Managing Political Risk Through Increased Local Participation: Innovations in Water Sector PSP from Tirupur, India

by

Michael D. Brown

B.A. Peace and Global Studies
Earlham College, 1992

SUBMITTED TO THE DEPARTMENT OF URBAN STUDIES AND PLANNING IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF

MASTER IN CITY PLANNING

AT THE

MASSACHUSETTS INSTITUTE OF TECHNOLOGY

FEBRUARY 2006

©2006 Michael D. Brown. All rights reserved.

The author hereby grants to MIT permission to reproduce and to distribute publicly paper and electronic copies of this thesis document in whole or in part.

Signature of Author: ____________________________

Department of Urban Studies and Planning
September 16, 2005

Certified by: ____________________________

Lawrence Susskind
Ford Professor of Urban and Environmental Planning
Thesis Supervisor

Accepted by: ____________________________

Langley Keyes
Ford Professor of City and Regional Planning
Chair, MCP Committee
Managing Political Risk Through Increased Local Participation: Innovations in Water Sector PSP from Tirupur, India

by

Michael D. Brown

Submitted to the Department of Urban Studies and Planning on September 16, 2005 in partial fulfillment of the requirements for the Degree of Master of City Planning

ABSTRACT

Using primary data from an innovative water project in Tirupur, India with findings from two well-documented water projects in Latin America, this thesis asks: How might greater equity participation and decision-making authority among a broad base of users insulate against key political risks that have beset water sector private sector participation (PSP) in the past?

I utilize concepts from the political risk literature, which have mainly been applied to the extractive and manufacturing industries, and extend this consideration to the water sector. I present preliminary findings, based on field research in India, that suggest increased local participation in water sector PSPs can mitigate against key political risks that have created problems elsewhere. These early findings challenge the conventional wisdom about water privatization and suggest a means to improve the design of future PSPs to reduce some of the risks and controversy that have characterized the sector.

Thesis Supervisor: Lawrence Susskind
Title: Ford Professor of Urban and Environmental Planning

Thesis Reader: Balakrishnan Rajagopal
Title: Ford International Assistant Professor of Law and Development
ACKNOWLEDGEMENTS

I wish to thank my thesis advisor Professor Lawrence Susskind for his critical feedback and help developing a framework for this paper. Thank you also to my thesis reader Professor Balakrishnan Rajagopal. I would also like to thank Professor Jennifer Davis for exposing me to the wonderful world of water and for her encouragement, even before I was a student at DUSP; Professor Karen Polenske, a great teacher and constant support; and Professor Alice Amsden and the Rodwin Fellowship which enabled me to pursue my research interests in India.

I am indebted to many people in India that graciously made time to be interviewed and in other ways facilitated this thesis. I wish to thank Dr. Jha of Sulbh International for hosting me in New Delhi and Sameer Vyas and Sujatha of the NTADCL offices in Tamil Nadu. Most critically, the numerous and invaluable conversations with Hari Sankaran of IL&FS made this study possible; I am grateful for his assistance and support.

I want to thank my two great roommates, Ella and Alex, always quick to laugh—even when I wasn’t joking. My academic partners in crime: Carli, Evan, and Jill, thank you. And thanks also to Ariel and the thesis Wednesday crew.

Thanks to my parents, Susan and Richard, and the rest of my family for their support, especially getting through the shock and awe of the first semester.

And, of course, Kelsey, your advice and support at every step made all the difference—especially towards the end when things got a little Conradian. Thanks for waiting.
# Table of Contents

Chapter I: Introduction ................................................................. 9  
Chapter II: Literature Review and Research Methodology .......... 13  
  Privatization .............................................................................. 13  
  Political Risk ............................................................................. 19  
  Research Methodology ............................................................... 29  
  Case Summaries ......................................................................... 30  
Chapter III: Case Analysis ........................................................... 37  
  Case Analyses and Political Risks in Context A: Cochabamba, Bolivia and Buenos Aires, Argentina ................................................................. 37  
    Public Opposition ....................................................................... 37  
    Limited Regulatory Capacity ...................................................... 41  
    Unstable Deal Structures .......................................................... 46  
    Summary .................................................................................. 51  
  Case Analysis and Political Risks in Context B: Tirupur, India .... 53  
    Tirupur Project Background ...................................................... 53  
    Tirupur Exporters’ Association (TEA) ........................................ 55  
    Infrastructure Leasing and Financial Services (IL&FS) .............. 57  
    Public Opposition ....................................................................... 59  
    Limited Regulatory Capacity ...................................................... 64  
    Unstable Deal Structures .......................................................... 65  
    Summary .................................................................................. 73  
Chapter IV: Conclusions and Recommendations ......................... 77  
  Key Findings ............................................................................... 79  
  Recommendations ....................................................................... 81  
References ...................................................................................... 91
Chapter I: Introduction

The Problem

The need for water and sanitation infrastructure in the developing world is staggering; an estimated one billion people lack access to adequate drinking water and two billion lack access to adequate sanitation (World Bank 2004; Izaguirre, Hahn et al. 2005; United Nations 2005). Annual infrastructure investment shortfalls are predicted to be in the hundreds of billions of US dollars and cash-strapped developing countries are simply unable to pay for these projects (World Bank 1997; Uitto and Biswas 2000; Kessides 2004). Compounding the problem are decades of poor maintenance (TWUWS 1996; World Bank 1997), low collection rates (World Bank 1997; Komives 1999; Yepes 1999), and competing budgetary priorities (Huber, Ruitenbeek et al. 1998; World Bank 2004), which have left many existing utilities in a downward service spiral and increasingly unable to meet the needs of growing populations (Uitto and Biswas 2000; Kessides 2004).

In response to these continuing problems, development banks began to tap multinational corporations in the 1980s; they aimed to fill these infrastructure gaps across a variety of sectors in developing countries (World Bank 1997). Between 1990 and 2003, there were over 260 projects with some degree of private sector participation (PSP) in the water sector in 53 low- and middle-income countries, with total investments approaching $40 billion (World Bank 2005). Through government contracts, typically in the form of 20- or 30-year leases or concession agreements, corporations contributed capital to build new facilities and/or maintain existing systems as well as take over fee collection and operations and maintenance (O&M). In exchange, private firms gained access to user fees
and possibly additional government subsidies; most firms earn profit margins approaching 20% in order to make the investment worthwhile (World Bank 1997; Guasch 2004).

Privatization of this type—generally with foreign capital and characterized by limited local ownership and decision-making authority—has been the dominant model for water privatization in the developing world for more than two decades (Pfefferman and Madarrassy 1989; World Bank 1997; Guasch 2004; Kessides 2004; World Bank 2004).\(^1\)

Unfortunately, the conventional privatization model described above—in which local decision-making authorities cede control to foreign investors—does not appear to be working. Indeed, the same companies that were strongly in support of privatization are now backing out of some of the deals they made and are looking outside of the developing world for new business (RWE 2005; Suez 2005; Veolia 2005; Wells and Royere 2005; World Bank 2005). The primary explanation for this seems to be that political risks associated with these projects have not been dealt with effectively. By political risks I mean 1) Public opposition to the loss of local control and to the intrusion of outside corporate interests (Moran 1998; Komives 1999), 2) Inability to use the regulatory powers of government to ensure fair, efficient and well operating systems (Gómez-Ibáñez 2003; Kessides 2004; Newcombe 2005), and, 3) Unstable deal structures where revenue projections were not realized and losses not anticipated (Kessides 2004; Wells and Royere 2005).

Literature in the field of business and political risk management have described local ownership of infrastructure projects to be a critical key to project success (Wells

\(^1\) Water privatization or water sector includes water and sanitation unless otherwise noted.
and Gleason 1995; Moran 1998; Powers 1998). The logic behind this is that by
distributing equity broadly among local users that have a degree of political and
economic influence reduces the risk of government (or public) intervention (Moran
1998). Such arrangements, it is argued, ensures substantial public representation through
a broad base of local ownership and eliminates at least some of the distrust that arises
when a foreign investor engages in a natural resource project (OECD 2003). In addition,
local partners can protect foreign investors from local opposition, identify local suppliers
and penetrate local markets, raise local finance, and arrange support in high places
(Moran 1998; Wells 1998).

The Question

The benefits of local ownership have been described in the political risk
literature—which are mainly directed at the energy, petroleum and other extractive
sectors (e.g. mining) as well as manufacturing—but we know little of its advantages in
the water sector. In the wake of the withdrawal of the private water firms, developing
country governments, unable to finance projects from public coffers, are left with few
alternative models from which to successfully develop their water sector infrastructure.
Using literature from the international political risk management field, case studies of
Cochabamba, Bolivia and Buenos Aires, Argentina, and primary data from a new water
project in Tirupur, India, this thesis asks: how might greater equity participation and
decision-making authority among a broad base of users insulate against some of the
political risks that have created problems previously for water sector PSPs? In particular,
the identified risks examined include 1) Public opposition, 2) Limited regulatory
capacity, and 3) Unstable deal structures. A recent case of increased local ownership and decision making in the Indian water sector will illustrate the thesis proposition.

Proposal

I use two case studies in the water and sanitation sector to show exactly how these political risks tend to play themselves out and why. I next use a case from India of an alternatively structured partnership that appears better prepared to avoid the political risks described in the literature and illustrated in the first two cases. I will demonstrate how greater local control of public-private partnerships in the water sector can insulate against some of the political risks that have caused problems elsewhere.

Based on the challenge to the conventional wisdom that the Tirupur represents, in the final section I extrapolate prescriptive advice for developing countries, civil society organizations and international financial institutions that may be considering engaging the private sector to assist in the development of water supply and sanitation infrastructure.
Beginning in the 1980s, foreign investment in infrastructure projects accelerated throughout the developing world (World Bank 1997; Guasch 2004; Kessides 2004; World Bank 2004; World Bank 2005). Among the principal forces behind the push for private sector participation (PSP) in infrastructure development are 1) Greater access to capital and management expertise (World Bank 1997; Kessides 2004; World Bank 2004; Izaguirre, Hahn et al. 2005); 2) The trend toward decentralization in government (desired by development banks to address perceived inefficiency and to combat corruption) (Smoke 2001); 3) Linking infrastructure development to poverty alleviation and economic growth (Kessides 1993; Baker 1999; Gómez-Ibáñez 2004; Kessides 2004); and 4) Increased capacity and sophistication of private providers and investors (World Bank 1997; Kessides 2004; World Bank 2004).

For most developing countries, private sector participation invariably means some level of involvement from a foreign investor since contractors with sufficient capital and capacity are typically not available in the domestic market. The comparatively high economic growth rates in developing economies in the 1990s marked a steep climb in infrastructure investment by foreign companies. Latin American, Caribbean, and, to a lesser extent, East Asian and Pacific countries saw the lion’s share of investment during this time. In addition, foreign direct investment (FDI) is an increasingly important source of funds for developing economies, and in 1997 was approximately five times larger than official development assistance, $256 billion compared with $50 billion (Moran 1998).
Two decades of increased investment in infrastructure peaked in the 1990s with nearly 2,500 projects across 132 developing countries and a total investment of $754 billion in that period (Izaguirre, Hahn et al. 2005).

Private investment in water and sanitation is far below that of other infrastructure sectors, accounting for just 5% of global private investment in infrastructure in developing and transitioning economies during 1990-2001. Private flows for water supply and sanitation averaged $4.6 billion a year in 1990-2001 and peaked at $9.3 billion in 1997 (all measured in 2001 dollars) (Kessides 2004).

The World Bank has been an enthusiastic supporter of PSP in the water sector; currently 40% of the institution’s projects in the sector involve the private sector. In the water sector, three firms dominate and win the vast majority of contracts worldwide. The firms are Veolia Environnement (formerly Vivendi) and Suez Environment both of France, and RWE Thames Water of Germany. The firms have large operations around the world with revenues that match the GDPs of many developing countries.²


Suez Environment’s 2003 revenues were approximately US $17 billion; the company has built more than 10,000 water treatment plants over the past 65 years. Its partner company Suez Energy, had revenues approaching US $35 billion that same year Suez. (2005). “Suez Corporate Website.” Retrieved August 1, 2005, from http://www.suez.com/indexUK.php.

RWE Thames Water, the third largest firm in the sector, is in 20 countries and serves more than 70 million customers; 2003 revenues were approximately US $6 billion.
Defining Privatization

The term “privatization” rarely means sale or transfer of ownership; instead, most privatizations are leases or service contracts. For a specified period, the private firm assumes the role and responsibility of what had been the domain of the public sector. However, the extent to which the private sector is engaged in a project can range as can the degree the public sector retains a role. Terms like private-sector-participation (PSP) and private-public-partnership (PPP) are used to describe projects with a wide range of public sector involvement. In the Tirupur case, for example, the term PSP is used because the institutional arrangement of the company managing the project, NTADCL, is a special entity with both public and private ownership and voice. The World Bank’s Private Participation in Infrastructure (PPI) database describes four main types of privatization: Management and Lease Contracts, Concessions, Greenfield Projects, and Divestitures.

Management and Lease Contracts. Management and lease contracts are arrangements in which a private entity takes over the management of a pre-existing state-owned enterprise for a specified duration of time. Ownership of the facility remains with the public sector, as do investment decisions and related financial responsibilities associated with developing the infrastructure. Typical examples include contracts to manage water supply or power generation facilities; these usually are entered into for management expertise and/or to reduce labor costs. An example of management and lease contracts in India is seen in Chennai water treatment plant’s operations (Satyanarayana 2003).
**Concessions.** Concessions, including operation and management (O&M) contracts with major private capital expenditures, are arrangements through which a private entity takes over the management of a new or pre-existing state-owned enterprise for a given period during which it also assumes significant investment risk. Concessions have been used to improve an existing highway, port, or water system, or build new facilities.

Concessions are by far the most common type of project in the sector, accounting for more than 80% of investments in the 1990s (Kessides 2004). Aguas del Tunari in Bolivia and Aguas Argentinas in Argentina are both examples of concession contracts.

**Greenfield Projects.** Greenfield projects are arrangements in which a private entity or a public-private joint venture builds and operates a new facility for the period specified in the project contract. The facility may return to the public sector at the end of the concession period; examples include new power plants or gas pipelines, which commonly are configured as a build-transfer-operate (BTO) or build-own-operate-transfer (BOOT) basis. The Tirupur, India case is a Greenfield BOOT project operated by the public-private joint venture company, NTADCL.

**Divestitures.** Divestitures are transactions in which a private entity buys an equity stake in a state-owned enterprise through an asset sale, public offering, or mass privatization program. Examples include water and rail in the UK. Divestitures in the water sector are less common, however, in large part because of the associated political risks. Talin Water and Wastewater Company in Estonia provides a recent divestiture example (Gómez-Ibáñez 2003; World Bank 2005).
The Rationale for Privatization in the Water Sector

The primary rationale for engaging the private sector in infrastructure development is access to capital and/or managerial and technical capacity. For much of the 20th century, infrastructure services were provided by state-owned utilities. In most countries, this has meant these services were under direct ministerial control. In the developing world, this model initially produced efficient and equitable results, particularly in the Cold War period. However, sustained under-investment, which resulted largely from under-pricing, has created a vicious cycle of decreasing service levels; poor system performance then leads to increasing unwillingness to pay for services among users (SIGUS 2003; Kessides 2004).

The current privatization trend began in the late 1970s in Chile and in the U.K. as part of a larger public governance reform movement that aims to bring private sector efficiency and choice to the traditionally publicly operated services sector. In the developing world, privatization has not come so much from pressure for choice as it has emerged from necessity. Cash-strapped governments that lack significant tax revenues or access to capital markets have looked to the private sector for sorely needed capital to upgrade often poorly maintained and overstrained infrastructure and utilities, such as water supply and sanitation, roads and highways, electricity generation and distribution, and telecommunications.

As a reform movement, privatization is linked closely to decentralization and efforts to reduce government bureaucracy and corruption as well as to attempts to make the public sector a more efficient deliverer of services. Assumptions about what these reforms bring to a country are vast—such as proximity of local actors leading to more
responsive services, increased accountability through social contract theory (e.g. tax collection), greater democracy, etc. However, comparatively little has been done about how to effectively implement these difficult projects and programs within this new framework (Tendler 1997).

Common Problems in Water Sector Privatization

The large growth rate of privatization seems to have been matched by a growing chorus of critics. Concerns are both ideological and pragmatic, informed by numerous well-documented project failures. Social justice frameworks argue that privatization negatively affects access to an essential natural resource, especially for the poor. The chief ideological argument is that access to drinking water is a basic human right and, therefore, should be available to all at an affordable price (United Nations 1992; Gleick 2004).

Critics of the free market justification for water privatization cite its negative distributional impacts on the poor (Birdsall and Nellis 2002), that water markets do not behave like typical commodity markets (Gutierrez 2003), and that most markets are not competitive when contracting out services, therefore forcing governments to select from among a fewer than optimal number of firms (Van Slyke 2003).

In recent years, significant pragmatic impediments to water privatization in developing countries have begun to adversely impact the profitability of these ventures. The impediments stem from the main political risks previously mentioned—public opposition, limited regulatory capacity, and unstable deal structures.
Political Risk

Political risk covers a broad range of risks classified as non-commercial. Historically, non-commercial risks mainly pertained to expropriation of assets, as occurred in Cuba once the Castro regime came to power and nationalized all foreign-owned companies. While this was more common in the middle of the last century, there have been recent cases as well. In the early 1990s the Thai government expropriated what was going to be a private toll-road in Bangkok after public outrage over the high cost tolls (Wells and Gleason 1995; Gómez-Ibáñez 1997). Today, political risks characterize a broader set of uncertainties, such as government instability, i.e. a coup or insurrection, or currency inconvertibility, which is a change in expected revenues resulting from a shift in local currency policy, i.e. exchange rates (Wells and Gleason 1995; Baker 1999; Gómez-Ibáñez 2003).³

Privatization efforts in developing countries have largely reflected the economies of the investor countries that tended to be reasonably stable and homogenous. Correspondingly, contracts and projects reflected this and did not offer significant

³ The World Bank’s MIGA insures investors for the following four types of political risk: 1) Currency Transfer Restriction: These restrictions prevent lenders from converting local currency into foreign exchange and/or transferring the proceeds abroad. 2) Expropriation: This is the act of a host government, which reduces or eliminates ownership of, control over, or rights to the insured investment and can be either a direct or an indirect act. 3) War and Civil Disturbance: This is an act that results in damage to, or destruction or disappearance of, tangible assets or interference with the ability of the foreign enterprise to operate and can include politically motivated acts of sabotage or terrorism. 4) Breach of Contract: This refers to an act of a host government involved in a contract with the foreign investor, provided the investor obtains an arbitration award or judicial sentence for damages and is unable to enforce the award after a specified period or is unable to obtain the award sentence Baker, J. C. (1999). Foreign direct investment in less developed countries: the role of ICSID and MIGA. Newport, CT, Quorum Books.


flexibility, and were blueprinted often from one country to the next. From an investor’s standpoint, stability is good because it lowers risk and therefore decreases the cost of capital. However, stability and homogeneity are not characteristics of a typical developing country. Contracts often last 30 years and in these cases arrangements should be adaptable, and ought to anticipate, for example, that there will be currency problems as well as political and social trends that may place the contract in public disfavor. The lack of flexibility and adequate outlets for disagreements has been a main cause for the surge in arbitrations, which often end acrimoniously (Hirsch 1993; Wells and Garcia-Cuellar 2005; Wells and Royere 2005).

Public Opposition

A critical and often under-addressed issue is public opposition (Gómez-Ibáñez 2004). When dealing with critical services such as water supply, and introducing foreign ownership, project sponsors needs to be pragmatic (Tagliabue 2002). In January 2005, the Bolivian government cancelled the Aguas del Illimani water supply and sanitation contract in La Paz and El Alto in response to public pressure over what were deemed excessive connection charges (Forero 2005). Later, in March 2005, Bolivian president Carlos Mesa offered his resignation in response to protests arising from oil and gas price increases (Reuters 2005). It is unclear whether investors realize what is at stake for these countries, and hence for their politicians, when they embark on privatizations; this type of

---

4 The cancellation of Aguas del Illimani was especially significant for privatization watchers because of the project’s unique pro-poor structure. The water concession for La Paz – El Alto was awarded on coverage rates and not on tariffs or subsidy rates, which is more common. For more information, see Komives, K. (1999). "Designing Pro-Poor Water and Sewer Concessions: Early Lessons from Bolivia."
economic restructuring is often unpopular and can create significant instability.\(^5\) Indeed, privatization can lead to sudden rate increases that can create significant risks, especially if there is fear that the new prices may not be affordable; this is especially true in sensitive, i.e. critical for survival, sectors such as water supply.

Throughout Latin America, for example, privatization is perceived negatively. Of those people surveyed in 17 countries in 2001, 63% disagreed or strongly disagreed with the statement “The privatization of state companies has been beneficial…” Furthermore, this is an increase from previous surveys, which showed 57% disagreement in 2000 and 43% disagreement in 1998 when asked the same question (The Economist 2001).

In response to water privatization, public protests have occurred throughout the world. For example, in Bolivia protestors rallied against projects in Cochabamba (Komives 1999; Nickson and Vargas 2002) and La Paz (Komives 1999; Forero 2005). In 1997, protests broke out in several provinces across South Africa in reaction to privatization efforts (Bond 1997). In the Philippines, protests against water privatization have occurred throughout the country and most notably over two Manila water privatization projects (Public Citizen 2005).

### Limited Regulatory Capacity

Network infrastructure services such as telephone, water, and power are so-called natural monopolies. Economies of scale and high barriers to entry make the most efficient production and delivery of the service in the form of a monopoly. Redundant sets of water and sewage pipes, or power or telephone lines, would clearly not be an efficient use

\(^5\) There is an abundant literature on IMF loan conditions, or so-called structural adjustment programs, and their impact on democracy; it is part of a larger ‘globalization’ literature. See, e.g. Ha-Joon Chang, *Kicking away the Ladder: Development Strategy in Historical Perspective* (2002); Joseph E. Stiglitz, *Globalization and its Discontents* (2003); Dani Rodrik, *Has Globalization Gone Too Far?* (1997).
of resources and ultimately would result in poorer service, i.e. higher charges, for consumers. In cases of natural monopolies, governments have typically done one of two things, provide the service directly, or permit a private firm to deliver the service under the condition that its monopoly power be regulated.

When governments provide the service, as has mostly been the case in recent history, state-owned utilities deliver the infrastructure service. This arrangement is typical of many water companies in the United States, including the Massachusetts Water Resources Authority (MWRA), which serves Boston and its outskirts, and the San Francisco Public Utilities Commission (SFPUC), which serves San Francisco as well as several surrounding communities. The other option, more common among US power companies, such as NSTAR in Boston and PG&E in San Francisco, is to permit a private firm to provide the service under the condition they agree to be regulated. Essentially, this is a type of bargain entered into between the government and the provider: the firm is guarantied a monopoly position in a market in exchange for governmental power, usually through some type of regulatory body, to set standards in a host of areas, such as pricing, quality and service expansion.

The inclusion of the private sector—especially foreign firms—in what had been historically state-administered natural monopolies has necessitated rapid development of regulatory bodies. However, this has proved challenging when capacity to regulate is not available locally, as is often the case for countries’ initial involvements in privatization. As a result, some countries have privatized out of sequence, granting concessions and contracts prior to the establishment of a regulatory body (Zhang, Parker et al. 2004). In these cases, service quality and coverage issues typically are specified in the contracts.
The lack of a regulatory environment also creates a problem for users; without independent oversight they may not have an effective channel for expressing grievances (Finnegan 2002).

An overarching problem is the haste in which so many privatizations occur. This might seem odd, given that the projects can be years in the making (Sankaran 2005), but many important steps are rushed, and implemented out of sequence. This can be especially problematic considering these are often environments with little or no previous privatization experience (Chang 2002). A common consequence of hurried privatization with poor project sequencing is an underdeveloped regulatory environment (Kessides 2004), which may lead to a host of problems, not the least of which is generating regulatory risk: that is, risk arising from an uncertain regulatory environment. When a private operator cannot project level of service requirements or tariffs into the future, the project accrues additional risk. The risk then is transferred back to the host country in the form of a risk premium charged by lenders—akin to a credit agency downgrade—thus increasing the project’s cost. The proceedings from a 2003 World Bank / OECD conference addressing the problems with PSP describe the problems of limited regulatory capacity:

“Private investors attribute the failure of many PSP projects to absent or unclear regulations or to over-regulation when the government wants to use businesses to achieve social goals. They also complain about the absence of stable and transparent contract administration, and want a clearer statement from IFIs [International Financial Institutions] and donors about their readiness to mitigate attendant risks.” (World Bank and OECD 2003).

Limited regulatory capacity can also be expressed in the form of excessive government interference. The older a project and the more it can operate without foreign
assistance the greater the likelihood of government expropriation or interference.

Raymond Vernon describes this risk in his “obsolescing bargain model” (Vernon 1971). The model describes the increasing risk associated with most international infrastructure investments. Initially, the investor is in a more powerful, less risky position. The host country needs the capital and expertise that the investor can provide. However, over time, if the investor does not have a continued, integral role in the delivery of a good or service, the power, or bargaining position, begins to favor the host country. As power shifts from the investor to the host country, the government may demand more money from the investor—such conditions range from arbitrary increases in royalties to expropriation of assets (Powers 1998).

Infrastructure services, like water supply or power generation, are especially vulnerable to the obsolescing bargain since once the asset is constructed little else is needed from the investor. This may contrast with a manufacturing facility where, for example, the investor could also be responsible for sales and marketing, or act as point of contact in the export market (Wells and Gleason 1995; Powers 1998).

Unstable Deal Structures

Infrastructure is financed in two principal ways, through either urban finance or project finance. Urban finance, a subset of public finance, relies on publicly available money, such as bonds, taxes and service fees to finance infrastructure, is traditionally how public projects are financed (Satyanarayana 2003). However, with a few notable exceptions, such as Ahmedabad in India, municipal bonds are not accessible to sub-national governments, because of either restrictive fiscal policy or insufficient
creditworthiness. Given competing demands for healthcare, education, and military, this makes large-scale investments in infrastructure extremely difficult. In developing economies, a source of financing may be development bank loans or grants. In the case of loans, it will be up to policy makers and government officials to determine how to repay the loans if, in fact, the project’s user fees are not sufficient.

Related to the topics of finance and water supply is the notion of full-cost recovery, a common theme in the development literature (World Bank 1997; World Bank 2004). Full-cost recovery in water and sanitation, unheard of in the US (although Boston gets close), involves charging users the real cost of providing water supply and sanitation services. In semi-arid places like in the US southwest, Los Angeles and Phoenix, for example, users pay a fraction of the actual cost of water. Although the World Bank is moving away from full-cost recovery in the water sector (Lederman 2004), it is still dominant in the professional literature (World Bank 1997; Lederman 2004; World Bank 2004). Full cost recovery in water is exceedingly challenging for a variety of reasons, chief among them is that many water systems were not designed appropriately given users’ income levels or local preferences and conditions.

In addition to the three main risks, public opposition, limited regulatory capacity, and unstable deal structures, I have also identified the risks associated with too few capable firms in competitive bidding, or the ‘sole bidder problem.’ With all the promise of PSP, efficiency and quality improvements may be elusive to developing economies. For private sector participation to provide the benefits of cost savings and improved service, there needs to be competition in the local marketplace (Van Slyke 2003).

---

6 USAID’s FIRE(D) Project and IL&FS were instrumental to the Ahmedabad bond offering as they were to the Tirupur, India water supply project.
Bourguignon 2004). For concessions, this means a critical mass of capable firms should be present in the market to participate in competitive bidding processes. While belief in the possibility of competition among firms is strong (World Bank 2004), cases exist of insufficient competition among suppliers of infrastructure services. An under-subscribed bidding process is not uncommon in the developing world, primarily due to a lack of local capacity to participate in the auction combined with industry sectors often dominated by a handful of multinational corporations. This lack of competition can create an environment where investors gain an asymmetric degree of power in relation to the host country (Finnegan 2002; OECD 2004).

Consequences of Problems

Private sector participation is widely held as the best option to address the problem of inadequate infrastructure in developing countries. Yet, PSP in the water sector of developing economies has proved wrought with challenges, even in the best of circumstances; contract renegotiation rates exceed 70% for water projects, and increasing numbers of investor-host country disputes are ending acrimoniously in arbitration tribunals (Wells and Royere 2005).

Among the largest three water firms, there is a growing perception that Latin America—and the developing world generally—is no longer an attractive place to do business given the combination of political risks and poor economic performance of the region (Lee 2004; Forero 2005; Wells and Royere 2005). Hall et al (2005) describe a retreat by the private sector in water infrastructure development in developing countries, using the examples of announcements made by Suez, which will reduce its investment in
the developing world by a third, and RWE Thames announcing they will no longer participate in ventures that result from loan conditionalities.

Bechtel, the leading American firm in the sector, is leaving the water business as an investor altogether (Berger 2005) and many firms are looking to richer, less volatile markets in North America, Europe and Asia (China). In a recent New York Times interview, César Gaviria, former secretary general of the Organization of American States summed up the problem: "In the last decade, non-economic factors have become even more important in affecting investments...Political risks have grown to a great degree," (Gaviria 2005). In the wake of the firms’ withdrawal, developing country governments, unable to finance projects from public funds, are left with few alternative models in the sector from which to successfully develop their infrastructure.

Local Ownership

Other sectors, such as power generation and natural resource extraction, offer examples of alternative privatization models in which investors and host countries have creatively experimented with varying degrees of equity participation to increase the likelihood for project success. These projects exploit the latest thinking on political risk management, which focuses on reducing non-commercial project risks. The impetus for this work has come from necessity. For decades, projects outside the water supply sector have typically been privately financed using a project finance model and without government or development bank guaranties. This has meant investors cannot seek financial recourse from the host government in the event of a project failure, which
subsequently places great importance on the merits of the investment, including an
accurate assessment of political risks and effective responses to them.⁷

Benefits of Local Ownership

A key strategy to reduce risks for foreign investors in infrastructure projects is to
enlist broad local ownership of influential players (Moran 1998; Powers 1998). The logic
behind this approach is that by distributing equity broadly among influential local actors,
the risk of harmful government (or public) intervention is reduced. Put another way, it
aligns the incentives of key stakeholders with the success of the project. A further
clarification suggests that a joint venture company with a foreign investor and a private
local firm may not be enough. The agreement should ideally be between the foreign
investor and at least some form of local government or parastatal institution (Moran
1998). In this way, the investment agreement ensures broad ownership since the
government would ostensibly represent the public at large and eliminate at least some of
the distrust that arises when a foreign investor engages in natural resource project (OECD
2003).

The critical nature of the water sector is of special sensitivity to users. Foreign
investors, then, are particularly vulnerable to criticism and even expropriation should the
project fall out of favor with a host country’s population (Moran 1998).

Possible Disadvantages to Local Ownership

There are also several distinct disadvantages to working with local partners. For
all of the advantage a local partner can provide, especially if special arrangements are
made with governments without transparency or competitive bidding, the project can be

⁷ The project finance model in infrastructure uses revenues generated from the project to repay investors. Political risk insurance is another option available to private investors; however, it does raise project costs.
tarnished with accusations of corruption should the government’s attitude towards the project, and its local participants, change or if the government should change (Shanks 1998). On this point, Louis T. Wells writes “Today’s well-connected insider can easily become tomorrow’s embarrassment if the government administration changes.” (Wells 1998).

Research Methodology

Sampling of Cases

The research for this thesis is primarily case-based. Two cases, one in Argentina and one in Bolivia, are conventional privatizations, typical of what the World Bank has promoted throughout the world over the past two decades. The cases were chosen because they are large (both serve over 500,000 people), they are well documented and marred by public controversy, and they both have gone to the World Bank affiliated ICSID for dispute arbitration. The third case, in India, is the alternative model. It was chosen because of its unique structure; in particular, a high number of users have equity stakes in the project, as does the state government, making it a true public-private partnership. The case was also selected because it is the first water privatization in India, for its comparably large size (the project serves approximately 300,000 people and nearly 1,000 industrial users), and for its potential to influence other projects.

For the two Latin American cases, I relied heavily on available academic and professional literature as well as newspaper accounts. Interviews also were used for these cases. For the India case, I relied heavily on interviews I conducted in India in 2004 and 2005. The interviews were vital as little is known currently about the NTADCL project and documentation, aside from local newspaper accounts and a handful of descriptive professional reports.
Sampling of Interviewees

Interviewees were chosen for their knowledge of private sector participation in the water sector, in particular as they applied to the three case studies. Additionally, interviewees were chosen for their accessibility. For a list of interviewees, please see Appendix A.

Interview Questions. Interviewees were asked semi-structured and covered local participation in water sector PSP, trends in the water sector, and political risk in the water sector. For sample questions, please see the Appendix B.

Case Summaries

Case 1: Cochabamba, Bolivia

Cochabamba is Bolivia’s third largest city with six hundred thousand people. Before Cochabamba attempted to privatize its water and sanitation infrastructure in 1999, there was a clear need for improvements to the existing infrastructure. More than 40% of the residents lacked access to adequate water and sanitation services. In the years leading up to the contract, revenues from the city’s state-owned water utility, Servicio Municipal de Agua Potable y Alcantarillado (SEMAPA), were not covering the costs of operating the system. Without alternative sources of funds, this forced the utility into a period of progressively declining service. Many of those without utility connections bought water from private tanker trucks, tanqueros, paying as much as five times more than those receiving piped water from SEMAPA ($3 compared to $0.60 per 1000 liters) (Bechtel 2005). This tended to favor the wealthy because the very poor often lived in unregulated housing or in the city’s outskirts, both of which rarely had piped water connections.

In 1999, in fulfillment of an International Monetary Fund (IMF) loan condition to sell off state-owned assets, the government leased the city’s state-owned water company,
SEMAPA, to Aguas del Tunari, an international consortium. The Aguas del Tunari consortium was comprised almost entirely of foreign investors. International Water, which was owned by Bechtel Enterprises, an affiliate of US-based Bechtel Corporation, had a 55% stake in Aguas del Tunari. Other investors include Abengo of Spain, with a 25% stake, ICE, a major Bolivian contractor, with a 5% stake, and three other Bolivian companies, each with equity stakes of 5%. The 40-year, $2.5 billion contract gave the consortium the city’s water system and exclusive rights to all the district’s water, including underground aquifers and surface water, such as lakes, streams, and existing wells. In exchange, the contract would expand the existing poor service coverage and upgrade the infrastructure.

The Cochabamba contract began in November 1, 1999 and price increases took effect January 1, 2000. A group of well-organized protesters, consisting mostly of indigenous farmers, began protesting in mid-January, organized by a newly formed group called la Coordinadora de Defensa del Agua y de la Vida (The Coalition for the Defense of Water and Life, popularly known as La Coordinadora). By April 2000, the protests extended outside of Cochabamba to La Paz and other parts of the country. The Bolivian military was dispatched to squash the crowds, which led to the deaths of several protestors, including a teenage boy in Cochabamba; this only served to enflamed the protestors. By the end of April, the government cancelled the contract and La Coordinadora took over its management.

Case 2: Buenos Aires, Argentina

Buenos Aires is Argentina’s capital and largest city with a population of more than 11 million people. In 1993, Buenos Aires entered into a 30-year water supply and
sanitation concession with Aguas Argentinas, a consortium led by Suez of France (formerly Générale des Eaux). Prior to the Aguas Argentinas contract, Buenos Aires’ public water utility, Obres Sanitarias de la Nacion (OSN), was characterized by decades of under investment and poor performance; water stoppages and low pressure were common and service coverage areas were limited. The period before the contract saw a massive influx of people into Buenos Aires, tripling its population and putting tremendous strain on its water and sewerage infrastructure.

The Aguas Argentinas consortium represented a diverse range of partners, including Suez, with a 25.3% stake in the consortium, Sociedad General Aguas de Barcelona of Spain with a 12.6% stake, an 8% stake by Veolia of France (then called Vivendi), and a 4.5% stake by Anglian Water of the UK. The remaining 49.6% was owned by Argentines, including 20.7% going to the business group Sociedad Comercial del Plata and 10% going to an employee stock ownership program.

The 30-year contract gave Aguas Argentinas control of maintenance and operations (M&O), and billing for the water and sanitation system. In return, Aguas Argentinas committed to invest $1 billion in system expansion in the first five years of operation. The consortium did not pay the government for the right to the concession. Instead, Aguas Argentinas agreed to reduce water rates for consumers, expand coverage areas, and offered $1 billion in investment. This was an unusual arrangement; it is more typical for the contract to include a payment to the government for the right to operate the system and collect user fees.

Case 3: Tirupur, India
A case study of the New Tirupur Area Development Corporation Limited (NTADCL) provides an analysis of a recent water supply and sanitation project in Tirupur, India. The project began operations in April 2005 and offers an alternative to the failed PSP model used throughout the world for over two decades, including in the Bolivia and Argentina cases. While it is too early to assess the project's outcome, it has an innovative partnership structure between government, local business, and investors that enables it to address some of the weaknesses of previous projects. Regardless of the final evaluation, which may be many years in the future (the concession is for 30 years), the project is so unlike the bulk of previous water privatizations, and structured with such sophistication by investment bankers with extensive local, national and international reach, rather than aid agencies or multinationals that tend to transfer project blueprints from one city to the next, that the project marks a genuine departure and may offer implications for the sector, both in India and throughout the developing world.

The Tirupur case is a story of a small industrial city in southern India that has creatively engaged the private sector to develop badly needed infrastructure. Several favorable factors, including the leadership of highly entrepreneurial and empowered individuals, coalesced to make this project possible. Other key factors include the liberalization of India’s economy and subsequent creation of Infrastructure Leasing and Financial Services (IL&FS) in 1988 to improve the country’s infrastructure, the central government’s desire to expand exports, and the local industry association’s far-reaching influence. Even still, this project was over ten years in the making.8

---

8 While India has recently gained notoriety for call centers and software, for the vast majority of Indians vocational options are limited to agriculture and some manufacturing. To diversify its economy, as well bring the estimated one-quarter of Indians out from below the poverty line, the Government of India is
In the decade 1985 to 1995, Tirupur became the largest exporter of knitwear and hosiery in India, accounting for more than 75% of exports in this category. Today, Tirupur’s approximately 700 firms export approximately $1.5 billion per year—a considerably high level of production for a city with a population of 350,000 (NTADCL 2001).  

Tirupur’s location in western Tamil Nadu, half a day’s travel to the nearest port cities of Chennai (formerly Madras) and Tuticorin, makes it an unlikely candidate for major production and exporting of the water-intensive cotton processing and dying industry. Tirupur’s economic history is one of small-scale cotton farming gradually evolving into small- and medium-sized, and often family-run, textile processing firms that sold first within India and then to export markets. It was not until government’s economic reforms in the mid 1980s that the industry saw major expansion; from 1985 to 1995, the industry grew by a factor of 200 to 35 billion rupees, or $US 806 million (FIRE(D) 1999).  

In Tirupur, firms are rarely vertically integrated and the production processes are typically spread among many firms, each one handling a different step in the manufacturing process, such as cotton production, weaving, dying, fabrication, and exporting. India’s comparative advantage in this sector, at least in relation to China—its seeking to develop its non-technical manufacturing sectors (40% of Indians are illiterate, 60% live in the countryside), source: Mehta, S. (2005). A Passage From India. New York Times. New York.


10 Unless otherwise noted, throughout this thesis, the Indian rupee / US dollar exchange rate is based on Rs. 43.43 to US $1 as taken from XE.com on July 24, 2005.
main competitor, which is still significantly more mechanized and larger than India’s textile sector—is its ability to run small, highly customized jobs. The economies of scale work against China to compete in this area (Sakthivel 2005). Adequate water supply has increasingly become an impediment since the textile industry entered the global marketplace.

In the next section, I seek to explore how increased local participation water sector PSP mitigates three critical types of political risk, public opposition, limited regulatory capacity, and unstable deal structures. I will do this by first analyzing two cases in Latin America to show how these risks play out in environments lacking adequate local participation and then a case in India that seems to have addressed these problems through an abundant local equity and decision-making participation.
Chapter III: Case Analysis

Case Analyses and Political Risks in Context A: Cochabamba, Bolivia and Buenos Aires, Argentina

Public Opposition

In some of the best-documented cases of private sector participation (PSP) in the water sector of developing countries, the loss of control over infrastructure planning—for both local government and local users—has led to a rise in public opposition to privatization efforts (Wells and Gleason 1995; Moran 1998; Komives 1999; Finnegan 2002; Nickson and Vargas 2002; Wells and Royere 2005; Finnegan April 8, 2002). Public opposition is fueled mainly by a real or perceived efficiency vs. equity conflict within privatization as well as the role of the state and/or local government. The impact of this type of opposition on a project’s viability can be considerable. Public actors and civil society can mobilize highly effective protests even when confronting formidable players, such as national governments, international development banks and multinational corporations (Hall, Lobina et al. 2005; New York Times 2005)

Public consultation and public education are important strategies for developing public support (Sherwill and Rogers 2001; OECD 2003; Smith 2003; Hall, Lobina et al. 2005). Public consultation can enable project planners to learn the needs and priorities of consumers, industry, and other stakeholders. Such knowledge also helps to set appropriate tariffs and make appropriate project design and technology choices (Hall and Lobina, 2005). Methods of gaining public input include formal hearings, consultative or advisory committees, and a range of less formal approaches (Smith 2003). Public education, whether through media campaigns, public meetings, or other forms, is also
critical to establishing public support. Without such efforts, the potential for misinformation and rumors to ignite resistance for no apparent cause increases (Smith 2003; Kessides 2004; Berger 2005).

Cochabamba, Bolivia

In Cochabamba, Bolivia, public opposition to the Aguas del Tunari concession was sufficiently strong to end the project after only six months of implementation. The case is perhaps the best known of all privatization failures and is a prime example of the potential of public opposition to derail completely a project. Despite the Cochabamba case’s notoriety—in large part because of the widely read New Yorker essay “Leasing the Rain” and a PBS Frontline World documentary by the same name—the project lasted just six months. The concession operated between November 1999 and April 2000, and ended when the government, in response to intense and protracted public opposition, took over the water system from the private consortium, Aguas del Tunari, and granted control of it to La Coordinadora, the group leading the protests (Finnegan 2002).

The project suffered from a multitude of failings having to do with the lack of widespread local participation in the project that increased the risk for public opposition. With equity involvement by only the local elite, the Aguas del Tunari partnership can be described as highly insulated from the needs and concerns of the general public, a feature common to such projects (Miller 1999).

Aguas del Tunari was a consortium with four Bolivian shareholders, each with 5% of the company; the balance of the company was foreign owned. The elitist makeup of the partnership reflected the way the projected was developed and implemented. Most notably, its failure to hold public meetings to gather input about adequate rate setting, and
additionally, to provide public education about the effects of the project on users in the service are as well as non-users in the surrounding areas. This last point, according to Jeff Berger of Bechtel, was exploited by protest organizers who sparked fears among area villagers that their water supply would be imperiled even though it was outside of the Aguas del Tunari service area (Berger 2005).

These lapses in building public support may have also been the result of a rushed project timeline. Projects of this type can easily take ten years to develop (Sankaran 2005) but in the case of Bolivia, one year after the IMF required the sell-off of SEMAPA, Aguas del Tunari was awarded the Cochabamba concession in September 1999 and began operations just two months later in November (Sadiq 2002; Bechtel 2005).

Although originally conceived as part of the project plan, public meetings were delayed and then cancelled altogether to meet the accelerated hand-over schedule (Nickson and Vargas 2002). The lack of information gathering from the public, as well as little public education about the project, had important consequences. Without public consultation and support, water tariffs were raised one month after the takeover by the concessionaire without any effort for learning the feasibility of implementing such rate hikes; in some cases, increases were over 100% despite assurances from Aguas del Tunari that water rates would increase only by 35% (Sadiq 2002). For the largely impoverished population in Cochabamba, this made water and sanitation services prohibitively expensive (Finnegan 2002).

The lack of public education about the tariff increases and other project plans led to widespread rumors and generated momentum for public opposition. At first peaceful, the protestors aimed to get public meetings with the project planners about the rate
increases. The protesters were refused and the government sent troops to breakup the demonstrations, resulting in a number of deaths (Sadiq 2002). The government’s actions inflamed the public and protests erupted in cities outside of Cochabamba. Without transparency or effective education on the part of Aguas del Tunari and project planners, villagers from outside the Cochabamba coverage area joined the protest, fearing their access to water would soon be restricted and commodified (up to that time they obtained water though streams and private wells) (Finnegan 2002; Berger 2005).

The potential for misinformation and rumors are only compounded when efforts to change existing structures are made by foreign operators (Moran 1998). In Latin America, suspicion of foreign ownership of infrastructure and natural resources already looms large, perhaps especially owing to the colonial history of the region. This sentiment is especially widespread among indigenous populations in Bolivia and in extractive sectors, i.e. mining and natural gas, but is not altogether different than the recent US rejection of the Chinese oil company Cnooc’s attempt to buy Unocal (Lee 2004; Barboza 2005).

In Cochabamba, Aguas del Tunari, the foreign owned consortium played a highly visible role in the project. Responsible for retail delivery of water, the company collected money directly from the public (as opposed to, for example, supplying water wholesale to the municipality in bulk). The visible foreign ownership of the project led protest organizers to associate the project with the globalization efforts happening throughout the world. Linking the demonstrations against Aguas del Tunari to the larger anti-globalization movement in the country fueled the protests and was especially supported
by the country’s long-disenfranchised indigenous populations (Finnegan 2002; Nickson and Vargas 2002).

By April 2000, after several deaths, a broad boycott of Aguas del Tunari, and continued strikes and protests throughout Bolivia, the government intervened and cancelled the contract. In the aftermath, Bechtel, the largest foreign equity holder in Aguas del Tunari brought an arbitration suit against the Bolivian government for $25 million to the World Bank affiliated International Center for Settlement of Investment Disputes (ICSID).

Limited Regulatory Capacity

The rationale for regulation among economists and policymakers is to overcome the problems associated with so-called market failures. Market failures are cases in a free market economy when resources are not allocated efficiently. In the case of infrastructure, regulatory oversight is typically justified by the following market failures: 1) Abuse of monopoly power, with implications for the control of prices and related quality and quantity. 2) Negative externalities, when the market does not take into account an activity’s full costs, with implications for environmental and social impacts; such as technology choices, project siting, and quality standards; and 3) Imperfect information about the nature and/or quality of services being provided and other standards to protect consumers (Smith 2003; The Economist 2005).

Regulatory bodies have to reconcile consumer interests with private sector objectives. Such a function requires independence from both government and private sector interests (Nickson and Vargas 2002). However, insulating regulatory bodies from political pressure remains a challenge—especially with large-scale infrastructure projects.
A host of regulatory problems may exist in countries with little or no experience with private-sector participation in infrastructure. Among the most common challenges are regulatory capture, which is a regulator that lacks independence and is “captured” by the interests it is intended to regulate, and regulatory risk, which influences an investor and is the added risk that comes from an unpredictable or non-existing regulatory body.11

In most cases of PSP in the developing world, once contracts have been signed and private investors have assumed what traditionally have been governmental functions, regulatory agencies have had great difficulty imposing controls on how these projects go forward. This is not what was intended, but in practical terms, once control has been ceded to private interests, regulatory functions are difficult to pursue in environments without a culture of regulation (Nickson and Vargas 2002) as well as the legal and administrative commitment and capacity for enforcement, potentially in the face of challenges from industry, government, or the general public (Nickson and Vargas 2002; Gómez-Ibáñez 2003; Kessides 2004).

The cases of Cochabamba and Buenos Aires each demonstrate instances of regulatory “capture” and weak regulatory bodies. In Cochabamba, Superintendencia Sectorial de Saneamiento Basico (SSSB) was the regulatory body responsible for monitoring tariffs and water service delivery. SSSB’s authority over tariff setting was weakened under pressure by government. In the case of Argentina, the regulatory body for the Aguas Argentinas project, Ente Tripartito de Obras y Servicios Sanitarios

---

11 A recent example of the dangers of regulatory risk occurred is Brazil’s privatization of power distribution companies (DISCOS). The DISCOS entered to agreements with the government before a regulatory regime was installed. Without a regulatory agency in place, the DISCOS signed contracts that specified in detail the terms under which power could be purchased for and its selling price. When the Brazilian government rationed power due low water levels at hydroelectric facilities, the DISCOS could not charge more to make up for the gap between expected and real revenues. Although the Brazilian government eventually compensated the companies, the insecurity associated with the absence of an established and predictable regulatory system can increased perceived risk.
(ETOSS), was weak in the face of pressures by the concessionaire. Both instances of government and corporate pressures led to unstable rate setting tendencies, distrust among the public, and distrust among partners in the project.

_Cochabamba, Bolivia_

Regulatory powers over water distribution and rate setting in Cochabamba was weak before the Aguas del Tunari privatization. The government controlled utility responsible for water delivery before privatization was SEMAPA. Under this management, SSSB and SEMAPA experienced continuous tension over the question of whether to raise tariffs to cover maintenance costs. As a government entity, SEMAPA was beholden to popular demands for low cost water. SSSB was unable to exert independence from political pressure. Despite problems of declining service, SSSB was unable to compel SEMAPA to raise tariffs. Ultimately, the quality of water deteriorated, and consumers became even increasingly unwilling to pay tariffs, leading to decreasing levels of service.

The water system’s decline under SEMAPA predated the privatization of water delivery under the Aguas del Tunari contract. Even under this new management structure, the SSSB was revealed to have minimal influence. Indeed, SSSB was kept out of the privatization process (Nickson and Vargas 2002).

The SSSB had little power to enforce its rulings during the Aguas del Tunari contract. Tariff increases, and subsequent demands by government for rate decreases, created a highly unstable environment. The concessionaire increased tariffs to unexpected highs of 100% to 300%, despite initial claims that the arrangement would bring up fees by only 35%. Such increases united local villagers and businesses in opposition to the
project. Bypassing the SSSB, the government lowered the tariff increases in an attempt to quell the protesters.

In the case of Cochabamba, the regulatory body was captured by government interests and had little teeth to enforce rulings. Under this structure, the regulatory body was in no position to save the corporate interests from the consequences of their mispricing, and at the same time, left corporate interests unprotected and vulnerable to government interference.

*Buenos Aires, Argentina*

Like Aguas del Tunari in the Cochabamba case, the Aguas Argentinas concession in Buenos Aires commenced in a weak regulatory environment. The concession marked the country’s first water privatization and the country, therefore, had no experience with water regulation. The regulatory agency established to oversee Aguas Argentinas, Ente Tripartito de Obras y Servicios Sanitarios (ETOSS), would be responsible for ensuring the quality of service provided, protecting the interests of the community, and controlling, supervising, and verifying compliance with the concession contract. This body has been criticized for its lack of political independence (Post 2005).

The central critique of ETOSS rests on its makeup of regulatory partners. ETOSS consists of representatives from three different levels of government: the national government (as owner of the physical assets), the Buenos Aires municipality, and the provincial government. The three-tiered government representation in the regulatory body has enabled representatives from opposing political parties to sit on the body, which has led to considerable delays due to partisanship. Furthermore, most of ETOSS’s 110 employees are from the former state owned water utility company, increasing the
likelihood of regulatory capture due to the influence of personal relationships and / or
corruption (Lobina and Hall 2003).

To secure a degree of political independence for ETOSS, the concessionaire
charges users an additional 2.67% charge that is remitted to the regulatory agency. While
this affords the regulatory body a degree of autonomy from the government, critics
suggest that this kind of financial arrangement makes regulatory bodies susceptible to
corporate influence (Lobina and Hall 2003). Indeed, the sponsors of this project have
been characterized as opportunistic—continually renegotiating rate hikes, with little to
stop them despite ETOSS’s attempts. Critics also contend that the concessionaire
submitted an intentionally low bid in order to secure the concession and renegotiate the
contract at a later time (Post 2005).

When ETOSS attempted to regulate, it had little power to enforce its rulings. In
May of 1998, for example. Aguas Argentinas made a request to ETOSS for a rate
increase of 11.7%. When ETOSS authorized a 1.61% increase, Aguas Argentinas
appealed to the Secretary of National Resources in Sustainable Development, which
authorized a 17% increase. Additionally, 58% of ETOSS fines against Aguas Argentinas
went unpaid between 1993 and 2003 (Wells and Royere 2005).

Summary

While some firms might be enticed by a weak regulatory system, thinking they
may be able to profit on the absence of oversight, ultimately the associated uncertainties
puts the firm in a more precarious situation. For example, in Indonesia, scant regulation
in the telecommunications sector enabled the Suharto government to take over the
Indosat contract with very little recourse available to the foreign investor, ITT (Wells and
Gleason 1995). Additionally, a lack of regulatory capacity can mean not only capricious policymaking, which can harm private firms, but also can harm the users it was intended to protect by not acting with neutrality.

Unstable Deal Structures

In water privatization, firms are typically awarded contracts after a competitive bidding process. The awarded contracts are usually concessions whereby the firm takes over a water system for a specified period, generally 30 years, and takes responsibility for water supply and sanitation services as well as system maintenance and expansion. For major systems, the three largest companies, Suez. Veolia, and RWE Thames, typically participate in the bidding process as do smaller firms usually in the form of a consortium.

In the Cochabamba case, Aguas del Turari was the sole bidder, which critics argue presented a host of problems and may have weakened the host country’s bargaining position (Finnegan 2002; OECD 2004). Although privatization concessions with just one bidder are rare, 2 to 4 firms more commonly respond to bid requests, it is not considered a robust marketplace that generates adequate competition among firms (Kirkpatrick, Parker et al. 2004).

When submitting a bid proposal, the two key variables are tariffs—how much can the system charge for its service—and service expansion—how much capital investment the operator will need to fulfill expansion commitments. In the developing world, the vast majority of people currently connected to water systems are middle class and live in dense areas. System expansion, then, is a money loser for most operators, requiring the building out of systems into areas with less density (which raises the per hook-up charge).
and with populations less able to pay connection fees (World Bank 1997; Komives 1999; Sankaran 2005).

Outside of the tariff and service expansion parameters specified in the bid, the foreign investor has to make a number of additional decisions that will affect the project’s financial viability. Among these include choices of when over the life of the project to recoup tariffs. If a private firm attempts to get its money out of the project too quickly or “front load,” and raises rates significantly to do so, a backlash may be triggered as occurred in Cochabamba (Wells and Gleason 1995; Finnegan 2002). Currency convertibility is also an issue if revenues are linked to an outside currency and profits are to be sent back to the parent company. In several water projects, firms have mitigated this risk of potential devaluations through linking the exchange rate of the host country’s currency to another currency, usually the US dollar. While this may serve as a type of surety for the investors, it puts the project in jeopardy should the currency fall precipitously against the linked currency as is the case in the Aguas Argentinas example below (Lobina and Hall 2003; Spanish News Digest 2003; Wells and Royere 2005).

Another important consideration for private firms relates to a project’s design and technology selection (Yepes 1999; Flyvbjerg, Bruzelius et al. 2003; Lobina and Hall 2003; Athias 2005).\textsuperscript{12} Water projects often include features that are not appropriate

\textsuperscript{12} An example of inappropriate design and over-engineering is the water system in Kiev, Ukraine. In Kiev, the government was faced trying to determine a course of action to repair its crumbling Soviet-era water system. On the one hand, because the country was part of the Eastern Block, and therefore shared a communist government, the city had no water metering. While this reflected socialist era ideals, metering was considered essential by current best practices to minimize waste and ensure equitable billing. However, installing meters after a system is in place is extremely expensive and would bring the project’s cost beyond what was considered affordable. The additional problem the planners in Kiev faced was the over-engineered hot water system. The original engineers built a centralized hot water system, meaning a network of hot and cold water pipes ran throughout the city, to every home and business. For a city with minimum temperatures below freezing 5 months of the year, this was clearly an expensive system to maintain. While the system had not worked in years, since Ukraine stopped paying its natural gas bill to the
technically nor critical to the project’s success but act to substantially increase costs and, therefore, operator’s need to raise tariffs; this was seen in both the Cochabamba and Aguas Argentinas cases (Nickson and Vargas 2002; Lobina and Hall 2003; Bechtel 2005). Finally, many companies include provisions for a so-called fair rate of return on capital; this is essentially a guarantee by the host country that the project will be profitable. In the Cochabamba case, the concessionaire Aguas del Tunari was granted a 16% rate of return on capital, in the Buenos Aires case the percentage was left open so long as it was “fair rate of return” for Aguas Argentinas (Nickson and Vargas 2002), and in the Tirupur case, while not guaranteed, investors in NTADCL anticipated a 17-20% return (Vyas 2005).

_Cochabamba, Bolivia_

The Aguas del Tunari concession in Cochabamba had several features that weakened the project’s sustainability. Among the most serious were immediate and steep price increases and the late-addition to the project plans of a costly and questionable dam project (Finnegan 2002; Bechtel 2005).

Despite Aguas del Tunari winning a 40-year contract, the consortium made the error of trying to recoup costs through sharp price increases immediately upon taking over the concession instead of amortizing them over the life of the agreement, or at least until users could see service improvements. Wells and Gleason warn if there are to be price increases early in a project’s lifecycle, it should only be after improvements to

---

Russia, homes were not equipped to heat water locally, as is typically done in the US and elsewhere. In Kiev, officials were in a position to take a loan to overhaul their water system, but to do so in an ideal way—i.e. install meters and solve the hot water problem—would drive costs to a point that user fees would not be adequate to cover loan payments. The fact that the government has tried to select a solution that is appropriate from a cost and technology standpoint is a break from what has been done in the past, where projects were often over engineered and, therefore, over priced. (Davis 2004).
service and quality (Wells and Gleason 1995). Despite the contract allowing for a 35% rate increase, Aguas del Tunari raised water rates by 100% for some consumers, and even higher for some industrial users; 35%, it later came out, was intended to be the average tariff increase (Nickson and Vargas 2002; Sadiq 2002).

The local elite in Cochabamba, to which the local government was beholden to, insisted on adding at a late stage the long-favored Misicuni Dam. The project was controversial as it was deemed unnecessary and exceedingly expensive by critics; the World Bank withdrew support for the project when the dam project was included, stating that it was not economically viable (Finnegan 2002). Even Bechtel, the main foreign investor in the project, acquiesced to the inclusion of project only after the government made it a requirement to win the concession. “The municipality in particular insisted the Misicuni dam be built during the first two years of Aguas del Tunari’s contract,” (Bechtel 2005). Bechtel also claims the addition of the dam’s cost resulted in half of the average 35% increase in water and sewerage charges (10% for low-income residents and 106% rate increase for high volume users) (Bechtel 2005). The result of the creeping project costs, however, was a bloated Aguas del Tunari concession whose high investment costs required it to raise tariffs perhaps beyond what many users could pay.

Since the collapse of the concession, Aguas del Tunari’s parent company, Bechtel, pursued the Bolivian government for damages. The talks stalled and in 2001 and Bechtel filled a claim with the World Bank affiliate International Centre for the Settlement of Investment Disputes (ICSID) for $25 million (ICSID 2002). As of the writing if this paper, the arbitration case is still pending.

_Buenos Aires, Argentina_
In January 2002, Argentina defaulted on its $80 billion foreign debt, the largest default in history and floated its currency, which had been pegged to the US dollar. Within three months, the currency fell from a rate of AR $1 = US$1 to AR3.50 = $1. Since Aguas Argentinas' debts were dollar denominated, and Suez financial projections were based on the 1:1 peso-dollar ratio, the company suffered significant losses (estimated to be in the hundreds of millions of dollars (Santoro 2003; Suez 2005)).

The problems of Aguas Argentinas rest with the larger macroeconomic problems occurring in Argentina at the time, namely its default on foreign debt and an end to the artificial fixing of its currency to the US dollar. When the country was doing well in the 1990s, so was Aguas Argentinas, but when the economy faltered, and made the unexpected move to float its currency, foreign firms that linked revenues to an outside currency saw their profits evaporate.

The Aguas Argentinas contract includes a condition, promoted by the government, that the concessionaires invest $1 billion into the system in the first five years. The second condition, promoted by Aguas Argentinas, was to link profits to an outside currency, in this case the US dollar. For nearly the first 10 years of the contract, Aguas Argentinas was successful and met or exceeded profit targets of 19%. During that period, Aguas Argentinas reduced the labor force by 48%, increased payment rates, and claims to have invested $1.7 billion and added nearly 2 million water connections and just over 1 million sewer connections. Service also improved, the contract ended summer-time service interruptions which had become commonplace, increased water pressure throughout the system, and conducted regular operations and maintenance (Wells and Royere 2005).
By agreeing to invest too much too quickly, $1 billion in first five years, the concessionaire was forced to raise tariffs substantially and obtain large amounts of foreign debt to finance the investments. Tied to this was the consortium’s clause that profits be tied to the US dollar. This was done in order to be able to repay the dollar-denominated loans and repatriate earnings back to the parent company in France. When the Argentine peso lost over 70% of its value against the dollar, so did the consortium’s ability to service debt, let alone send profits back to Suez.

Summary

The protests that ensued in Cochabamba occurred because water is a critically sensitive resource (Moran 1998) and the rapid price increases created panic among users that they may be priced out of water (Finnegan 2002). The protests also occurred because the Aguas del Tunari project came to represent larger globalization trends in the country the benefits of which the vast majority felt excluded from (Nickson and Vargas 2002). This last point underscores the importance of being sensitive to contextual issues in a host country.

In Cochabamba, the absence of local participation exacerbated the intensity and anti-globalization “mission” of the protests. Further, the absence of local participation led to a lack of aligned interests between shareholders and the other stakeholder groups. To mitigate political risk, equity interests, perhaps in the form of a stock offering, could be made broadly available to users. This would have aligned the economic interests of company and users and had the added benefit of giving voice to additional stakeholders. Greater local involvement may also serve as a an informal regulator and reduce the
chances for the kind of myopia that was present in the Cochabamba case that led to the inclusion of a costly dam project that led to increased water and sewerage rates.

The risks facing Aguas Argentinas originating from currency exchange rate fluctuations are part of most international investments – oil companies, hotels, airlines, etc; all must deal with this problem. Because currency risks are so common, many effective methods have been developed in an effort to reduce them. While they do come at some cost, that type of insurance would have potentially mitigated the foreign exchange risk and saved the Aguas Argentinas project from nearly collapsing. Examples include using currency options or a so-called liquidity backstop facility whereby a loan is available (usually in the linked currency, in this case US dollars) to meet foreign currency debt service payments in the event of a devaluation of the local currency (Esty 2003; World Bank 2005).

The ambitious investment plans also hamstrung the project’s sustainability. By agreeing to invest $1 billion in the project in a short period, the concessionaires were forced to raise water rates as well as borrow heavily from foreign banks. If Aguas Argentinas had a more gradual investment strategy, the company would not have been as vulnerable to devaluation of the peso.

In the next section, I focus on the instructive Tirupur, India case and explore how the project planners were able to effectively mitigate political risks through increased local participation in the project.
Case Analysis and Political Risks in Context B: Tirupur, India

Advantages of Increased Local Ownership in Water Privatization

_Tirupur Project Background_

Tirupur is a small industrial city in the southern Indian state of Tamil Nadu and is the country’s leading exporter of woven cotton textiles, with approximately $1.5 billion in annual exports (FIRE(D) 1999). As trade liberalization over the past decade has enabled rapid growth in the industry, expansion has been hamstrung by the limited regional water supply, a critical input in textile processing. In 1990, the Tirupur Exporters’ Association (TEA) and the Municipality of Tirupur sought assistance from Government of Tamil Nadu to improve the city’s water and wastewater treatment infrastructure for both industrial and residential use. The principal parties could not obtain the capital needed to develop the project so they sought assistance from the private sector. In addition to capital constraints, as this project would mark the country’s first large-scale privatization in the water sector, the principal parties also lacked the managerial and technical capacity to embark on a project of this scale. Rather than have the Government of Tamil Nadu attempt to take on project implementation, it was decided to develop an alternative strategy to enable a public-private partnership to bring in additional capital and experience from the private sector.

Created as a public-private entity, the New Tirupur Development Corporation Limited (NTADCL) was formed in 1995 as a special purpose vehicle, with both public and private ownership. Equity holders include Government of Tamil Nadu, TEA, and Infrastructure Leasing and Financial Services (IL&FS), a Mumbai-based investment bank specializing in infrastructure.
NTADCL then entered into formal contract agreements with the Government of Tamil Nadu and the Municipality of Tirupur as part of implementing the regional Tirupur Area Development Programme (TADP) for a water supply and sanitation project. At a cost of $220 million, the project supplies water directly to approximately 700 textile firms, to the municipality of Tirupur in bulk (to be distributed and billed to consumers through the municipality) and to 23 wayside communities. NTADCL is charged with all aspects of the water supply and wastewater treatment project, including engineering and construction, operations and maintenance, and its financial viability.

NTADCL, as a joint public-private entity, has a unique institutional structure to reflect this bi-sector composition. The government of Tamil Nadu employs Mr. Sameer Vyas, the American-trained Managing Director, while his staff works for NTADCL, essentially a private firm. The NTADCL employees have the commensurate risk and reward associated with private firms.

NTADCL Project Partners

In this section, I will describe two partners in the NTADCL project, the Tirupur Exporters' Association and Infrastructure Leasing and Financial Services (IL&FS), a Mumbai-based infrastructure investment firm. The third partner in NTADCL is the government of Tamil Nadu, however, they have a comparatively minimal role. Through the Exporter’s Association the project gained broad ownership and decision-making authority among users and through IL&FS the project gained access to capital and sophisticated financing tools.
Tirupur Exporters' Association (TEA)

The local industry association for exporters is the Tirupur Exporters' Association (TEA). TEA was established in 1990 and has over 600 members, all of whom are engaged in textile exporting. The success of the industry has meant that TEA's members include among the wealthiest people in India with considerable and far-reaching influence. At one time the town boasted the highest number of millionaires per capita (in US dollars) – the software capital Bangalore has since taken claim to that distinction. TEA has been successful at infrastructure projects and other development in the area to improve the industry's competitiveness. Aside from the NTADCL project, which TEA initiated, projects include an inland rail freight container depot, a fashion and textile college, a high school, common effluent treatments plants and a business-to-business online portal (www.tea-india.org) so overseas buyers can locate and transact with Tirupur firms.

TEA's Value to the Local Economy. In the decade 1985 to 1995, Tirupur became the largest exporter of knitwear and hosiery in India, accounting for more than 75% of exports in this category. Today, Tirupur's approximately 700 firms export over $1 billion per year; considerable for city with a population of 347,000 (NTADCL 2001).\textsuperscript{13} TEA's membership, which consists of approximately 600 firms, includes the industry's largest companies. Most of Tirupur's residents are directly or indirectly dependent on the firms for their livelihood.

In Tamil Nadu, small and medium sized enterprises (SMEs), such as those in Tirupur, are a critical part of the state’s industrial economy. Small firms in the state, as Tewari and Goebel (2002) point out “employ 80% of the state’s industrial workforce, produce for 40% of its industrial output, and account for 35% of exports. Clearly, the economic viability of Tamil Nadu’s small firms is critical to the continued dynamism of the state as a whole.” (Tewari and Goebel 2002).

TEA’s investment in NTADCL. The Tirupur Exporters’ Association provided both financial and non-financial support to the project. Through the Tirupur Infrastructure Development Company Limited (TIDC), the exporters own a 0.68% stake in NTADCL (Srikanth 2005). This equity contribution, equivalent to $500,000 (at Rs 45 = US $1) came from collections from user industries (approximately 500 firms with contributions based on proposed water consumption). Furthermore, equity participation of TEA’s members gave prospective investors confidence that the project would have steady revenues. In addition to financial support, albeit limited, TEA did considerable work in the project development phase, along with IL&FS and NTADCL. TEA played the vital role of local partner, securing land for the project, coordinating with local government, and garnering broad support from industry. And, most importantly, the NTADCL project began as a TEA initiative (TEA 2005).

TEA as Effective Partner. TEA, by virtue of the textile industry’s size as well as the personal influence of Association members, has been able to garner national support to upgrade Tirupur’s manufacturing and exporting capacity. The president and founder of TEA, Mr. A. Sakthivel, is also head of the New-Delhi based Apparel Export Promotion
Council of India. This gives him direct access to government leaders in Delhi where he has been able to lobby effectively on behalf of Tirupur’s textile industry.

*Infrastructure Leasing and Financial Services (IL&FS)*

IL&FS is the main institution in India developing infrastructure and began in 1988 with initial capital from the Central Bank of India (CBI). The organization works in the infrastructure, banking, and education sectors and has a project portfolio of over $10 billion. Its structure straddles both public and private domains, charged with finding private financing for what are traditionally funded services. Additionally, although IL&FS received startup capital from the government, it behaves more like a venture capital firm. For example, the organization puts a lot of emphasis on project development and takes equity stakes in fledgling enterprises, a common practice in venture capital.

Ownership of IL&FS is 60% Indian and 40% foreign, major equity holders include ORIX (Japan), HDFC (India), Central Bank of India, State Bank of India, IFC (US).

Hari Sankaran, the Joint Managing Director of IL&FS, explained that India went bankrupt in 1991 and was in a dire need for infrastructure investment but did not have the resources. The country embarked on a strategy to finance projects outside of traditional budgetary sources, such as taxes, and IL&FS became part of this strategy. IL&FS began a series of projects that aimed to combine commercially viable investments with infrastructure using a project finance model, where project revenues are used to repay investors. IL&FS has since launched several of such projects, including toll-roads and toll-bridges; the NADCL project in Tirupur marks its first project in the water supply and sanitation sector (Sankaran 2005).
Mr. Sankaran thinks they can achieve similar results for the water sector in cities without industry clusters, such as in Tamil Nadu’s capital, Chennai. He explained that the poor pay the most for water in India, often paying many times what middle-class people with piped water pay. Ninety percent of urban India buys water from private providers; Indians are willing to pay but politicians are unwilling to charge. (Sankaran 2005). Additional projects IL&FS is involved in include plans to take NTADCL public by listing it on the Mumbai stock exchange, New Delhi’s elevated ring road, and a USAID-funded environmental consulting group called Ecosmart.

IL&FS and Infrastructure Development in India. Corresponding to the great economic growth in India has been its need for infrastructure investment. India spent $100-150 million annually between the years 1991–1998 on infrastructure and nearly $1 billion in 1999. Official estimates put the infrastructure investment needs of India to be $15 billion per year. IL&FS will invest $6 billion in 2005, or 40% of the total needed.

IL&FS’s Investment in NTADCL. IL&FS equity stake in NTADCL is through the Tamil Nadu Water Investment Company Limited (TWICL), a company formed jointly by the Government of Tamil Nadu and IL&FS for the Tirupur project as well as other private sector participation (PSP) water projects in the state (Sankaran 2005). TWICL has a 31.5% equity stake in NTADCL, which approximately 1/3 of that held by IL&FS and equivalent to $11 million (at Rs 45 = US $1) (Srikanth 2005) (for a listing of NTADCL equity holders please see Appendix D).

Foreign Investment in NTADCL

14 For more on this subject see, for example, UNDP (1999). Willing To Pay But Unwilling To Charge: Do willingness-to-pay studies make a difference? Field Note. UNDP World Bank Water and Sanitation Program South Asia.
Though foreign capital may come from IL&FS contribution in TWiCL, NTADCL has one foreign investor, AIDQUA Holdings of Mauritius. AIDQUA has a 27% equity stake, equivalent to $20 million (at Rs 45 = US $1) (Srikanth 2005).

Local Users with Equity Participation in the PSP Insulates Against Political Risks

In this section, I describe how the broad local ownership of users in the Tirupur case mitigates three key political risks that are common to PSP in the water sector. I will look at the three risks public opposition, limited regulatory capacity, and unstable deal structures.

Public Opposition

The Tirupur project has employed a number of strategies that suggest its operations will more successfully mitigate public opposition to the project than has been described in the cases of Cochabamba and Buenos Aires. These include the following: 1) The use of public meetings for public education and information gathering on tariff setting 2) The use of a local company comprised of trusted public and private partners, which allowed for greater accessibility and public education about the project and 3) The subsidization of rates for the municipality and neighboring villages. The success of these strategies hinge on the unique NTADCL partnership, which involves local actors who have the financial, political, and technical credibility to instill confidence in the general public about the project.

Threat of Public Opposition. In India, farmers account for approximately 70% of water usage by World Bank estimates (World Bank 2004), and make up roughly three-quarters of the population; they are an immensely powerful voting block.15 Furthermore,

---

15 In India’s 2004 national elections, the very popular pro-business Bharatiya Janata Party (BJP) party lost to the left-leaning Congress Party. Despite the country achieving unprecedented economic growth during
in this part of India, farmers have considerable power when it comes to water use; therefore, supplying water only to industry would not be politically feasible. In general, villagers in India are not hesitant to engage in public protest or access the courts if an activity or project is perceived to be against their interests.

In the neighboring state of Kerala, for example, fewer than 100 miles from Tirupur, the Coca-Cola Company has provoked the ire of influential farmers. Several communities near bottling plants have charged the company’s Indian subsidiary with excessive water extraction and pollution of the groundwater. A protracted dispute over the effects of company’s practices has recently reached the courts (Oneworld 2005).

While one could argue Kerala’s politicians were acting to curry favor among farmers, a powerful voting block, water shortages have catastrophic effects. In Andra Pradesh to the north, the combined problem of drought and debt has led thousands farmers to commit suicide since 1991, when government-led economic reforms began. (Waldman 2004)

**Insulating Against the Risk of Public Opposition.** In the case of public opposition, the Tirupur project differs from previous projects in its broad local ownership by politically and economically empowered users. Unlike previous PSPs in the water sector, in the Tirupur case the private sector worked collaboratively with local government and local industry and created a bi-sector joint venture company, NTADCL, to manage and oversee the water project (Vyas 2005). The “Lack of participation and capacity of a wide variety of stakeholders; Lack of broad ownership of the project” has been described as a
major impediment to other privatization effort (Satyanarayana 2003). This alternative model differs sharply from previous cases by its high degree of inclusion of key local partners and allowing for broad local ownership and decision-making authority (Sankaran 2004; Satyanarayana 2004). This partnership enabled a variety of trust building strategies with the public.

/Public Input and Public Education./ The planning for this consortium was ten years in the making, during which time the public was consulted in numerous public meetings about project features such as feasible tariffs. Furthermore, the meeting provided the project sponsors and opportunity to forge relationships with the municipality and neighboring villages.

/Public Access and Education./ The NTADCL approach to water provision differs markedly from the cases in Cochabamba and Buenos Aires. While some may argue that this project does not qualify as a privatization since it was a greenfield project with no existing public assets taken over in the form of a contract or, although less common, a divestiture, which is a complete sale of assets, it does qualify since water is being provided wholesale by the private entity, NTADCL, and supplied to the municipality for residential consumption as well directly to wayside villages. If the water supplied were to be used only by industry, then it would not likely qualify as a privatization case, but be more akin to the cooperation seen among competing firms for their collective benefit, such as Detroit carmakers’ procurement website Covisint. Automakers Ford, General Motors, DaimlerChrysler, Renault-Nissan, Toyota, and Peugeot will use the business-to-business e-commerce system to streamline supply chains.
Having a local face on the project, both in government and in the Tirupur Exporters’ Association, has been critical in earning the project popular support. By staying out of the retail market NTADCL is comparable to power generation privatizations, which are quite common throughout the developing world and where the foreign operator remains on the production side and leaves distribution and billing to the domestic, typically state-owned, company, these have met with better success. The accessibility and familiarity that the public feels with this kind of arrangement was made clear during a field observation at the NTADCL office in Chennai. There, several village leaders came to complain, asking that their community be included in the project and connected to the water pipes that pass by the village. While the director was unable to accommodate the request at the project’s late stage, it is apparently a common occurrence that villagers access the local office, and that the procedures for implementation of the project can be explained (Vyas 2004). This opportunity for public education and public access can be critical for creating trust with the public (OECD 2003). Having a local, reputable partner as the local face of the project is crucial for this kind of success. This is important to reduce political risk, as infrastructure services, especially those that are critical like water and power, are particularly visible and therefore vulnerable to public protest.17

This was in stark contrast to the Aguas del Tunari case in Cochabamba where concessionaire billed for water and sanitation services directly to the consumers. This highly visible foreign face angered people and served as a rallying cry for the intense protests, which also had strong anti-globalization significance (Wells and Gleason 1995; Moran 1998; Finnegan 2002; Nickson and Vargas 2002; Sadiq 2002).

Subsidizing Water Rates for the Municipality and Villages. The project’s planners also sought to mitigate opposition that could have arisen from the Tirupur public as well as communities along the project’s nearly 50-mile construction path. Although the wayside villages were not the intended market for the NTADCL project, provisions were made to accommodate them through offering water at a highly subsidized rate. For the Tirupur municipality, water is provided in bulk also at a highly subsidized rate. Additionally, for the municipality, sanitation services were also included in the project.

Summary

The savvy project planners in Tirupur are in stark contrast to those in Cochabamba, Bolivia where villagers flooded the city to protest for fear their water prices would go up (Berger 2005). In the Tirupur case, NTADCL endeavored to educate and include users through public meetings and equity participation; this is also in stark contrast to Cochabamba. In addition, NTADCL maintains offices in both Tirupur and in the state capital Chennai. The accessibility of NTADCL officials, in addition to public

---

18 Water Rates:
Industry users: Rs. 45 per 1000 liters
Tirupur municipality: Rs 3.5 per 1000 liters
Wayside villages: Rs 3.5 per 1000 liters
meetings, seems to have been effective at giving stakeholders significant enough voice that they did not have to take to the streets to express themselves. (Witold J. Henisz and Zelner 2002; Streeter, George et al. 2003; Sankaran 2005). In Bolivia, by contrast, people felt they had no choice but to protest (Finnegan 2002).

The substantial difference between how the Tirupur project and the Latin American projects handled their relationship with the public lies in the partnership features of NTADCL. In Tirupur, the project partners were trusted, known organizations which presented a local face that was accessible to public input and response (Wells 1998; Satyanarayana 2003). In contrast, the Cochabamba, project champions were the local elite that through project add-ons increased project costs to unsustainable levels (Finnegan 2002; Bechtel 2005; Finnegan April 8, 2002). Similarly, in Argentina, there was limited broad ownership among users. One local investor, the prominent Soldati family, had near half of all Argentine equity and were supporters of Carlos Menem, the Argentine president at the time of the concession began (Santoro 2003). The exclusivity and insular nature of this partnership filtered down to the public, who were not consulted in substantial rate hikes.

Limited Regulatory Capacity

Like the cases in Bolivia and Argentina, the NTADCL project has limited regulatory oversight. This is perhaps the weakest element of the Tirupur project. The regulatory process has been setup whereby price and quality decisions are specified in the contract and changes are deliberated by a three-person panel, one representative from each of the main stakeholders of the project: the municipality of Tirupur, the Tirupur Exporters’ Association, and NTADCL (Sankaran 2004; Vyas 2005).
Despite the lack of formal regulatory oversight in the form of an independent body, this partnership offers potential for oversight that is more effective than the regulatory bodies in Buenos Aires and Cochabamba. A critical feature of this partnership in this regard is the stakes the regulators have in the project’s financial and operational success. As consumers of the service, the Tirupur Exporters Association, for example, is hoping to accrue financial benefits to their member businesses with the success of this project.

Because of these shared financial and political interests among the various stakeholders, the project is less susceptible to capture by political agendas that lie outside of the project, or by corporate interests for short-term profits that are recouped through exorbitant rate hikes. In the case of Argentina, the regulatory body for the Buenos Aires project was unable to prohibit frequent tariff hikes. Similarly, in Cochabamba, the project did not grant adequate power to the regulator to set and enforce reasonable tariffs. Rate setting in the NTADCL context of partnership means that rates must be feasible according to the users (TEA) while also profitable enough to ensure the project’s long-term viability.

Unstable Deal Structures

The NTADCL project was developed through a conventional project finance framework. (For example of project finance calculations for a water project in India, please see Appendix C.) Private investors finance and build the project as well as collect revenues once it is operational to repay investors at a commercially viable rate. At the end of the concessionary period, in this case 30 years, ownership of the project is then
transferred to the government (Satyanarayana 2003). This type of arrangement is known as a BOO{T, for build-own-operate-transfer.

The project finance model is not typically found in the water sector for a variety of reasons, such as the 'obsolescing bargain,' the extraordinary political risk associated with a critical service like water and the long repayments periods since user fees must be kept low. It is doubtful that the project financing would have been possible without the near-guaranteed revenues through the participation of the local textile industry.

While NTADCL looks like a conventional project finance arrangement, it differs in several significant ways. Most importantly, NTADCL has TEA, the exporter's association, as one of its principal project sponsors as well as an equity holder and therefore is owned by the people it serves. NTADCL has created a compact with approximately 500 exporters whereby they agree to 'take or pay' contracts for water, that is, they commit in advance to buy a certain quantity of water each month whether or not they use it (Vyas 2004; Sankaran 2005; Srikanth 2005). In exchange for this commitment, NTADCL will provide a dividend to the exporters, as well as other investors, in the years the project exceeds revenue requirements (Sivagnanamurthi 2004; Sankaran 2005). One exporter, Mr. K. Sivagnanamurthi, thought this was fair, especially given the high price of alternatives such as vended water (Sivagnanamurthi 2004).

---

19 See BOOT footnote above.
20 Conditions prior to NTADCL:
Industry users: No municipal piped water system; no municipal sewerage system
Tirupur municipality: Water supplied two hours per day on alternating days; no municipal sewerage system. (Once the project is complete, 60% of the municipality will have sewerage.)
Wayside villages: no municipal piped water system; no municipal sewerage system
Sankaran of IL&FS explained that creating the compact with the dyers lowered the cost of capital because it reduced the political risk that the project would meet resistance. After all, he continued, these companies are part owners of the project; it is in their interest for NTADCL to succeed. Furthermore, the arrangement rewards the biggest users by providing the biggest dividends in the event of surplus (Sankaran 2005); this adds a level of transparency to the partnership that resonated with the firm owners (Shanmugam 2005). An additional benefit to bringing local industry in equity partners—and because these participants are politically and economically empowered—is that the there is less likely to be government interference in the project (Powers 1998; Wells 1998).

In addition to project finance model described above, the Tirupur project differs in several ways from previous projects to mitigate the risks stemming from unstable deal structures. In contrast to the projects seen in Bolivia and Argentina, the Tirupur project effectively managed the common problems of sudden rate increases, currency inconvertibility, and appropriate technology selection.

The Tirupur project has several features that aim to keep water rates competitively priced in comparison to nearby cities and substitute sources and to avoid the need for rapid rate increases. The project is funded through a combination of debt and equity, with equity participation from the public and private sector, debt/equity ratio of 2:1 (public sector projects can only be financed by debt). Sameer Vyas, the project’s Managing Director, estimates a return of 20% and, with a 30-year contract, enough time to recover

21 Financing Structure:

<table>
<thead>
<tr>
<th></th>
<th>Amount</th>
<th>Currency</th>
</tr>
</thead>
<tbody>
<tr>
<td>Equity</td>
<td>Rs. 322.7 Crs (US $69 million)</td>
<td></td>
</tr>
<tr>
<td>Senior Debt</td>
<td>Rs. 613.8 Crs (US $132 million)</td>
<td></td>
</tr>
<tr>
<td>Subordinate Debt</td>
<td>Rs. 86.5 Crs (US $18 million)</td>
<td></td>
</tr>
<tr>
<td>Total</td>
<td>Rs. 1023 Crs (US $220 million)</td>
<td></td>
</tr>
</tbody>
</table>

Source: Ibid.
all investment costs (Vyas 2005). To avoid the need for “front loading” or sudden up-front price increases to repay creditors, the project’s sponsors sought debt financing with staggered repayment periods over the contract period to be inline with the project’s expected revenues (Sankaran 2005).

Furthermore, in the NTADCL case, water charges are indexed to Indian inflation and revised annually, reducing the risk of rapid price increases. This is in sharp contrast to the Cochabamba case where operators attempted to recoup their investment suddenly and created a backlash (Finnegan 2002; Nickson and Vargas 2002; Sadiq 2002). It is also in sharp contrast to Aguas Argentinas where critics felt the concessionaire was constantly negotiating rate increases (Post 2005). Critics also questioned Aguas Argentinas indexing rate increases to the US inflation rate despite Argentina experiencing a period of deflation (Wells and Royere 2005).

The predominance of local ownership in the NTADCL project greatly reduced the currency convertibility risk. Since the project’s owners, with the exception of Mauritius-based AIDQUA, are Indian, the problem of sending profits back to the multinational’s home country is obviated. The project is remains exposed to primarily dollar-denominated debt and in those areas has attempted to reduce risk. A $25 million dollar loan form USAID, for example, was promptly swapped for a rupee-based loan with the Indian government (Shivkumar 2000).

---

In comparison to the multi-billion dollar Latin American cases, the NTADCL project is modest at $220 million. The project planners have ostensibly designed and built a water supply and sanitation system achieve that meets the project’s goals at the lowest possible cost. The participation of the local industry association no doubt was critical in achieving this. TEA’s participation ensured not only that the project be optimized to meet the needs of the textile firms, and that appropriate technology be chosen, but also that the project’s costs would stay in check with no superfluous add-ons; after all, it is TEA’s members that will be footing the bill (McKenzie and Ray 2004). In contrast to the case in Cochabamba, where the addition of a costly dam project strained the project’s viability (Bechtel 2005), and in Buenos Aires, where a very aggressive multi-billion dollar capital investment program caused the concessionaire to borrow heavily (Wells and Royere 2005), the NTADCL project has been able to stay comparatively lean.

Additional Enhancements to Project Sustainability

Unlike many infrastructure projects listed in the World Bank Database of infrastructure investments, the NTADCL project’s investors do not have political risk insurance, in the form of MIGA or ICSID provisions, nor does the project have government guaranties outside of $25 million government guaranty in the event of a water supply failure. This reduces the potential for moral hazard, which has been a criticism of overly guaranteed or insured projects (Nickson and Vargas 2002; Lobina and Hall 2003; Wells and Garcia-Cuellar 2005).

Mr. Sankaran firmly believes these types of projects should be evaluated on their merits, with as little government intervention as possible, including incentives and guaranties. He explained that guaranties cloud the due diligence process when evaluating
whether to invest in a project and he prefers not to invest in projects with them. This is an important departure from what is typically done and acknowledges the point that insurances and guaranties, especially those in the political risk domain, artificially raises an investor’s risk hurdle and thereby create a moral hazard (Sankaran 2005).

Additional project innovations include a water shortage fund that was created be the Government of Tamil Nadu. The fund would be accessed by NTADCL in the event of water shortage in the Bhavani River (Gurumurthy 2002). Mr. Sankaran explained that this was the only risk the project could not strip away to the private sector. The risk of the river not supplying enough water was calculated and the state stepped in to provide the only guaranty on the project (Sankaran 2005).

The NTADCL Project in Context

In this section, I discuss issues related to the outcome of the water project that pertain to the Tirupur context. I think it is important to highlight these to better assess the project’s outcome. If it fails, the cause may be related to industry conditions and not necessarily the structure of NTADCL. Similarly, if the project is successful, context will limit which of the project’s innovations can be extrapolated and applied elsewhere.

Contextual Advantages

*SME Industry Cluster.* Tirupur, like other industry cluster towns, has the potential to offer investors a secure customer base willing and able to pay for services. This arrangement affords the opportunity to engage the private sector to bring in infrastructure for industry and, through cross-subsidies, offer them to the public at an affordable price.

---

23 The project’s sponsors believe the likelihood of a water shortage is very remote. According to The Hindu Business Line, “The creation of this fund, according to sources, is only of ‘notional’ value because in the last 15 years or so, it has been observed that the water level in the source river never ran below the required levels. Even in the worst shortage conditions, the water flow levels stood 15 times the NTADCL’s requirement,”
If this model works, it may have great influence to utilize the private sector to develop infrastructure in industry cluster towns and preserve limited public resources for areas that do not provide opportunities for commercially supported infrastructure.

*Project Champion.* Infrastructure projects often need project champions to provide continuous, strong leadership (Satyanarayana 2003). The story of IL&FS’s success is also one of leadership in the form of Hari Sankaran, the Joint Managing Director. Mr. Sankaran, who has been with IL&FS since it began in 1988, is a London School of Economics trained investment banker that brings considerable expertise and enthusiasm to projects.

Similarly, the success of TEA, and therefore its ability to initiate NTADCL, is highly connected to the initiative and influence of its president and founder, A. Sakthivel. Mr. Sakthivel is also one of the largest textile producers. His company, Poppys Knitwear, reports $10 million in annual sales. In addition, he is a very prominent figure in the Tirupur business community through his upmarket hotel, host to national and foreign dignitaries. Mr. Sakthivel also has significant influence in New Delhi through his participation as president of India’s Apparel Export Promotion Council. Many believe it has been his local knowledge and presence, combined with his access to India’s central government, including the Minister of Finance, which has enabled him to be such an effective advocate for the city’s industry.

*Contextual Constraints*

*Geographic location.* A point of friction in the Tirupur supply chain is getting product to ports cheaply and quickly (The Hindu 2004). Tirupur’s location in western Tamil Nadu, half a day’s travel to the nearest port cities of
Chennai (formerly Madras) and Tuticorin, makes it an unlikely place to be a major producer and exporter of textiles (Rey and Dev 1997). To overcome this distance, some firms have operations along the highway to Tuticorin; Classic Knits, one of the largest firms, recently opened a facility outside of Tuticorin. Tuticorin’s port, until the commencement of overnight freight rail service in January 2005, was only accessible by poorly maintained roadways.24

Water Scarcity and Pollution. Chronic water shortages Tirupur, often referred to as a “typical dusty Tamil Nadu town,” puts additional pressure on the water-intensive cotton growing and dying industry. Inadequate water supply and wastewater treatment services have constrained the growth of the sector as well as resulted in considerable damage to local water supplies, the result of years of untreated toxic effluents from bleaching and dyeing units discharged into local water bodies. The Tamil Nadu Pollution Control Board, a very powerful regulatory body, has become very engaged in this problem. Professor K. Palanisami, Director of the Water Technology Centre at the nearby Tamil Nadu Agricultural University in Coimbatore, related a story about the farmers near the Orathypalayam Dam downstream from Tirupur. The high concentration of textile dyes still present in the water used for irrigation began to cause their crops yellow, making them no longer of value in the market. These farmers, along with the Loss of Ecology Authority, were instrumental in the Tamil Nadu Pollution Control Board’s intervention in Tirupur. In 1998, the Madras High Court ruled that Tirupur textile

---

24 The cost to ship from Tirupur to Tuticorin by train is Rs. 4,850 compared with Rs. 9,300 for a 20-foot container and Rs. 9,000 compared with Rs. 13,775 for a 40-foot container (in dollars, $112 compared with $214 and $207 compared with $317) The Hindu (2005). Inland container depot opened. The Hindu. T. Hindu. New Delhi.
processing firms pay to remove the pollutants from the Orathypalayam Dam (Palanisami 2004).

The Pollution Control Board, at the behest of area farmers, made it illegal for bleaching and dying firms to discharge effluent into the groundwater. Approximately 60 of the larger firms, out of the nearly 700, built their own wastewater treatment plants, relying primarily on multiple aeration ponds and expensive reverse osmosis water treatment technology. Others have participated in common treatment effluent plants; however, that has not been considered widely successful due to the small percentage of firms that participate. The Pollution Control Board is mandating the firms to use these technologies to bring to zero the amount of total dissolvable solids (TDS) in the effluent. This was considered out of reach for many small firms, who felt they did not have the space or capital, and did not comply with the Control Board. On July 16, 2005, the Control Board closed over 600 plants, making 30,000 textile workers temporarily jobless (Gunasekaran 2005).

Summary

Following the Tirupur model, ILFS has embarked on a strategy to replicate the NTADCL arrangement in other industry cluster towns. The advantage of PSP in cluster towns is that there in an industrial base than can serve as an anchor customer, thus assuring revenues to repay investors. Secondly, by Mr. Sankaran’s calculations, an investment in infrastructure in an industrial town can affect output by approximately a factor of 10. They estimate that the $250 million spent in Tirupur will translate into $2 billion in exports. IL&FS is attempting to leverage momentum generated by these
projects and fund further improvements (Sankaran 2005). IL&FS currently has 16 industry cluster sites targeted for infrastructure development.

In the Tirupur project, IL&FS used investment-banking tools to mitigate risks and offer a commercially viable alternative application of PSP in the water supply and sanitation sector. If the project is successful, cluster towns throughout the developing world may be looked at to introduce an innovative model whereby infrastructure services are constructed at no cost to the government, with broad local equity holders, and full cost recovery.

This chapter described a case where a vital industry—responsible for more than 100,000 jobs and a significant part of the regional and national economy—is in jeopardy due to inadequate water supply and the pollution caused by industrial processes. The water supply solution that was developed by IL&FS and TEA, and their government counterparts, is context driven and endeavors to address local concerns and leverage local assets.

The Tirupur experience may offer a more stable and ultimately more successful alternative to the traditional privatizations in the water sector that have preceded it. In summary, the project’s main innovations rest on being able to mitigate the political risks that have weakened previous attempts at water privatization: 1) Public opposition, 2) Limited regulatory capacity, and 3) Unstable deal structures.

While it is too early to determine whether the Tirupur project should be a model for other projects, there are clearly valuable lessons from the case. In addition, regardless of its final evaluation, which is likely decades off, practitioners and policy makers will benefit from studying this project in detail. Its departure from the one-size-fits all, heavily
guaranteed projects with limited user ownership of the past offers an opportunity—and even promise—for infrastructure provision without the associated risks and controversy that have marked and marred past PSP in the water sector of industrializing economies.
Chapter IV: Conclusions and Recommendations

This thesis examined what was behind the rash of failures in private sector participation (PSP) in the water sector in developing countries and highlighted innovations in private sector participation that could possibly improve the existing models of privatization. What was found is a sector clearly in the midst of change, at least in developing country markets, and with an uncertain outlook. On the one hand, major water companies are looking to wealthier and more stable markets and, on the other, public sector capacity to fill the void is at all-time low. An accidental bright spot in this research was uncovering the innovative public-private joint venture in Tirupur that launched this spring (2005). The project offers much to draw from for project planners that seek to redress the problems that have dogged previous concessions.

The big three water companies, Veolia, Suez, and RWE Thames seem to be moving out of the developing world. According to its website, Veolia lost over $100 million due to the Latin American currency problems. The company’s business strategy trends toward the markets of middle income and developed countries. A survey of the company’s press releases since March 2002, shows new water contracts in China, Poland, the Czech Republic, and the US as well as Western Europe. No new projects were announced for Latin America, the Caribbean, Africa, or South East Asia (Veolia 2005).

In Suez’s 2003–2004 Strategic Action Plan, the company stated that it would decrease its investment in developing countries by more than a third by 2005. The new focus of the group would be on Franco-Belgian markets, then Europe and North America. Beginning in early 2003 with the water and sewerage concession in the Philippines, Suez began its withdrawal from the developing world (Wells and Royere 2005).
In recent years, RWE Thames has focused on opportunities in North America, Europe, and China. Recent business developments include the acquisition of American Water Works, Ondagua in Spain, and a 49% share in China Water Company. According to the RWE Thames corporate website, the firm's strategy is to focus on western economies: "The inherent strength of the water business area centers on the fundamentals for sustainable growth in the core markets of Europe and America," (RWE 2005).

The onus will now be on local governments, many weakened by decades of outsourcing (Van Slyke 2003), to solve the persistent service gap. The privatization blueprint of previous decades is increasingly less of an option: capable private firms no longer see the business potential and politicians have become more in-step with their public, which by and large oppose privatization. The World Bank, noticeably missing from this discussion and no documents found that acknowledge this trend, still portray privatization as the main reform mechanism for the sector. However, this may be pragmatic on the World Bank's part given that the public sector may be more enervated now than prior to privatization.

Perhaps a new model will develop that is a hybrid structure, like the one being tested in India. To be sure, India is not like everywhere in the developing world. The country has abundance of highly talented people, many of whom have studied or worked at the best institutions worldwide and then returned to India by choice. No doubt, the Tirupur project had two exceptional champions in Messrs. Sakthivel and Sankaran, the latter an investment banker trained at the London School of Economics with a project portfolio approaching $10 billion and the former a self-made millionaire businessman. This will likely not be the same for Bolivia, or Ghana. However, there are lessons from
the Tirupur project, as well as the rich history of failures seen in Latin America and elsewhere.

Key Findings

Key findings from the case studies highlight three elements to enhance the success of privatizing infrastructure projects. These include the following: 1) The importance of truly collaborative local partnerships for mitigating the risk of public opposition 2) The importance of a transparent regulatory process that includes users that, preferably, also have a stake in the project’s success, and 3) The importance of broad-based equity participation among system users and other local stakeholders, including local government, to ensure stability and a willingness and ability to pay for services.

Public Support from Local Partnerships

The first finding is that, if possible, projects should have the public face of the utility be locally owned. The foreign ownership of Aguas del Tunari exacerbated the perception among people in Cochabamba that their water assets, to which they believed they had a natural right to, had been sold off to a foreign company as part of a larger globalization movement. Private investors, to the extent possible, should stay out of retail distribution and billing. Arguably, the Tirupur case’s arrangement, where water is delivered in bulk to the municipally, for the local government to distribute and bill, avoids these hazards. A foreign-owned company shutting off a residential user’s water for non-payment will surely provoke the ire of the public and possibly lead to civil protest in many countries.

Strong Regulatory Environment
Secondly, related to the lesson of local partnership in service delivery is the value of local participation in regulating user fees. Bolivia, famous for its water utility failures, has two very successful water cooperatives in Montero and Santa Cruz. Their services are successful despite their services costing more than those of the Suez-led Aguas del Illimani contract for La Paz / El Alto which was cancelled earlier this year after mass civil unrest. For the water cooperatives, local participation in ownership quelled public unrest about substantial rate hikes. Luis Fernando Yavari, a manager at the Santa Cruz cooperative, known as Saguapac, explained this inconsistency: “In La Paz you have a company that came from abroad to offer a service and make a profit, whereas in Santa Cruz, you have consumers that are also owners of the company,” (Yavari 2005).

The benefit of distributing the ownership widely among users is that it gives voice to the very people that can make or break the project’s success. The obsolescing bargain problem will always be with water and sanitation projects: once the infrastructure project is completed, the foreign investor is at increasing risk of interference or expropriation. However, as was done in the Tirupur case, substantial equity participation by locals will help mitigate those risks. Broad ownership from the users will translate into a more stable contract since the owners/users want to see it succeed and will not let government interfere or engage in "creeping expropriation," which is the gradual chipping away at investor’s ability to make money.

Project Financing

To keep project costs down, vanity or rent-seeking projects and add-ons, like the Misicuni dam in the Cochabamba case, must be eliminated. When project planners, including host countries and investors, design arrangements with public input that seeks
to meet the minimum required needs of users at the minimum cost there is widespread support; ostensibly the Tirupur case is evidence of this. Thus, to the extent possible, projects should align the interests of the concession with that of the government and the users. This can be done through creating joint public-private ownership structures as well as offering equity shares to the general public or user groups, as was done in Tirupur. Finally, industry towns offer a very good laboratory for PSP. The benefit of having industry as an “anchor” customer and/or business partner can create opportunities for many types of infrastructure services in addition to water and sanitation, such as toll roads, telecommunications, power, and public transportation. Using the industrial customers to cross-subsidize residential users makes possible otherwise unaffordable services. The Tirupur case went one step further by creating a compact with the industrial users, which assured a revenue stream for the concession and ensured that the interests of the industry users were in line with that of NTADCL. In this regard, perhaps the lesson from the Tirupur case is to get as creative as possible to reduce political and commercial risks.

Recommendations

Decades of poor management in the water sector have left many people in the developing world without adequate service. Although there still may be willing investors and host countries—undoubtedly privatization in its current form is far from over—but it may be, as Harvard Business School Professor Louis T Wells Jr. and Eric Gleason pointed out in their article “Is Foreign Infrastructure Investment Still Risky,” a case where the higher returns are causing the higher risks (Wells and Gleason 1995). One implication of this statement is that unless non-commercial risks can be mitigated, and
therefore the need for high returns, these types of infrastructure projects will attract only those investors with the largest appetites for risk, rather than the most qualified.

This, then, begs the question: What Should Developing Countries Try Next With regard to PSP in Financing Water and Sanitation Infrastructure? Moreover, in what ways might they try to achieve more of the pluses and avoid some of the minuses, or is it hopeless? The following are recommendations to promote more successful PSP in the water sector; they are targeted to three specific audiences 1) International financial institutions, 2) Government officials, and 3) Civil society organizations.

Recommendations for International Financial Institutions

**Strong Economic Base for Sustainability.** Select for investment regions that have a strong local economy, ideally including a healthy industrial base. In the case of Tirupur, the Tirupur Exporters' Association is comprised of wealthy firms willing and able to pay for water services. In Cochabamba, on the other hand, it was doubtful the concessionaire could recover its investment. They had unrealistically, expected to recoup project costs with users fees charged to residential customers, many of them impoverished.

**Transparency for Positive Public Relations.** Collaborate with a strong local government or parastatal institution that has positive relations with the public. Project partners should provide a local face to the project that is accessible and interested in the views of the users. In the case of Tirupur, the local municipality and state government had positive relations with the public, and were known as a positive vehicle for public voice. This was not the case in Argentina, where corporate and government interests placed the concessionaire in a highly indebted and unstable environment. In the case of
Cochabamba, the mistake was giving the highly visible role of retail service delivery to a foreign entity, which created distrust and opposition.

*Regulation and Accountability.* Ensure that an established regulatory body has built-in checks in balances, ensuring that partners’ primary interests and agendas for the project are the project success, as was the case in Tirupur. Quick investment recovery, as was attempted to in Argentina and Bolivia, was not a part of the strategy for the Tirupur project sponsors. Political interference in rate setting, as was seen in Cochabamba, would not have served the local political partner in Tirupur well. Including the users as equity holders helps provide a perspective on tariff setting and other aspects of project income.

*Recommendations for Government Officials*

*Sustainability.* Ensure that projects are located in regions that have sufficient capital to pay for costs of service. In most cases, subsidies of some kind will be necessary, for connection charges at the least. Subsidies can come either from the government, such as is done in Santiago, Chile, or through user groups, such as industry.

In addition, governments should avoid offering excessive guaranties to private firms. Private firms are better able to assess risks without these types of insurances. In addition, an over reliance on safeguards and lead to a moral hazard on the part of firms, causing them to pursue projects that would otherwise be too risky for them. Finally, it is essential that project planners understand the prospective user base, including local preferences and willingness and ability to pay for service. As was previously described, Tirupur’s textile industry was a willing and able customer base and provides the cross-subsidy for the residential users.
Transparency for Good Public Relations. Ensure that the local government partner has the capacity to implement public meetings and gather public input to use for the tariff setting and other project features. In the case of Cochabamba, meetings were dismissed as the project timeline condensed, and there was insufficient representative government participation to ensure that the public voice in the project was heard. The absence of public meetings, at one time was considered an insignificant detail to the plan, had become a tremendous liability to the project as rates increased to unrealistic amounts, and rumors ignited violence, which resulted in the ultimate cancellation of the contract.

Regulation and Accountability. Ensure that there is adequate representation of users on the regulatory body overseeing the project, including the project-planning phase. These user/regulators should represent the various stakeholders of the project. This helps to ensure price setting that is both profitable but feasible to pay.

Recommendations for Civil Society Organizations

Sustainability. Provide frameworks for purchase of service that would enable broad distribution of water to underserved areas. In the Tirupur case, villages and townspeople were supported in their water connection and sanitation at subsidized rates. This was made possible through cross subsidies provided by industrial customers. This type of collaborative model should be encouraged to foster good faith and support for the project by both the public and the government.

Regulation and Accountability. Advocate for the participation not only of industry users (as was the case of the Tirupur project) on a regulatory body, but also the inclusion of municipality representatives to ensure fair pricing and that projects are designed to suit
local design and price preferences. These users should not have token representation but equal decision-making power; otherwise, trust will be lost in the public inclusion effort. Their inclusion also decreases the likelihood for implementation errors. Furthermore, insist on transparency in all aspects of project design and rate setting.

In order to know fully the extent to which these recommendations can be implemented, there is still much unknown about the Tirupur project and what the project will look like going forward. For example, to what extent will villagers remain satisfied with the subsidized water provided by NTADCL? How will the regulatory body powers react in response to changing conditions, such as requests for increases in water tariffs? Finally, to what extent is the long-term sustainability of this project relying on the health of a one-sector economy? Without a broader consumer base, the project may be left vulnerable to changing market preferences.

To be sure, the public and private sectors in PSP partnerships serve different masters. However, the problems of infrastructure in the developing world are so dire, and the need for capital so critical, governments cannot afford to shun the private sector. Similarly, water firms need to act more responsibly and strive for efficient projects that deliver adequate service at the lowest cost possible. The infrastructure challenge over the coming decades is enormous, it will be up to policy makers and others to help us move out of the conventional privatization model, one marred by controversy and failure, and offer an alternative model that can satisfy both the shareholder and the voter.
Appendix A

Sample Interview Questions:

1. What are some of the main challenges facing private sector participation in the water sector in developing countries?

2. What have host countries and investors learned from previous attempts to privatize water?

3. What are some of the causes prompting private water firms to leave the developing country market?

4. In what ways will local ownership impact project outcome (in Tirupur project)?

5. In what ways does eschewing government guaranties and political risk insurance impact project outcome (in Tirupur project)?
Appendix B

Interviewees:


Mr. Henry Lee, Faculty Co-Chair of the Kennedy School International Infrastructure Program and Lecturer in Public Policy, John F. Kennedy School of Government, Cambridge, MA. In-person interview, December 16, 2004.

Mr. K. Palanisami, Director and Professor, Water Technology Centre, Tamil Nadu Agricultural University, Coimbatore, India. In-person interview, July 17, 2005.

Mr. Hari Sankaran, Managing Director, IL&FS, Mumbai, India. In-person interview, July 13, 2004 (Chennai, India), April 9, 2005 (Cambridge, MA) May 13, 2005 (Cambridge, MA); email interview, August 30, 2005.

Mr. K. Sivagnanamurthi, President, President, Sivasakthi Textile Processors, Tirupur, India. In-person interview, July 16, 2004.

Mr. V Satyanarayana, Senior Infrastructure Finance Advisor, Indo-USAID Financial Institutions Reform and Expansion (FIRE) Project (former), New Delhi, India. In-person interview, July 10, 2004.

Mr. R. Shanmugam, Managing Director, Classic Knits, Tirupur, India. In-person interview, January 7, 2005.

Mr. M.C. Srikanth, CFO, NTADCL, Chennai, India. In-person interview, January 10, 2005; email interview, August 30, 2005.

Mr. Sameer Vyas, Managing Director, NTADCL, Chennai, India. In-person interview, July 8, 2004 and January 10, 2005.

Appendix C

Project Finance Example:

The following is a simplified example of how a project finance calculation might be conducted. The example is for a water project in India:

Compare internal rate of return (IRR) with the cost of equity (CE) or, if appropriate, weighted average cost of capital (WACC) if there is a combination of equity and debt. If the IRR is greater than the cost of capital then project is sound financially (Guasch 2004).

Since the cost of capital (weighted average of the cost of equity and cost of debt) is 32.65% and greater than the projected IRR of 20%, the firm would be advised against pursuing the project.

Assume IRR 20% from user fees, cost of equity:

\[
CE = (R_f) + (MRP) \times \beta + CRP + SRRP
\]

Where

- \(R_f\) = risk-free rate
- MRP = market risk premium
- \(\beta\) = sector beta
- CRP = country risk premium
- SRRP = sector and regulatory risk premium

\[
CE = 4.28\%^{25} + 12.98\%^{26} \times 1.53^{27} + 4.5\%^{28} + 4\%^{29}
\]

\[
CE = 32.65\%
\]

Cost of Capital = 32.65%

---

25 The risk-free rate usually refers to US Treasury bill rates, essentially a riskless asset. I selected a 10 year bond which yields 4.32%. Source: http://www.bloomberg.com/markets/ rates

26 The market risk premium is the difference between the return of the market (S&P 500) and the risk-free rate (T-bills). The S&P 500 is often used as a proxy when measuring the market risk premium. It is the expected return in the market portfolio, as represented by the S&P 500, essentially America’s 500 largest companies. During the 1990s, the S&P 500 averaged yearly returns of 17.3%. 17.3 - 4.32 = MRP. (Note: 17.3% seems unrealistic given the current state of the economy). Source: www.fool.com.

27 Beta is a measure of risk for a certain industry. Beta is calculated by averaging the betas of comparable firms. The firms Suez SA (SZE) and Veolia Environment SA (VE) have betas of 1.695 and 1.367, respectively, averaging to 1.531. Source: Yahoo! Finance.

28 The country risk premium measures the amount extra in return an investor should expect for investing in a country given its risk profile. Things like regulatory, political, and currency risks all contribute to high country risks. Our proposed project will be in India has a country risk premium of 4.50%. Examples of countries with no risk premiums include Netherlands and the US. Source: http://pages.stern.nyu.edu/~adamodar/New_Home_Page/datafile/ctryprem.html

29 The sector and regulatory risk premium measures country-specific risk. According to J. Luis Guasch in Granting and Renegotiating Infrastructure Concessions, SRRP typically ranges from 2-6%; I took the average, 4%.
Appendix D

Ownership Structure of the Tirupur Water Supply Project:

Equity Shareholding Pattern of New Tirupur Area Development Corporation Limited (NTADCL)

As on 31/03/2005

<table>
<thead>
<tr>
<th>Name of the Shareholder</th>
<th>Commitments No of shares</th>
<th>Amount Rs in million</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Individuals</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Tamil Nadu Water Investment Company Limited (TWICL)</td>
<td>104,999,993</td>
<td>1,049,999,930</td>
<td>31.56</td>
</tr>
<tr>
<td>AIDQUA Holdings (Mauritius) Inc.</td>
<td>90,000,000</td>
<td>900,000,000</td>
<td>27.05</td>
</tr>
<tr>
<td>Life Insurance Corporation of India</td>
<td>20,000,000</td>
<td>200,000,000</td>
<td>6.01</td>
</tr>
<tr>
<td>General Insurance Corporation of India (GIC)</td>
<td>20,000,000</td>
<td>200,000,000</td>
<td>6.01</td>
</tr>
<tr>
<td>The New India Assurance Company Ltd. (NIACL)</td>
<td>3,750,000</td>
<td>37,500,000</td>
<td>1.13</td>
</tr>
<tr>
<td>United India Insurance Co. Ltd. (UII)</td>
<td>3,750,000</td>
<td>37,500,000</td>
<td>1.13</td>
</tr>
<tr>
<td>National Insurance Company Ltd. (NICL)</td>
<td>3,000,000</td>
<td>30,000,000</td>
<td>0.90</td>
</tr>
<tr>
<td>The Oriental Insurance Company Limited (OICL)</td>
<td>2,250,000</td>
<td>22,500,000</td>
<td>0.68</td>
</tr>
<tr>
<td>Tirupur Infrastructure Development Company Limited (TIDC)</td>
<td>2,250,000</td>
<td>22,300,000</td>
<td>0.68</td>
</tr>
<tr>
<td>Mahindra Infrastructure Developers Limited</td>
<td>15,000,000</td>
<td>150,000,000</td>
<td>4.51</td>
</tr>
<tr>
<td>Mahindra Construction Company Limited</td>
<td>7,500,000</td>
<td>75,000,000</td>
<td>2.25</td>
</tr>
<tr>
<td>Mahindra Holdings &amp; Finance Limited</td>
<td>7,500,000</td>
<td>75,000,000</td>
<td>2.25</td>
</tr>
<tr>
<td>WSA Engineers India Pvt. Ltd.</td>
<td>15,000,000</td>
<td>150,000,000</td>
<td>4.51</td>
</tr>
<tr>
<td>Others - to be filled up</td>
<td>37,700,000</td>
<td>377,000,000</td>
<td>11.33</td>
</tr>
<tr>
<td><strong>TOTAL</strong></td>
<td><strong>332,700,000</strong></td>
<td><strong>3,327,000,000</strong></td>
<td>100%</td>
</tr>
</tbody>
</table>

Source: (Srikanth 2005)

30 The Government of Tamil Nadu’s contribution is through the Tamil Nadu Water Investment Company Limited (TWICL) of Rs 1050 million. TWICL is financed as follows: Equity: Rs 650 million has been financed by the Government of Tamil Nadu (Rs 300 million) and IL&FS (Rs 350 million). Debt: Rs 400 million has been financed by the Government of Tamil Nadu (Rs 250 million) and IL&FS (Rs 150 million).
31 Though foreign capital may come from IL&FS contribution in TWICL, AIDQUA Holdings is the sole foreign investor.
32 The Tirupur industry’s contribution is through the Tirupur Infrastructure Development Company Limited (Rs 100 million). This contribution came from collections from user industries (approximately 500 firms with contributions based on proposed water consumption). The Municipality of Tirupur has not contributed money but has made available land on favorable lease terms.
References


92


