. It notes that efforts on the part of state governments to establish “single window clearance” have largely been futile since “when most projects apply for approvals at the state-level, these have to go through multiple clearances at various levels.”

- 4. Finance:** India faces a number of macroeconomic and institutional issues limiting its financing capability to build the required infrastructure. A high profile report on Infrastructure Finance solicited by the Ministry of Finance outlines these challenges and proposes solutions (Government of India, Ministry of Finance, Department of Economic Affairs, Infrastructure Division, 2007). The challenges include limited availability of risk capital, limited long-term borrowing capability in the domestic banking sector, high public debt levels at around 80% of GDP (Business Monitor International, 2011b), restrictive infrastructure sector exposure norms for commercial banks, and regulatory and other restrictions preventing access to debt from insurance companies and pension funds, among others.
- 5. Lack of Key Inputs:** The infrastructure sector is hampered by the low levels of mechanization and limited use of modern technological equipment, low levels of domestic expertise in project management and civil engineering,

and shortage of key inputs such as petroleum, coal and natural gas. In fact, the power sector is likely to experience a quarter shortfall in capacity addition during the current Plan period (2007-12) owing to shortages in fuel supply (Government of India, Ministry of Finance, 2011a).

The Starting Point

In order to develop a governance strategy to facilitate public private partnerships, one needs to first recognize and appreciate the current state of affairs. Key characteristics that describe the starting point include:

- **The vicious cycle:** People throughout the country, with the possible exception of rich neighborhoods in the top-tier cities, are used to extremely poor service levels for infrastructure services, even those that are considered essential, such as water, sewage, waste management and electricity. Thus, people are in general opposed to paying rates that are necessary to provide even mediocre service levels for services that are well below par. Tariff levels as a result remain low, sometimes below cost; service providers are thus unable to recover their investments and improve services.

Figure 3: Vicious Cycle of Infrastructure Services

Public sector companies and agencies that are responsible for providing these services remain heavily debt ridden and dependent upon subsidies and grants for their survival. For instance, State Electricity Boards (SEBs), which still account for the bulk of electricity supply in India with a 48% market share in generation, 60% in transmission and 95% in distribution (Government of India, Ministry of Power, Central Electricity Authority, 2011a), have been charging lower tariffs than the average cost of supply, as a result of which all but three out of 22 SEBs are loss making ventures. Over the years they have consistently contributed to 10-15% of

state fiscal deficits, received subsidies amounting to Rs. 194 billion (US \$4.3 billion), and accounted for losses amounting to Rs. 610 billion (US \$13.5 billion) in 2007-08 (CRISIL, 2010). Service levels are even worse for water and sewerage.

- **Poor public perception of privatization:** With this understanding of dependence on government subsidies for survival, it is no surprise that tariff levels rise with a move towards private sector involvement in infrastructure service delivery. Such a change interferes with the reinforcing vicious cycle depicted above and incites opposition from users, often culminating into violent protests. This is especially true for services that people generally consider as a “right,” such as access to clean drinking water and sanitation. Thus, private companies are seen as evil bodies that make profits at the cost of the poor. This situation is far from sustainable.
- **Entrenched interests:** The case in Bhiwandi, where the public colludes with local representatives of public service providers and with local politicians to gain access to cheap or free services, is replicated throughout the country. The public, local officials, authorities and politicians have a unified objective to advance their individual concerns, even at the expense of the general public good or the rule of law. Thus, it is very difficult for private companies to measure up against complex networks of entrenched interests.
- **Threatened employees:** The incumbents - public agencies and companies - are typically overstaffed and face stringent firing rules. The system thus supports millions of unskilled and semi-skilled laborers, technicians, engineers and managers whose jobs are threatened by the entry of private players.

It is this environment of poor service levels, minimal collection of below-cost tariffs, complex networks of entrenched vested interests and rampant theft and corruption at all levels, to which the private sector offers to bring a lack of experience and knowledge or local cultures and norms, a focus on profit maximization, and perhaps some technical expertise.

The challenges are only complicated further owing to the presence of numerous civil society organizations, NGOs and a rampant media waiting to expose facts and fiction about the profit motives of the private sector and skewed personal incentives of elected officials. Needless to say, a transition to private sector service delivery is bound to be difficult.

Private Investment in Infrastructure

The Ministry of Finance recognizes that “rapid reduction of the infrastructure deficit holds the key to competitiveness in an increasingly globalized economic environment (Government of India, Ministry of Finance, 2011b).” It states that the goal for infrastructure is to “make huge capacity addition in a time-bound manner while ensuring that projects embody value for money and investment results in world class infrastructure. Infrastructure should at the same time be affordable and sustainable.” To achieve this goal, the Planning Commission has called for a substantial increase in investment in infrastructure.

The level of investment in infrastructure slumped from a peak of 6% of GDP in the early 1990s to a 30-year low of 3.3% of GDP in 2003 (Infrastructure Development and Finance Corporation, 2011). It since recovered somewhat to around 5.7% in 2006-07 but is still well below the required range of 7-8% to close the infrastructure gap (Harris, 2008) and below the government’s target of 9% (Government of India, Ministry of Finance, 2011b).

Total spending on infrastructure during the Tenth Five Year Plan (2002-07) amounted to \$204 billion,¹⁴ 24.5% of which came from the private sector. The Mid-Term Appraisal for the Eleventh Five Year Plan projects a cumulative investment of \$456 billion during the Plan Period (2007-12), with 36.2% coming from the private sector (Government of India, Planning Commission, 2011). Initial projections for the Twelfth Plan (2012-17) put total investments at \$1025 billion and the private sector’s share as 50% (Government of India, Ministry of Finance, 2011a).

In fact, India is among the leading nations in the world for private sector investment, ranking above its developing countries competitors, as shown in Figure 4.

¹⁴ Assuming an exchange rate of 45 Rs/\$; based on Government of India, Planning Commission (2007).

Figure 4: Private Sector Investment in Infrastructure

Source: The World Bank Group (2011), Private Participation in Infrastructure Projects Database, <http://ppi.worldbank.org/>. Last checked June 01, 2011.

Annual infrastructure investment in India during the Tenth Plan (1997-2002), the current Plan (2007-2012) and the subsequent Plan period (2012-17), along-with the private sector's share of these investments are depicted in Figure 5.

Figure 5: Infrastructure Investment Over Time

Source: Government of India, Planning Commission (2011); Government of India, Ministry of Finance (2011a); the 10th and 12th Plan numbers represent annual equivalents

The Electricity sector accounts for a majority of this investment (32% in the Eleventh Plan), followed by Telecommunications (17%), Roads and Bridges (14%) and Irrigation (12%). Among major sectors, private participation as a percentage of total investment is highest for Telecommunications (82%), Ports (80%), and Airports (64%) while it is almost non-existent for Irrigation, Water Supply & Sanitation, and Railways. Electricity, however, accounts for the largest projected private investment in aggregate terms with \$64 billion, ahead of Telecommunications with \$63 billion. Figure 6 presents projected investment levels across sectors and the expected private sector share for each sector.

Figure 6: Sector-Wise Investment During The Eleventh Plan (2007-12)

Source: Government of India, Planning Commission (2011)

Public-Private Partnerships

The Indian government has emphasized the importance of using public private partnerships to provide much of the required private investments outlined above and close the infrastructure gap. Top heads of government have repeatedly highlighted the criticality of PPPs. For instance, India's Finance said that with growing requirement of funds for the infrastructure sector, "PPPs (have become)...an important pillar of our strategy for infrastructure development. (The Hindu, 2010)."

In fact, India has already become the top destination in the world for PPPs with a 740 reported projects at various stages of completion and a total projected cost of \$84 billion. The sector and state-wise break-up of these projects is presented in Figures 7 & 8.

Figure 7: Sector-Wise Distribution of PPPs

Source: Government of India, Ministry of Finance, Department of Economic Affairs, PPP Cell
(2011)

Figure 8: State-Wise Distribution of PPPs

Source: Government of India, Ministry of Finance, Department of Economic Affairs, PPP Cell (2011)

One of the main arguments advanced in favor of using PPPs to deliver infrastructure projects is that this route leads to improvements in performance. However, for such a massive PPP program, this argument seems to rest on shaky ground since the evidence of improved performance via PPPs from around the world is inconclusive. Table 8 summarizes the results of major studies comparing traditional (public) delivery of infrastructure and delivery via PPPs:

Table 8: Results From PPP Performance Evaluations

Study	Method	Findings
Mott Macdonald (2002)	39 traditional and 11 PPP in UK	Public provision: on-time and on-budget 30% and 27% of the time PPP: on-time and on-budget 76% and 78% of the time
Allen Consulting Group (2007)	21 PPPs and 33 traditional projects in Australia	PPPs reported as being an 11% cheaper alternative to traditional projects
Standard and Poor's (2008)	Global survey of 100+ projects	88% of PPP projects were delivered on time and at cost while only 30% of traditionally publicly procured (non-PPP) projects achieved the same result.
U.K. National Audit Office (1999)	7 Cases in UK	10-20% cost savings estimated
Pollock <i>et al.</i> (2007)	Review of Mott McDonald (2002)	'... there is no evidence to support the Treasury cost and time overrun claims of improved efficiency in PFI... [estimates being quoted are] not evidence based but biased to favor PFI... [and] all claims based on [this] are misleading.'
Blanc-Brude <i>et al.</i> (2006)	227 new road sections (65 PPPs) across 15 EU countries	Ex-ante construction costs of PPPs were 24% higher than traditional procurement.
Leviakangas (2007)	Finnish toll-roads case study	The hypothesis that private finance enabled welfare gains to be achieved was not confirmed

Source: Author, data excerpted from Hodge, G. and Greve, C. (2009), "PPPs: The Passage of Time Permits a Sober Reflection," *Economic Affairs*, Vol. 29, No. 1, pp. 35-36, Table 1.

It is clear from Table 8 that we cannot justify PPPs based on the promise of improved performance alone. The other main argument presented by proponents of PPPs is that they provide value for money through the efficient allocation of risks based on the principle that risk should be assumed by the party best able to manage it. However, there are many complications and imperfections in estimating value for

money and to the narrow view of risk that the framework assumes (please see the VFM discussion in Appendix 2 for a detailed explanation).

Despite this lack of concrete evidence around the benefits of PPPs, India has established an elaborate institutional framework for their development and delivery. This framework is outlined herein with a more detailed explanation of the PPP process in Appendix 2.

PPP Institutional Framework

India has dedicated considerable resources towards establishing institutional and financial support towards the formulation, appraisal, approval and management of PPPs at the central and state government levels. The Finance Ministry has assumed leadership in consultation with the Planning Commission.

1. **PPP Cell in the Department of Economic Affairs (DEA), Ministry of Finance (MoF):** MoF is the nodal ministry to examine concession agreements from the financial angle, assess risk allocation from investment and banking perspectives, and extend guarantees where necessary (Government of India, Comptroller and Auditor General of India, 2009). The PPP Cell undertakes core implementation of PPP activities. It develops innovative schemes and policies to support infrastructure PPPs, develops tools and guidance documents to enable PPPs, and participates in project development, structuring and appraisal. It administers the India Infrastructure Project Development Fund (IIPDF) – a fund with an initial corpus of Rs. 100 crore meant to reduce PPP transaction costs for the project Sponsoring Authority. The IIPDF provides interest free loans to cover costs such as those incurred in respect of feasibility studies, environmental impact studies, financial structuring, legal reviews and development of project documentation, including concession agreements, commercial assessment studies (including traffic studies, demand assessment, capacity to pay assessment), etc. required for achieving technical closure for such projects (Government of India, Ministry of Finance, Department of Economic Affairs, PPP Cell, 2008).
2. **Planning Commission:** The Planning Commission was set up in 1950 to make efficient and balanced use of the country's resources and determining national priorities. For PPPs, it plays the role of enabler by focusing on due diligence and consistency with processes across sectors, and sharing best practices. It prepares Model Concession Agreements for various sectors after consulting the relevant Ministries to enable quicker and more even project development. It houses the PPP Appraisal Unit (PPPAU), which evaluates PPP project proposals and prepares appraisal notes for the PPP Appraisal Committee (PPPAC) on all relevant issues including the concession terms.

3. **Committee on Infrastructure:** This is the highest authority, which lays down the PPP policy and procedures, and evaluates and grants final approval to individual PPP projects. It is chaired by the Prime Minister, and includes the Finance Minister, the Deputy Chairman of the Planning Commission, Ministers in charge of the respective Ministries, and two members of the Planning Commission (Government of India, Comptroller and Auditor General of India, 2009).
4. **PPP Appraisal Committee (PPPAC):** This Committee is chaired by the Secretary to the Department of Economic Affairs (Financial/Risk Analysis service) and includes Secretaries from the Planning Commission, Department of Expenditure, Department of Legal Affairs, and the Department/Ministry sponsoring the project under consideration. The Committee carries out comprehensive and meticulous due diligence to address the risks attached to the proposed project and addresses the need to secure “good value in terms of performance standards, user concerns, public revenue and contingent liabilities (Government of India, Comptroller and Auditor General of India (2009).” It handles projects for which the capital cost or underlying value of assets is more than Rs. 250 crore.
5. **Sponsoring Ministry:** The concerned Ministry may develop individual projects using legal, financial and technical consultants, and submit the proposal to PPPAC for ‘in principle’ clearance before soliciting expressions of interest from prospective investors. If the PPP project is based on approved Model Concession Agreements, such clearance is not necessary until the bidding stages. The Ministry may provide additional grants or enter into joint venture partnerships with private developers.
6. **Empowered Committee/Institution:** For PPP projects that make economic sense but are not commercially viable on their own, the central government has set up a Viability Gap Fund (VGF) to provide up-to 20 percent of a project’s costs, and allowed sponsoring Ministries to provide another 20 percent. The Empowered Committee, which is chaired by the Secretary of the Department of Economic Affairs and has the Secretaries of Planning Commission, Department of Expenditure and the sponsoring Ministry as members, makes decisions to release funding via this mechanism. It is empowered to sanction Viability Gap Funding (VGF) of up to Rs. 200 Crores for each project.
7. **India Infrastructure Finance Company Limited (IIFCL):** The central government set up IIFCL with the specific goal to provide long tenor debt to commercially viable infrastructure projects (including those that receive support through VGF). IIFCL issues subordinate debt that functions like equity and also provides for refinancing to banks and financial institutions for loans granted by them. It raises funds from both domestic and international markets on the strength of government guarantees.

8. Consultants: Government of India has identified and engaged financial, legal, and other transaction advisors to aid in the structuring, development, delivery and assessment of PPP projects.
9. State Institutions: Since most funds are disbursed through state agencies and departments, PPP Cells have been set up under Departments of Finance in State governments across the country. These are actively involved in conducting similar activities as the central PPP Cell, such as providing financial support, preparing modal documents, etc.

Figure 13 depicts details of this institutional set-up.

Summary

The lack of adequate and high-quality infrastructure services threatens to limit India's economic growth prospects. Traditionally marked by a large share of public involvement in financing and delivery, projects across India's infrastructure sectors have suffered perpetual budget and schedule over-runs. Political intervention, policy flip-flops and land issues, among others, have at times proved to be insurmountable obstacles.

Yet, as discussed in this chapter, India has become a leading destination globally for private sector investment in infrastructure in general and for the use of PPPs in specific. It ranks ahead of competing developing nations such as Brazil, China and Mexico in total private sector investment in infrastructure. Indeed, the Twelfth Five Year Plan (2012-17) accounts for the private sector to supply 50% of the \$1 trillion in infrastructure investment over the Plan period.

India has put in place an extensive institutional framework to help formulate and develop PPP projects across sectors. States have followed suit by institutionalizing their own PPP Cells within Finance Departments. Forms of support available to PPPs include development of standardized documents such as RFQs, RFPs and MCAs, and financial support in the form of grants, interest free loans, and long-term debt, among other efforts to create a supportive environment (see Figure 13). Most of these levels of support, however, have been limited to up-front project preparation and have paid less attention to governance of PPP projects over their long lifetimes (apart from efforts to draft comprehensive long-term contracts).

It is critical to recognize that the business of infrastructure is about delivering essential public services over time, not simply constructing physical assets within ex-ante estimates of time and budget. Thus, success is not about signing contracts, reaching financial closure, or putting the physical assets in place, but about delivering the public service sustainably over time. Based on case studies and extensive literature review, this thesis has characterized the key types of turbulence

that projects face in Indian conditions and evaluated governance strategies that have managed to navigate such turbulence. As shown in Figure 9, the focus has been on shifting thinking from the traditional emphasis on the need for finance in the short-term to the importance of public service delivery over the long term.

Figure 9: A Required Shift in Thinking

Appendix 2: PPP Process in India

The PPP Cell in the Department of Economic Affairs (DEA) under the Ministry of Finance in India undertakes core implementation of PPP activities in the country. Similar cells have been set up in states across the country to facilitate preparation of bankable state level PPP projects. These cells outline criteria for evaluating proposed PPP projects and make available tools to test projects against these criteria. For projects in which delivery via the PPP route is found to be suitable, they have prepared model RFPs, RFQs and MCAs to streamline project development and delivery.

The PPP Cells help identify risk assessment and allocation frameworks that can be incorporated into long-term contracts based on sector, geography and the particular project conditions. This section takes a closer look at the management of PPPs at the central level in order to examine how and to what extent the current PPP procurement and support process prepares projects to adjust to changes over time that are typical in Indian conditions.

PPP Identification and Evaluation

The PPP Cell recognizes that the long lifetimes of infrastructure assets are associated with high levels of risk and that a key feature of PPPs is risk allocation. It operates on the principle that individual risks should be allocated “to those who are best able to manage them (Government of India, Ministry of Finance, Department of Economic Affairs, 2010).” For instance, it states that the private sector is better at managing technical, construction and market risks while the public partner is usually better at managing land acquisition risks. Thus, its aims to “pick out the strengths (of public and private partners) and combine them together” such that the “partnership of public and private parties is stronger and more efficient than either party by itself.”

In order to guide sponsoring agencies through the risk identification and allocation process with a goal to “improve the quality and likely success of projects entering the PPP development pipeline,” the PPP Cell has prepared various tools as part of an online Toolkit. These tools outline the main types of risks that infrastructure projects face in various phases along with estimates of typical risk levels (high, medium, low). Based on the theory that risks should be assigned to the party best able to manage it, the PPP Cell provides template risk allocation mechanisms for different types of projects.

PPP Toolkit

The “PPP Toolkit” provided on the website <http://toolkit.pppinindia.com/> contains the following tools relevant to risk identification, assessment and allocation:

- **PPP Suitability Filter:** is made up of a series of questions about the important factors that impact the suitability of the project for delivery as a PPP. Many of the PPP project risks are identified at this stage and the long-term uncertainty perspective seems to come into play here with questions such as “Is there a high level political champion for the PPP?” and “Is there support for the PPP in affected communities?” The answers to each question are scored, and the final result from all questions is presented on a scale from easy to difficult development of the project as a PPP.
- **PPP Mode Validation Tool:** uses a risk allocation analysis to help decide whether the selected PPP mode is best for the project. It allows users to specify their own preferred risk allocation, and compares this against the typical risk allocations under the main families of PPPs (sector specific). It highlights differences between the preferred allocation and the typical allocations in order to encourage critical thinking.

If after such analysis a project is still considered suitable for delivery via an identified PPP mode, it enters the PPP development pipeline, which includes a full feasibility study culminating in an application for in-principle clearance by the Appraisal/Clearance Authority (see Figure 13) and the procurement process culminating in final approval and project award. Analysts engaged in the feasibility study are required to assess all possible risks as applicable to the particular project under study. The tools that assist analysis and decision-making at these stages are:

- **Financial Viability Indicator Model:** allows for a quantitative analysis of the financial feasibility of the project. The analysis uses information gained from demand forecasts, technical feasibility, and cost estimates along with assumed PPP mode, capital structure, discount rates, debt repayment schedules and sensitivity ranges on assumptions “designed to encourage a careful consideration of probable outcomes.” The outputs from this tool include expected returns illustrated by indicators such as Net Present Value (NPV) and Internal Rate of Return (IRR), and other summary financials. This tool also allows for the testing of ‘what-if’ scenarios.
- **Value-for-money Indicator Tool:** Value for Money (VFM) analyses aid public agencies to determine whether to pursue a project as a PPP or via traditional procurement. This tool provides for a quantitative test to compare the estimated cost of procuring the project in the public sector with the estimated cost of procuring it as a PPP. At the heart of this test is an

evaluation of the value of the risks that are transferred from the public to the private partner through the proposed partnership. The output provides an indication of the expected range of value-for-money for the public sector from the PPP.

Since proving value for money is a central assessment in moving a project forward to the next stage of PPP procurement, it is important to recognize that "...the emphasis on risk transfer can be misleading as value-for-money requires equitable allocation of risk between the public and private sector partners, and there may be an inherent conflict between the public sector's need to demonstrate the value-for-money versus the private sector's need for robust revenue streams to support the financing arrangements (Grimsey and Lewis, 2002)." This contentious concept is therefore discussed in detail herein with a special emphasis on its limitations.

Value For Money (VFM)

Concept

"Value for money means the public sector is financially better off if the project is done as a PPP rather than if it is done as a traditional public sector project (ECAL and CRISIL, 2011)."

Value for Money (VFM) analyses aid public agencies in determining whether to pursue a project as a PPP or via traditional procurement. These are typically conducted during the feasibility phase of a project. As in many other countries, current practice in India justifies PPP projects based on the premise that the public sector achieves "value for money" by transferring risks onto the private sector. Unlike some countries (for example the UK, where PFI investment, once affordability has been confirmed, is taken on VFM grounds alone (Morillos and Amekudzi, 2008)), proving that the PPP project provides VFM is not an absolute requirement for it to move to the subsequent stages of project development and delivery. Rather, the purpose of the tool in India is to indicate the level of uncertainty in estimates of value to the public sector. It is still a critical assessment, as the VFM guidelines state: "If a project is not expected to provide VFM for the public sector then the project should not be implemented as a PPP (ECAL and CRISIL, 2011)."

Calculation

In India, VFM is assessed from the point of view of the Ministry of Finance or the finance department of the sponsoring public authority in the following way:

Value for Money (VFM) = Cost of Public Sector Comparator (PSC) – Cost of PPP

The net costs are estimated as the difference between all outflows (investment, annuity payments, etc.) and inflows (taxes, tolls, etc.) affecting the public party. The particular steps involved in assessing value for money are:

- **Cost of PPP:** This is expressed as a Net Present Cost (outflows – inflows) based on the financial model for the PPP project, which is prepared as part of the feasibility analysis. It includes all the payment commitments (annuities, subsidies, grants, etc.) that the public partner would need to make in support of the project and all the financial inflows that would be received by the public partner (taxes, concession fees, up-front payments, etc.).
- **Transferred Risks:** This step involves estimation in financial terms of the risks transferred onto the private party as part of the suggested PPP agreement. This is done by multiplying together estimates of probability of impact and magnitude (cost) of impact for each risk and adding these up across all risks. The public partner would face these costs if the project were procured in the public sector.
- **Cost of Public Sector Comparator (PSC):** A PSC is a hypothetical risk-adjusted costing based on the public sector as supplier for the same output specifications as those prepared for the PPP. It involves a modified set of inputs since the public party makes the investment (capital costs) and obtains the revenues (user charges). The PSC also includes the expected monetary value of the risk that is shifted to the private partner in a PPP arrangement (the “Transferred Risks” component described above).

The PSC evaluation in other countries includes various adjustments to key inputs such as financing charges, potential revenues sources and quantities, competitive neutrality adjustments, corrections for optimism bias, and other adjustments depending upon the particular assessment method utilized by the appraiser.

Typical VFM tests arrive at point estimates for VFM (projects are approved if VFM is positive) since they use just one monetary value for the risk that would be transferred to the private sector in the PPP. The PPP Cell in Department of Economic Affairs, however, has developed a VFM indicator that does not rely on point estimates but includes ranges for uncertain parameters that provide an improved indicator of the likelihood of the PPP to deliver value for money. There are three scenarios of results for expected VFM:

- The range is all positive: This indicates that the project can be expected to provide VFM;
- The range is all negative: VFM is unlikely;
- The range covers both negative and positive VFM outcomes: The focus should shift to a careful qualitative assessment of the key risks and to identifying mitigation alternatives for these risks.

Figure 10 depicts a sample output from VFM analysis where VFM is uncertain:

Figure 10: Sample 'Value for Money' Test Result

Source: ECAL and CRISIL (2010), "India, Developing PPP Toolkits, VFM Indicator Tool Note November 2010," <http://toolkit.pppinindia.com/pdf/VFM-Background-user-guide.pdf>, Figure 4, p. 12. Last checked July 01, 2011.

Limitations

Though the toolkit prepared by the PPP Cell in DEA is an improvement over alternative VFM estimators that rely on point estimates as it recognizes uncertainties in particular estimates of transferred risk, **rationalizing PPPs based on this indicator is still a highly subjective and potentially misleading practice.** Some of the shortcomings of this assessment are:

- **Vulnerability to Bias:** Estimating costs and benefits under different delivery modes is not a straightforward and transparent exercise. It "heavily relies on estimates made by the procuring agency and on the experience of the person(s) conducting the analysis" since not all specifications are hard-coded. Technical complexities of the financial methods challenge the limited experience of analysts.

The analyst's discretion on some key uncertain inputs leads to a vulnerability to bias. Grimsey and Lewis (2002) report "there may be an inherent conflict between the public sector's need to demonstrate the value-for-money versus the private sector's need for robust revenue streams to support the financing arrangements" Similarly, based on a review of VFM appraisal practices from around the world, Morillos and Amekudzi (2008) conclude, "Because an outcome where the PSC proved to be more affordable than the PPP would technically lead to the cancellation of the project, agencies may make slight

adjustments to the VFM calculations despite a potentially large margin of error to make the PPP seem cheaper.”

- **Optimal Risk Allocation is a Highly Unlikely:** With regard to risks, the PPP Toolkit mentions: “if one knows what the distribution looks like one can use it to indicate the outcome that might be expected (ECAL and CRISIL, 2011).” Unfortunately we do not typically know what the distribution looks like and it is thus highly improbable to account for all possible outcomes of a project. Moreover, we do not always account for all the risks that could affect the value of a project. Thus, even if we knew precisely the spread for all identified risks, a single unaccounted risk could have a bigger impact on the project than the cumulative impact of the accounted risks. Value for Money analyses are thus based on a false premise that optimal risk allocation frameworks can be framed and value for money can be assessed based on such a framework.

- **Choice of Discount Rate Affects Analysis:** The choice of discount rate that a procuring agency uses in discounting cash flows has a major impact on the outcome of a VFM analysis. Current practices associated with key inputs to VFM differ across countries and sector (ECAL and CRISIL, 2011). These differences are reflected through the various guidance documents and tools published internationally, with countries such as Australia, UK, South Africa, and Canada adopting different approaches to a number of issues as compared to India¹⁵. Partnerships Victoria uses a risk-free discount rate of 3% plus a risk premium dependent on risk classification (low, medium, high); UK’s HM Treasury uses a risk-free discount rate of 3.5%; Partnerships British Columbia uses the private sector weighted average cost of capital (WACC); India and Hong Kong do not specify a particular discount rate; and other countries justify their own practices.

There are several options for the use of discount rate and each has its own caveats (Morallos and Amekudzi, 2008):

- Use the public sector’s borrowing rate as the discount rate for the VFM discounting cash flow analysis: This practice seems to ignore that the revenue and cost streams and their associated risk characteristics are not the same for the two procurement alternatives.

- Employ a risk-free discount rate and value risks in the cash flows: Morallos and Amekudzi (2008) suggest that this method can be quite difficult “because it still entails relying on practitioners’ estimates of the risk values to adjust the cash flows”.

¹⁵ For a state of the practice review of VFM analysis using examples from Australia, Canada, Europe, Africa and Asia, see Morallos and Amekudzi (2008).

- Use a risk-adjusted discount rate: This method also presents some difficulty “because identifying the market or systematic risks that are transferred in a PPP model as opposed to a public procurement can be complicated.”
- **The Harsh Reality of Contingent Risks:** Owing to the essential nature of infrastructure services, the public partner never fully absolves himself of any risk that may adversely impact service delivery. Thus, despite an agency’s efforts to optimally allocate risks, “there will always be some risks that are still held by the public sector and potentially the general public that are not always factored into the VFM assessment.”

In summary, this exercise is highly subjective and the **inputs can be easily doctored to produce the desired outcome**. Thus, over-reliance on the VFM indicator as a basis of PPP evaluation and decision-making should be avoided.

If an identified project manages to secure initial approval after going through this evaluation, it moves on to the procurement and management stages, described herein.

PPP Procurement and Management

Long-term contracts form the basis for most infrastructure PPPs in India. One significant advantage of this approach is that it allows for competitive tendering, promoting transparency in procurement and driving down overall costs owing to competitive pressures. The PPP Cell in DEA and other state PPP cells provide project procurement support to project sponsors in the form of model RFQs, RFPs, and MCAs that become relevant after the project has passed the VFM test and achieved in principle clearance.

Two-Stage Bidding

Project delivery via PPPs commonly involves two-stage bidding processes: RFQ followed by RFP. The objective at the RFQ stage is to pre-qualify and short-list eligible bidders such that only serious bidders can participate in the second stage. In the RFP stage, “the bidders engage in a comprehensive scrutiny of the project before submitting their financial offers (Government of India, Ministry of Finance, Department of Economic Affairs, 2007).”

To reduce the time and promote transparency in procurement, the Ministry of Finance has issued bidding guidelines for central sector projects in the form of model RFQs and RFPs. Several state PPP cells use these or have issued their own guidelines. Specific Ministries and other project sponsors amend the model documents based on the characteristics of their particular sector and on specific project requirements.

The model RFQ seeks to streamline the process of soliciting qualifications for PPP projects, and reduce the time and costs to all parties in doing so. It lays out the essential elements that an RFQ should include – background information, bidding process schedule and description, requirements from applicants (experience and other requirements across technical, financial, and other capacities), criteria for evaluation, and other guidelines.

The model RFP is generic. It lends transparency and predictability to the entire process, allowing decisions to be made expeditiously. It provides guidelines for inviting financial bids from pre-qualified and shortlisted bidders based on detailed terms of the project that are specified in the Concession Agreement / Power Purchase Agreement (PPA).

Appendix 3: Indian Experience with Regulation

Telecommunications

No infrastructure sector in India has grown as fast as the telecommunications industry. The Indian mobile communications market has been growing faster than its Chinese counterpart with a growth rate of 75% per year between 2002 and 2007 (Heymann *et al.*, 2007) and an increase in telephone connections from around 76 million in 2004 (Government of India, Ministry of Finance, 2011) to more than 874 million telephone (wired and wireless) subscribers by June 2011 (Telecom Regulatory Authority of India (2011)). India is now the second largest telecommunications provider in the world after China and telecom rates in India are among the lowest in the world.

Some have attributed this unprecedented success in large part to the telecom regulator - TRAI. Patel and Bhattacharya (2010) note, "TRAI has gone onto play a notable role in the evolution of the sector." Others, however, have claimed that the industry has succeeded not because of, but despite the regulator. Indeed, in his account of the challenges to governance in India, Morris (2002) notes that the telecom industry has been successful but only because "the powerful force of technology overrode regulatory mistakes."

Starting Point

The Indian telecommunications sector was wholly government owned until the mid-1980s. Public sector corporations were set up in 1986 to allow greater autonomy in decision-making and to facilitate public borrowing. A number of efforts to encourage private sector participation were taken starting in 1991 with de-licensing and de-reservation of the telecommunications equipment manufacturing industry. Shortly thereafter, foreign investment in telecom equipment manufacturing and private investment in value added services were encouraged (Arun, 2003).

Other reform measures were perused under the umbrella of The National Telecom Policy (NTP) of 1994, which required telephone services on demand, the achievement of a universal service obligation, assurance of world-class service to subscribers and the universal availability of basic telephone services. A new NTP was issued in 1999 to alter some contentious issues related to license fees, interconnections, etc. This enhanced the confidence of industry players to regroup their efforts and embark on the next phase of growth. India has since attempted to create a level playing field between private and public companies in various sub-sectors within telecommunications (Arun, 2003).

Both policy formulation and regulation, however, remained with the Department of Telecommunications (DOT) until 1997.

Regulatory Details

In the face of rapid technological change, the government of India set up the Telecom Regulatory Authority of India (TRAI) in 1997 as the first independent regulatory commission in India and vested it with powers to protect consumer interests, fix tariffs, ensure compliance with license conditions, facilitate competition and interconnection between operators, and settle disputes. Thus, it was originally structured to perform both executive and judicial functions (Patel and Bhattacharya, 2010; Arun, 2003).

Although TRAI divested the DOT of several regulatory functions DOT retained policy-making, licensing, and operative powers within the same organizational boundaries. Additionally, TRAI was not given responsibility to issue and revoke licenses, but only to recommend them. In fact, the Department of Telecommunications originally opposed TRAI's creation and contested its decisions on key issues in court. For instance, it appealed a TRAI order that favored cellular operators who alleged that DOT had unilaterally increased the tariffs for calls made from ordinary telephone to cellular mobile phones, and requested to curtail the scope and powers of TRAI. Owing to such differences and confusion over the Authority's dual role as regulator and adjudicator, it could not make much headway in its first few years.

Furthermore, although the composition of TRAI was to protect it from unnecessary government intervention and provide functional autonomy, in the initial years TRAI was not truly independent owing to the specific personnel chosen to staff its leadership. Structurally, policy makers provided for fixed terms of five years for the Chairman of TRAI and its members with the possibility of removal only on the basis of a Supreme Court decision after a specific enquiry held by it into his or her misconduct. However, in practice, the majority of TRAI's members did not have a background in communications and were not businessmen, economists, industrialists, consumer activists or public policy makers. Rather, "the Minister for Communications nominated members to the TRAI and most of these members were former civil servants, who throughout their life were practitioners of the 'permit-license-quota system'...(Arun, 2003)". In fact, even a serving member of the Telecom Commission of the DOT was appointed to the TRAI.

These issues of lack of transparency in appointment of members, and the duality of powers were dealt with under a legislative amendment of the TRAI Act in 2000. The Act changed the nature, composition and powers of the regulatory commission. "A sharp distinction was drawn between regulation and adjudication, by divesting TRAI of its judicial powers by establishing a separate Telecom Disputes Settlement and Appellate Tribunal (TDSAT) to rule on appeals against TRAI's decisions, and

settle disputes between service providers, licensor and licensee, and service provider and consumers (Patel and Bhattacharya, 2010).”

Despite these efforts, “it is evident that key decisions associated with entry, licensing, and distribution of the spectrum frequency lie with the government, while the TRAI maintains residual command over co-ordinating certain practices (Anant and Singh, 2002).”

Post-Regulation Performance

Patel and Bhattacharya (2010) summarize the improvements in the telecommunications sector since the beginning of reforms: “The former bleakness typified by perennial underinvestment, outdated equipment and yawning unmet demand under government-owned service providers has given way to extraordinary growth and low prices in a competitive environment with substantial private participation” The shift in the pace of increase in the number of subscriber lines in India depicts a part of this improvement – the overall customer base expanded by the same amount on average in each month of 2007 as the cumulative expansion between 1960 and 1992 (Heymann *et al.*, 2007). The sector’s transformation is also seen in the fact that the private sector’s network presence expanded from 20 percent in 2003 to 70 percent in 2010.

TRAI has certainly contributed to this transformation by adopting a technology agnostic stance and establishing a level playing field. For instance, it’s unified licensing proposal in 2003 allowed the price momentum from the mobile networks to spill over to the landline networks. Furthermore, it let the competition establish the technology that is most cost-efficient for a given region. In fact, India is one of the few markets where there is active competition between the two major standards in mobile telephony: Global System for Mobile (GSM) and Code Division Multiple Access (CDMA). ‘Resolution of this major (contestability) issue and continuing light handed tariff regulation effectively gave free play to price competition, thus instigating a quintupling of tele-density from 6.6 in 2003 to 35.7 in 2009 (Patel and Bhattacharya, 2010).’

TRAI has played other critical roles in the evolution of this sector. For instance, it has published consultation papers on a number of critical issues, promoted transparency in consumer tariff plans, developed mergers and acquisitions guidelines and monitored service parameters. Over the years, as competition has emerged as a reliable and effective means to drive telecom call charges towards marginal costs, TRAI has largely relinquish the onerous task of tariff setting except in case of basic services in rural areas.

Lessons

In summary, there is little disagreement around the fact that the telecom sector has advanced significantly over the past two decades and that TRAI can partly claim responsibility for this impressive turnaround. However, TRAI's contribution needs to be taken in context of an environment in which it has had limited input into key decisions related to the sector, and rapid technological improvement and other efforts towards encouraging private participation have played a significant role. Moreover, "major differences between the dynamic urban agglomerations and the rural areas" still remain and "huge market potential still remains untapped (Heymann *et al.*, 2007)."

In evaluating the success of the telecom industry and extrapolating lessons to other sectors, it is also important to keep in mind the unique attributes of the telecom industry that make it more amenable to private participation and regulation. Specifically, the fact that telecommunication services are not regarded as a 'right' in the same way as water or electricity gives operators the freedom to operate on broadly commercial terms with non-payment resulting in service cut offs. Moreover, the required investments (i.e. sunk costs) are not as prohibitive as those in other sectors.

Overall, the case of the telecommunications industry in India shows that regulation has been positively correlated with vast improvements in performance, but that the regulatory institution has faced significant challenges, had various shortcomings, and other enablers have had a significant role to play. These are important lessons for other infrastructure sectors in India that are looking towards regulation as a panacea to their problems and the success of the telecom industry needs to be evaluated in full cognizance of the unique attributes of the sector.

Power

The power sector is the largest out of all infrastructure sectors in India, accounting for 32% of the total infrastructure investment called for in the 11th Five-Year Plan (2007-2012) (Government of India, Planning Commission, 2011b). The Planning Commission estimates that meeting its power sector goals during the 12th Five Year Plan (2012-17) necessitates roughly \$450 billion¹⁶ in investment and calls for 50% of this funding to come private sources.

As of 2011, India has the world's fifth largest power generation capacity after the US, China, Japan and Russia at 171,926 MW (U.S. Energy Information Administration, 2011). State government owned generation plants produce the

¹⁶ \$146.05 billion in the 11th Plan period and \$300 billion in the 12th Plan period. See Banerji and Mishra (2010).

majority of this power with a 48% share; central government owned generation plants produce another 31%. The generation sub-sector has experienced the most significant private sector involvement, growing from 9% in 1999-2000 to 21% by March 2011 (see Figure 11). The transmission network is mostly owned, operated and maintained by the government with only a few noticeable cases of private involvement¹⁷. Privatization of the revenue generating distribution system has been targeted and successfully completed in a handful of jurisdictions but this too remains largely a government-controlled activity¹⁸. In summary, private involvement in the power sector is still very much at a nascent stage.

Figure 11: Central, State and Private Shares in Power Generation

Source: Government of India, Ministry of Power, Central Electricity Authority (2011), "Executive Summary: March 2011," http://www.cea.nic.in/executive_summary.html. Last checked April, 21, 2011.

Starting Point

The Indian power sector has gone through tremendous regulatory change over the past century - from a system of license raj to dominance by State Electricity Boards (SEBs) to the recent emphasis on competition and private sector participation governed by IRAs.

¹⁷ The central and the state utilities own nearly 40 percent and 60 percent, respectively of the total transmission lines of 2.7 million circuit kilometers. See Government of India, Ministry of Power, Central Electricity Authority (2011b).

¹⁸ State Electricity Boards own nearly 95 percent of the distribution network in India. See KPMG (2006).

In 1910, the Indian Electricity Act created licenses for power-generating companies and established companies with political influence received their initial licenses. After independence, the Indian Parliament passed the Electricity Supply Act of 1948, which placed State Electricity Boards (SEBs) in charge of generation, transmission, and distribution. This arrangement put an end to private electricity development because private entities that wished to build new assets were required to obtain licenses from the SEBs, who did not want to create competition for themselves. At the same time, however, the Boards lacked the resources to meet the country's electricity needs. As a result, India suffered a peak deficit of 12.2% in 2003 and has consistently suffered from peak deficits higher than 10% (Government of India, Ministry of Statistics and Programme Implementation, Central Statistical Office, 2010). Moreover, India's SEBs have been in a perpetual state of financial ruin, running commercial losses of Rs. 40 billion (\$0.9 billion) in 1991-92 and a staggering Rs. 610 billion (\$14 billion) in 2007-08 (CRISIL, 2010).

Realizing that SEBs were not going to be able to efficiently deliver India's power infrastructure, legislators framed The Electricity Laws (Amendment) Act, 1991, whereby Independent Power Producers (IPPs) could establish and run generation plants and sell the output to the SEBs through long term contracts. India provided generous incentives and a fast-track approval process for large IPP projects to achieve rapid capacity expansion.

This change, however, did not lead to an improvement in the sector's performance. In fact, authors have referred to these reforms as "a cure worse than the disease" owing to the slow capacity build up and the inefficiencies of reform (Mahalingam, 2005). Contrary to working towards the government's highest priority of closing the gap between demand and supply, actual capacity addition as a percentage of planned addition dropped down to the 50% level starting in the Eight Five Year Plan (1992-97) (see Figure 12).

Figure 12: Planned vs. Actual Capacity Addition

Source: Government of India, Ministry of Power, Central Electricity Authority and Confederation of Indian Industry (2007), "White Paper on Strategy for 11th Plan," www.cea.nic.in/reports/planning/white_paper_strategy_11plan.pdf. Last checked April 28, 2011.

In an analysis of 41 IPPs from developing countries including 8 projects from India, Phadke (2009) finds that the stated capital costs of negotiated projects (majority of projects were negotiated rather than competitively bid) was on average 44-56% higher than that of competitively bid projects. The author reports that this wave of reforms suffered from the fact that efficiency gains from private participation were not passed onto consumers and that a transparent and vigilant regulatory system could have limited the extent to which capital costs were over-stated.

This disappointing experience with private participation prompted further reforms, this time involving the creation of independent regulatory authorities.

Regulatory Environment

The Orissa regulatory agency, setup in 1996 with significant World Bank involvement, was the first independent regulator in the power sector. Though it was set up with the goal of balancing consumer and investor interest, the reality turned out to be quite different. Mahalingam (2005) reports that while availability of power in the state improved, reforms failed to improve accessibility (only 5.5 percent of rural households in Orissa had access to electricity compared to a national average of 55 percent), affordability (tariffs increased regularly and targeted consumers who had the least ability to pay), or efficiency (T&D losses remained high and there were no significant improvements in metering, billing or collection efficiencies).

Encouraged by the World Bank, several other states passed similar reforms to Orissa and eventually, the Electricity Act of 2003 replaced ad hoc experiments with a uniform national framework and set the tone for a complete overhaul of the power sector (Williams and Ghanadan, 2006).

This Act established the CERC and mandated that each state establish its own State Electricity Regulatory Commission (SERC). The roles of these regulators include tariff regulation, monitoring quality of service and compliance to regulatory orders, redressing grievances, and advising the government on related matters (Ghosh and Kathuria, 2011). Their primary role is to balance consumer and investor interests. The Appellate Tribunal for Electricity was set up in 2004 to adjudicate disputes and hear appeals from Central and State Electricity Regulatory Commissions.

All regulatory commissions have adopted public hearing practices to encourage public participation in decision-making and some have even adopted more information open-house sessions to discuss the issues in a more non-restrictive manner. However, as discussed herein, stakeholder engagement efforts overall remain weak.

Regulatory Experience: Positives

Despite the numerous shortcomings of electricity regulation in India, there have been some positive developments:

- **Regulation Helps Promote Transparency:** CERC and many state regulators regularly publish latest regulations and utility tariff orders online along-with explanatory notes for the rationale behind the orders. Additionally, they issue public notices, hold public hearings on proposed rules, publish market-monitoring reports, meeting minutes, public tenders, and maintain a detailed record of regulatory proceedings electronically. There is however, much room to improve as Dubash (2008) notes, "Public participation procedures enshrined in regulatory statutes have led to some transparency and discussion, but neither have these been followed diligently, nor have they been used to their full potential, in part due to the weaknesses of civil society."
- **Transparency Helps Regulators:** In addition to instilling confidence in the public and mobilizing support for regulation, transparency leads to improved rulemaking. Moreover, transparency and resultant debates over the consequences of state decisions place bounds on state action and thus help insulate regulators from state influence (Dubash, 2005). Indeed, in their analysis of regulation in the state of Andhra Pradesh, Ghosh and Kathuria (2011) find that "a pro-active regulation is still possible when it sticks to the text book prescriptions of following the standard procedures of transparency. This allows all stakeholder groups to bring forth the discussion

into the public domain thereby reducing the scope of the regulator being captured by either the public or private interest groups.”

- **Regulation Benefits from Greater Public Participation:** Diverse and meaningful public input helps decision-makers consider different issues, perspectives, and options when defining a problem and devising solutions. Dubash (2005) finds inclusion of stakeholders to hold “the possibility for regulatory spaces to be new and open sites for political contest.”

Regulatory Experience: Limitations

India’s experience with electricity regulation has been disappointing at best, as politics has retained a significant influence on regulatory decision-making while stakeholder involvement has been weak. Dubash (2008) critically explores electricity regulation in India with special attention to the political, legal and institutional contexts within which regulators operate. He concludes, “The original hope that electricity regulators would function as some sort of island insulated from politics appears to have been flawed in its conception.” Dubash and Rao (2008) provide insights into the critical flaws in the regulatory design. These include:

1. **Staffing Issues:** The authors find that an apolitical regulatory sphere cannot be created merely by legislation. State regulatory bodies are often extended branches of state governments since governments heavily influence selection of regulators and staff, who mostly retired from high ranked government cadre under the Indian Administrative Services (IAS). This tendency to staff with retired judges and bureaucrats instead of professionals with required expertise along-with restrictions on salaries and lack of adequate budgets are serious systemic shortcomings. Instead, “Indian regulators need to be innovative, far-sighted and politically savvy. They need to act quickly and decisively (Bhatiani, 2002).”
2. **Political Criteria Often Outweigh Techno-Economic Criteria:** Regulatory decisions are more influenced by politics than techno-economic criteria. Ghosh and Kathuria (2011) report, “Decisions are often individual-specific, variable and often entrenched in the political networks from which the staff is drawn. Thus the process is heavily politicized and tied to electoral outcomes resulting in a non transparent and imbalanced negotiation of political pressures.” For instance, following the decision to provide free power to farmers in 2005, the state regulator in Tamil Nadu did not pull up the state utility for its failure to file the required Annual Revenue Requirement statement for fear of embarrassing the state government ahead of the pending elections in 2006 (Dubash, 2005);
3. **Stakeholders Engagement in Weak:** Dubash and Rao (2008) note that there is little progress towards stakeholder involvement wherein

“independence is ensured not through isolation, but through being subject equally to the voice and representation of all stakeholders.” Dubash (2008) elaborates, “Public participation procedures enshrined in regulatory statutes have led to some transparency and discussion, but neither have these been followed diligently, nor have they been used to their full potential, in part due to the weaknesses of civil society.”

In addition to design failures, Dubash (2005) highlights the fact that independent regulation suffers from major complications in an environment where the state owns and controls infrastructure assets. Ghosh and Kathuria (2011) elaborate, “the regulation of state owned generation and distribution utilities is an ‘idiosyncrasy’ in that it is a strange case of ‘a state agency regulating another state agency’.”

The following examples are evidence of this particular danger:

1. **Free Power to Farmers:** Starting in mid-2004, a number of important states including Andhra Pradesh, Tamil Nadu, Maharashtra, Haryana and Punjab reinstated provisions for free power and/or a number of other electricity concessions to farmers. Though regulators are meant to insulate tariff determination and other economic decisions from political system, regulatory institutions in these states “chose to interpret government action as a policy position over which they had no control (Dubash, 2005).”
2. **Political Control over Utility Decisions:** State governments exercise control over distribution companies by asking them not to file for tariff revisions at politically inconvenient moments and over state owned generating companies by asking them to slash their rates even at the expense of incurring losses so that no tariff revisions are necessary.
3. **Regulatory Leniency:** Though penalizing rouge utilities is important to bring discipline, utilities have largely been able to ignore the directives of regulatory bodies without penalty. Bhatiani (2002), for instance, notes, “there is not a single instance in our knowledge where a utility and its management have been penalized for failures to meet the directives given in tariff orders”.

For detailed guidance on the design of regulatory institutions with emphasis on the highest standards of governance, please refer to the Electricity Governance Toolkit (Dixit *et al.*, 2007), a publication of the Electricity Governance Initiative - a collaborative initiative of civil society, policymakers, regulators, and other electricity sector actors to promote the open, transparent, and accountable decision-making processes.

Appendix 4: Detailed Case Studies of Troubled Projects

Delhi International Airport Limited: Regulatory and Policy Flip-Flops

Basics

Increasing passenger and cargo traffic over the years led to saturation at many airports across India, including the Indira Gandhi International Airport (IGIA) in Delhi. IGIA was an embarrassment as a first welcome for a growing number of international travelers to the metropolitan capital of the country. Thus, the decision to restructure and modernize IGIA to world-class levels was taken in 2006 under a 30-year concession and lease agreement (extendable for another 30 years).

A new joint venture company – Delhi International Airport Private Limited (DIAL) was entrusted with this responsibility. A private consortium (GMR group, Fraport AG, Eraman Malaysia and IDFC) contributed 74% of the equity while the rest 26% rested with the public sector representative – the Airports Authority of India (AAI) (World Economic Forum, 2010). In return for rights to control revenue during the operations of the airport, the private developer committed to capital investments, an up-front payment to the government, and a revenue sharing agreement with a 45.99% government share of gross revenue (Government of India, Ministry of Civil Aviation, 2006).

DIAL's revenue is made up of two main elements:

1. **Aeronautical charges:** These are fees for landing, aircraft parking and hangars, and passenger service. For DIAL, these charges were to be regulated by the Ministry of Civil Aviation for three years and by the Airports Economic Regulatory Authority (Aera) thereafter if it came into existence.
2. **Non-aeronautical charges:** These are revenues from activities such as cargo handling, aircraft maintenance, advertising, duty-free retail sales, car parking facilities, real estate development, food and beverages, etc. These fees were to be left unregulated with DIAL reserving the right to charge for its services on a competitive basis.

The project enjoyed strong support from commercial banks owing to demonstrated sector knowledge on behalf of the private sector partners, strong revenue forecasts and the stable revenue structure.

Regulatory Background

Indian airports were managed by the Civil Aviation Department within the Government of India prior to the creation of the International Airports Authority of India (IAAI) in 1972 and the National Airports Authority (NAA) in 1986. These two authorities were then merged to form AAI in 1995 for better management of all airports in India by a single authority.

An independent regulatory authority (Aera) was set up in 2009, after the Delhi airport was already well under construction. The envisioned functions of this authority were to monitor and assess service quality performance standards set by the government and to review and assess capital and operating expenses.

Unforeseen Impacts

The shift in power from the Ministry of Civil Aviation to the new regulator Aera threatens the private operator's business. Referring to this situation, Paul (2011) remarks: "[T]he advent of Aera has changed the dynamics of the aviation business almost overnight." Potentially devastating impacts to the majority shareholder, GMR Infrastructure could occur in two ways:

1. **Reimbursement for cost escalation:** The project was delivered in a record time of 37 months but experienced a cost escalation owing to the need for new mini-projects (a low cost terminal and an underpass) along the way. The new regulator Aera is to determine whether the government, civil society or the developer should pay for the uncovered escalation, amounting to roughly 15% of the project costs. Since GMR has already incurred these costs, it could suffer from a big financial setback if Aera decides not to reimburse the amount.
2. **Revenues for cost recovery:** In the agreement with the government (represented by AAI), there was some uncertainty as to the details of the revenue sharing agreement (mostly relating to the government's share from non-aeronautical revenues) and the cost base used to determine the aeronautical tariffs (whether to include non-aeronautical capital costs) (Pandey *et al.*, 2010). Aera now plans to include non-aeronautical revenues within its ambit and its current thinking regarding these issues threatens to drastically impact the private partners' returns.

With help from the law ministry, Aera has made sure that its rulings on airport revenues would overrule any prior contractual agreement – even if they were with

the government. "This simply mean(s) that the government's promises and GMR's assumptions in the Delhi airport project (are) invalid if Aera (doesn't) agree with them (Paul, 2011)."

These 'regulatory hurdles and policy flip-flops' could make GMR Infrastructure's business unviable. This uncertainty has already contributed to a 50% drop in GMR Infrastructure's stock value over one year. Similar policy 'flip-flops' have landed businesses in other infrastructure sectors in trouble as well.

Karur Bridge Project: Bad Forecasts and New Government Opportunism

Basics

The Karur Toll Bridge was to be a 14-year Design-Build-Operate-Transfer (DBOT) agreement involving East Coast Construction and Industries (concessionaire), Karur municipality and Tamil Nadu Urban Development Fund (TNUDF). This was a high profile project as it was the first toll bridge contracted by an Urban Local Body (ULB) in India (Collaboratory for Research on Global Projects, 2005).

Unforeseen Impacts

The target financial rate of return for the project was 18% but even the hurdle rate of 14% was not achieved since actual toll collections were only 70% of projections (The World Bank, 2005). Moreover, Tamil Nadu experienced heavy rains during the northeast monsoon of 2005 resulting in unprecedented floods, which caused extensive damage to the approach road to the bridge. This was considered a "breach of obligation" on part of the private concessionaire (Government of Tamil Nadu, Municipal Administration and Water Supply (MA3) Department, 2008). The Highways and Rural Works Department took over the bridge, restored it for public use, and stopped the collection of tolls in the public interest. Despite the fact that the concessionaire was willing to repair the damage on the approach road and absorb the costs for doing the same, the Karur Municipality did not give them that option. As Mahalingam (2010) summarizes: "...a newly elected municipal government unilaterally cancelled the concession agreement on the pretext of a damaged approach road without compensating the concessionaire". Since the concessionaire had substantial debt obligations respect of this project, premature termination of the BOT contract put them into severe financial constraints besides creating a lack of confidence in the financial institutions of the concessionaire's ability to participate in future BOT ventures.

East Coast Road Project: Government Reneges on Promises

Basics

The Tamil Nadu Road Development Company (TNRDC) was formed in 1998 as a joint venture company with equal equity participation from the Tamil Nadu Industrial Development Corporation – the investment arm of the Government of Tamil Nadu – and infrastructure development and finance company IL&FS to improve state infrastructure. One of the projects involved repair work and widening of the East Coast Road (ECR) – an important State Highway connecting the cities of Chennai and Pondicherry. TNRDC was to charge tolls to road users to recoup their investment and the toll rates were to increase by 8% every year to combat inflation (Delhi *et al.*, 2010). The concession agreement was signed in December 2000 and civil works were completed by December 2001, within time and cost (Infrastructure Leasing & Financial Services, 2005a).

Unforeseen Impacts

Toll collection commenced in March 2002. Involvement of the government helped the project navigate initial toll-compliance related problems as the state government made a one-time grant to the Special Purpose Vehicle (SPV) in exchange for exempting local residents and three wheelers from paying the toll. However, the project soon landed in financial trouble owing to political decisions. The Government of Tamil Nadu “banned the quarrying process on environmental grounds, dramatically reducing the number of trucks using the ECR (Delhi *et al.*, 2010),” whereas trucks transporting sand to and from quarries located along the road constituted a significant user-base of the toll road. Furthermore, the government reneged on its commitment to increase annual toll rates by 8% because of “political compulsions” (Thillai *et al.*, 2010). The project was therefore stuck with high debt servicing costs and revenues from other projects had to be mobilized in order to keep the consortium afloat.

Tirupur Solid Waste Management Project¹⁹: Waste Today, Gone Tomorrow

Basics

Tirupur Municipal Corporation decided to engage a private operator in a 20-year PPP to finance, construct and operate a waste management plant, including a composting facility for organic waste. The Municipality agreed to provide a daily minimum of 100MT of mixed waste (Delhi *et al.*, 2010).

Unforeseen Impacts

In 2000, the Government of India enacted Municipal Solid Waste Management laws that directed municipalities to supply only segregated waste to composting facilities. Based on these rules, the original agreement to provide 100MT of mixed waste was no longer feasible and the municipality sought to re-write the contract. The case is currently under arbitration while the “composting plant is not being used and the municipal solid waste continues to pile up outside Tirupur (Delhi *et al.*, 2010).” This is thus another example of the “policy flip-flop” discussed in the context of the Delhi International Airport.

¹⁹ Since the sector does not have a formal regulator, laws governing the ‘rules of the game’ in the sector are considered a form of regulation.

Latur Water Supply Project: The “Right” To Water Incites Agitation

Basics

Owing to the inability of the Latur Municipal Corporation (LMC) to operate and maintain the water supply system and provide water to its 350,000 citizens, Maharashtra Jeevan Pradhikaran (MJP), the nodal agency responsible for development and regulation of water supply and sanitation in Maharashtra, was entrusted with this responsibility for 30 years. MJP in turn entered into a hybrid management / affermage / concession contract in 2008, which was the first source-to-tap integrated management contract being executed through a SPV.

Unforeseen Impacts

This concession faced intense local opposition leading to delay of transfer of assets and commencement of contract. Expressions of public opposition involved formation of an Opposition Committee, which started a severe agitation campaign against what they termed “privatization of water supply.” Agitators vandalized and closed down the LWMC office in Latur despite state government support for the project.²⁰

²⁰ Government of India, Ministry of Finance, Department of Economic Affairs, “Case Studies: Latur Water Supply Project,” PPP Toolkit for Improving PPP Decision Making Processes, <http://toolkit.pppinindia.com/solid-waste-management/module3-rocs-lwsp1.php?links=lwsp1>. Last checked March 04, 2011.

Timarpur-Okhla Integrated Municipal Solid Waste Management Project: Not In My Back-Yard

Basics

Despite having the highest per capita income in the country, Delhi is facing a waste management disaster with its antiquated landfills rapidly filling-up. This project was envisioned to divert waste from these landfills and generate valuable end products such as electricity and organic fertilizer. The project involves setting up plants to convert municipal solid waste (MSW) into refuse derived fuel (RDF), a biomethanation plant capable of handling green waste, a water recovery plant and a power plant to turn RDF into electricity.

Unforeseen Impacts

This 25-year BOOT agreement has already been delayed by more than a year owing to public opposition based on environmental and other concerns. The prevailing sentiment is that the affected public was not afforded a voice at the table during the initial project consultations and emissions from the plant are unacceptable to the residents of the area.

Meanwhile, there is an alternate proposal to process the city's municipal solid waste in a more decentralized fashion. Such a practice could potentially result in only 20% of the waste being available for this project (Dunu, 2011). The future of this critical project this remains uncertain.

New Delhi Water: Public Opposition Crushes Private Participation Effort

Basics

The condition of Delhi's water utility was among the worst nation-wide when it was being considered for privatization. Intermittent water supply, low coverage (especially amongst the poor), and limited collection of what were already the lowest tariffs among all metropolitan regions marked the state of the Delhi Jal Board (DJB) – the government agency responsible for the supply of potable water for most of Delhi.

Road to Private Participation

The government engaged a consulting firm, Pricewaterhouse Coopers (PwC) with financial support from the World Bank in order to identify a solution to its water woes. Upon PwC's recommendation, the government decided to engage private water companies in pilot management contracts for two of its 21 water zones for a five-year period. The private contractors were to receive fixed-fees plus performance based bonuses in return for their technical and managerial expertise in service provision while the assets, staff, revenues, and tariff regulation would remain with the DJB.

Unforeseen Impacts

A local citizen's group, Parivartan, whose mission was "fighting corruption and ensuring just, transparent and accountable governance" alleged that the project would lead to higher tariffs and accused the government of ignoring the needs of the poor neighborhoods (Lee and Singh, 2009). It further asserted that private management contracts were an abrogation of government's responsibility. In partnership with other NGOs and community groups, Parivartan mobilized public opposition against private involvement in water supply. In the face of such opposition, the Chief Minister of Delhi had to eventually abandon this move towards private participation.

Narmada Dams: Public Opposition Leads to Big Changes and Long Delays

“The Narmada Dams controversy provides apt demonstration of the ways that large physical infrastructure projects can generate strong contentions among their many stakeholders (Peterson, 2010).”

Basics

A set of large dams was first envisioned in 1947-48 to be built on several sections of the Narmada river in order to “supply irrigation and drinking water to the drier and drought-prone parts of Gujarat (later extended to equally dry Rajasthan) and to supply hydroelectric power to all three riparian states (Gujarat, Madhya Pradesh and Maharashtra) (Conca, 2005).” The main controversy surrounds the Sardar Sarovar Dam at Navagam in Gujarat, but also include several dams at various points in Madhya Pradesh and Maharashtra.

Unforeseen Impacts

Proposals to build large dams on the Narmada inspired political controversy from the very beginning. Starting in the mid-1980s, however, the controversy took upon transnational aspects. Peterson (2010) reports: “massive rallies of villagers from the 19 affected villages got enough publicity to come to the attention not only of the government but also of international aid groups including Oxfam and the World Bank.”

Grounds for Contention

- **Lack of Public Participation:** Inadequate public information and participation in project conceptualization, definition and design.
- **Inadequate Resettlement and Rehabilitation:** Displacement of indigenous populations (*adivasis*²¹) and inadequate land/cash compensation.

²¹ *Adivasis* are treated as a distinct category and provided with special legal protection under several Indian laws for maintenance of their traditional communal ways of life.

- **Foreign Involvement:** Opposition groups attracted people who believed that the involvement of multi-lateral international organizations in the projects was against their interest, since their funding comes from developed countries who are looking to pursue their own agenda whether or not it is in the interest of the host countries.
- **Miscellaneous:** Environmental impact (wildlife, forests, etc.), safety, technical reasons, and any other reason they could find.

Forums for Expression of Discontent

These include prominent social figures, voluntary associations, community action groups and NGOs. Prominent and vocal stakeholder groups included:

- **Narmada Bachao Andolan (NBA):** The NBA was formed in Maharashtra in 1989 and later spread to include 150 affiliates in other parts of India and organizations of supporters abroad. It organized village committees in the areas of Madhya Pradesh and Maharashtra that would be affected by Sardar Sarovar and other dams on the Narmada, registered its opposition to the Narmada Project on human rights and environmental grounds and staged a series of demonstrations, road blockades, and sit-ins against its continuation. Social activist Medha Patkar became the central figure in the Narmada Bachao Andolan. "The efforts of NBA to seek social and environmental justice for those most directly affected by the Sardar Sarover Dam construction feature prominently" in an award winning film: *A Narmada Diary* (1995).
- **Lokayan:** An organization founded by social scientists seeking to link researchers with activists, policy makers and ordinary citizens affected by development projects;
- **SETU:** A non-profit organization intended to build leadership within marginalized communities so they could carry out their own struggles;
- **Lok Adhikar Sangh:** A civic organization specializing in legal assistance to the poor;
- **Action Research in Community Health and Development (ARCH) and Vahini:** Engaged in providing social services in *adivasi* communities.

Each of these groups and many others took advantage of opportunities to mobilize the local public and transnational groups on issues that formed the foundations of their own objectives.

Changes Resulting from Opposition

- **Project Reconsideration:** The NBA succeeded at getting Prime Minister V.P. Singh to agree to reconsider the Narmada Project in March 1990 and got several other concessions from various governments.
- **Elimination of World Bank funding:** By 1989, campaigners were demanding that the World Bank, which was considering \$440 million in additional loans for the Sardar Sarovar Project -either force modification of or refuse to support the project. The World Bank faced strong pressures on both sides. There were several reasons to both approve the loans (to maintain relations with central and state governments and to further their development objectives) and refuse the loans (internal stakeholder opposition to the project, growing NGO influence, legitimate environmental and social concerns). Ultimately, the state and central governments decided to proceed without World Bank support.
- **Oustee compensation:** ARCH-Vahini battled with the Gujarat government about the inadequacies of the tribunal resettlement provisions. After several years of *oustee* organizing and demonstration, the Government of Gujarat in 1987 “offered a revised resettlement package that improved the terms and also included landless and encroachers among the beneficiaries (Peterson, 2010).”

In many ways, this landmark project epitomizes the force of the masses in India and the impact it can have on infrastructure and industrial projects. Many other projects, such as the cancelled Tata Nano plant in Singur, West Bengal and the Posco plant in Orissa, have faced similar stiff public opposition, largely surrounding issues concerning land acquisition.

Appendix 5: Cases of Stakeholder Involvement

Case Study: Community Solar Power Plant²²

Scatec Solar, a Norwegian company partnered with Development Alternatives (DA), an Indian non-profit working in the field of creating sustainable livelihoods, to pilot the Community Solar Power Plant (CSPP) project in two villages: Rampura and Gopalpura in Jhansi district, Uttar Pradesh. The project leveraged the participatory processes and utilizes the two levels of stakeholder governance discussed above to build power plants for electrifying villages.

The partnership created a Village Energy Committee (VEC) and entrusted it with responsibility for the construction, operation and maintenance of the power plant. The VEC includes members from all sectors of the village community. DA, the project facilitator, mobilized the villagers and trained the VEC so that ultimately, plant operations and maintenance would be locally owned. Scatec Solar funded the project and provided technical expertise.

Initially, DA, which had previous knowledge in the local environment, mobilized villagers and cleared their misconceptions regarding solar energy. It organized various workshops to build awareness about the environmental, economic and social benefits of solar power. It held meetings with local government agencies, district administration and the villagers to enable open dialogue on the topic. It even introduced an innovative game of 'saap sidhi' (snakes and ladders) to explain how taking certain positive measures, like the use of solar electricity, could help village life 'move up the ladder'.

The VEC in Rampura effectively executed the entire project and the village community extended their whole-hearted support.

Case Study: Ghana Urban Water Project

Ghana's urban water project utilized these two levels of stakeholder governance and was successful in introducing private sector participation to a situation where only 51% of the population had access to improved water supply and less than 40% to sanitation services. The strategy included elements such as solid opinion research to establish benchmarks for goal setting, a Public Education and Communication

²²²² Author, based on data from Kedia, S. (2011), "Community Solar Power Plant Project - Jhansi," *One World Foundation India*, <http://indiagovernance.gov.in/bestpractices.php?id=592>. Last checked June 12, 2011.

Program to spread awareness and understanding of policy goals, a Water Communication Committee to ensure coordination and consistency across water-related organizations, community rallies for Resident Associations, tailored workshops and presentations to media, Members of Parliament, NGOs, women groups, labor unions and religious interests; and production and dissemination of TV documentaries and radio talk shows.

“The major outcome was the emergence of a pro-PSP coalition made up of some resident associations, professional associations, and individual citizens.” The new culture of transparency and public oversight “helps to maintain confidence in the system and keeps up the pressure for better service (Calabrese, 2008).”

Figure 13: Institutional Set-up for PPPs in India

