WORLD BANK WORKING PAPER NO. 2

Private Participation in Infrastructure in China

Issues and Recommendations for the Road, Water, and Power Sectors

Michel Bellier
Yue Maggie Zhou

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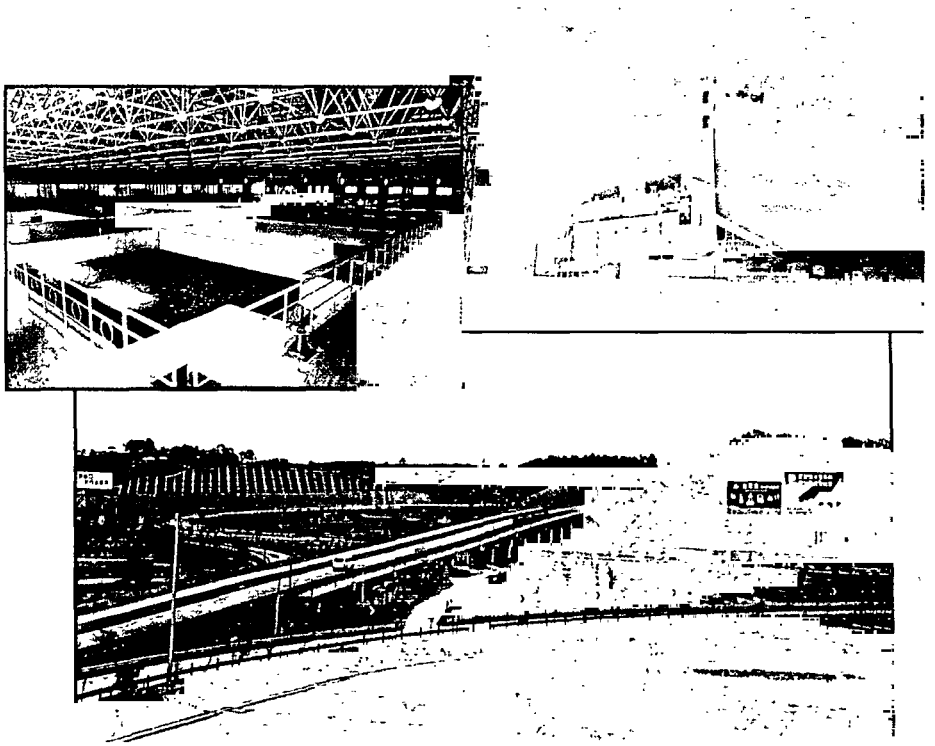

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FOREWORD

Since the late 1970s China's economic reforms have generated stellar growth, averaging 8 percent a year. As a result poverty has fallen considerably, with more than 200 million people lifted out of extreme poverty. The economy is fueled by enormous flows of foreign direct investment—the highest in the developing world China has become a powerful and important player in the global economy, as well as an economic powerhouse in East Asia.

Infrastructure has played a major role in China's rapid development. Over the past decade the road network expanded by more than 40 percent, water production grew by more than 50 percent, and power generation exceeded 300 gigawatts—making China the world's second largest energy producer. But while this performance is unprecedented, there is room for improvement. In absolute terms China has had considerable success in attracting foreign direct investment in infrastructure, including road, water and sanitation, and power projects. Still, the amounts account for a small share of foreign direct investment flows and for only about 10 percent of total investment in infrastructure.

The government's plans to further liberalize infrastructure and to develop western China should ensure greater achievements—and challenges—over the next few decades. Inadequate infrastructure services are a major obstacle to improving poor people's lives and to increasing economic activity in less developed regions In addition, to reap the expected benefits of World Trade Organization accession, exporters and consumers will require cheaper, more reliable, and more efficient infrastructure services. Meeting this demand will require more than $75 billion a year in infrastructure investment over the next decade. Thus the Chinese government must raise the resources to finance the additional investment while improving service quality and efficiency. Increasing the participation of the private sector—domestic and foreign—is an obvious policy option.

Building on the successes and lessons of recent efforts, including pilot BOT (build, operate, transfer) projects, the government is further developing the framework for private participation in infrastructure. In doing so, it is drawing on best practices and useful experiences from other developing as well as industrial countries. Above all, these other countries show that successful private participation in infrastructure requires appropriate umbrella policies and regulations that provide adequate comfort to investors and financiers while protecting the public interest. Approaches to private participation will likely vary by sector, depending on the level of reform and the strength of relevant institutions. But well-designed public-private partnerships can support government efforts to alleviate poverty and ease regional disparities. Most important, private participation in infrastructure can reduce the fiscal burden on public agencies and improve the targeting of subsidies to poor people, students, the elderly, and other disadvantaged groups.

The report that follows was prepared by the World Bank Group to help improve China's approach to private participation in infrastructure—focusing on roads, water and sanitation, and power generation—by expanding foreign direct investment and domestic financing in such projects. The initiative also compared China's experiences with those of other countries. Based on these analyses, strategic suggestions were presented to the Chinese government.

This report is the result of numerous policy discussions and technical studies that would not have been possible without the support and cooperation of China's State Development Planning Commission and many other government agencies It is hoped that this work will help the Chinese government advance its infrastructure development plan.

Jemal-ud-din Kassum
Vice President, East Asia and Pacific Region
The World Bank

Abstract

Since 1978, but especially over the past decade, China has undertaken extensive policy reforms and investments in infrastructure and has experimented with many models for private participation in infrastructure However, none has been fully developed and implemented, and more than 90 percent of investments have come from government. A great challenge lies ahead with the huge infrastructure investments still needed Weaknesses in the legal and regulatory framework are obstacles to broader private participation in infrastructure, and a series of issues deserve separate attention in the transport, water and power generation sectors.

This report reviews China's current framework for private participation in infrastructure, highlights achievements from and issues with private investments in roads, water, and power generation, and offers recommendations for overcoming hurdles to wider private participation from academic research, cross-country experiences and domestic and international practices.

ACKNOWLEDGMENTS

The Private Participation in Infrastructure Framework Initiative was funded by the Public-Private Infrastructure Advisory Facility,[1] AusAID (the Australian government's foreign aid program), the World Bank, and the International Finance Corporation. The initiative encompassed three main activities:

- Reviewing China's framework for private participation in infrastructure and identifying achievements in roads, water, and power generation—including assessments of a sample of completed transactions.
- Comparing China with a group of developing and industrial countries and identifying useful lessons.
- Developing recommendations for improving private participation in infrastructure in China.

The initiative was managed by Michel Bellier, from the World Bank's Transport Sector Unit for the East Asia and Pacific Region, and Yue Maggie Zhou, from the International Finance Corporation's Private Sector Advisory Policy and Transaction Unit.

This report was undertaken by the World Bank and International Finance Corporation at the request of China's State Development Planning Commission, in March 2000. Written by Yue Maggie Zhou and Michel Bellier, it is the result of collaborative research by many consultants and experts, including Australia New Zealand Bank, Bridge of Trust, Chwoon Ang Lim, Clifford Chance, Credit Agricole Indosuez, Economic Consulting Associates, Economie et Humanisme, Freshfields Bruckhaus Deringer, Linklaters, Mitchell Stanfield & Associates, MottMacDonald, PhaceLift, SOGREAH, and White & Case.

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An international Conference on Private Participation in Infrastructure was held in Beijing, China, in 2001 to discuss the many issues raised in an earlier draft of this report. The conference was attended by internationally renowned experts and policymakers, private sector representatives—including legal advisers, technical consultants, strategic operators, and financial investors—and many state and local officials from the Chinese government. Their views were taken into account by the authors when preparing this final report.

The authors are also grateful to the many people who assisted the project team by providing source documents, participating in conceptual discussions, and performing peer reviews of drafts.

1 PPIAF is a multidonor technical assistance facility aimed at helping developing countries improve the quality of their infrastructure through private sector involvement For more information on the facility, see the Website at http //www ppiaf org

ABBREVIATIONS

$A	Australian Dollar
ADB	Asian Development Bank
B	Thai Baht
BOO	Build, Own and Operate
BOT	Build, Operate, and Transfer
BROT	Build, Rehabilitate, Operate, and Transfer
BTO	Build, Transfer, and Operate
CAI	Crédit Agricole Indosuez
CfD	Contract for difference
CFS	Co-Financing Scheme
CJV	Cooperative Joint Ventures
CPI	Consumer Price Index
CSOP	Capital Structure Optimization Program
DBFO	Design, Build, Finance, and Operate
ECA	Export Credit Agency
EIB	European Investment Bank
EJV	Equity Joint Venture
EPF	Employee Provident Fund
FDI	Foreign Direct Investment
FIE	Foreign Invested Entity
FSR	Feasibility Study Report
FX	Foreign Exchange
GDP	Gross Domestic Product
HK	Hong Kong
HK$	Hong Kong Dollar
IADB	Inter-American Development Bank
IBRD	International Bank for Reconstruction and Development
IFC	International Finance Corporation
IPP	Independent Power Producer
IMF	International Monetary Fund
IPO	Initial Public Offering
IPP	Independent Power Producer
JV	Joint Ventures
KLSE	Kuala Lumpur Stock Exchange
LPVR	Least Present Value of Revenue
LRT	Light Rail Transit
MGS	Malaysia Government Security
MLA	Multilateral Agency
NPL	Non-Performing Loan
NRW	Non-Revenue Water
NTHS	National Trunk Highway System
O&M	Operations and Maintenance
PHP	Philippines Peso
PPA	Power Purchase Agreement
PPI	Private Participation in Infrastructure
PPP	Public Private Partnership
PRC	People's Republic of China
RAM	Rating Agency of Malaysia
RM	Malaysian Ringgit

RMB	Chinese Currency (Yuan)
ROT	Rehabilitate, Operate, and Transfer
SAFE	State Administration of Foreign Exchange
SDPC	State Development Planning Commission
SEC	Securities and Exchange Commission
SEHK	Stock Exchange of Hong Kong
SETC	State Economic and Trade Commission
SOC	Social Overhead Capital
SOE	State-Owned Enterprise
SP	State Power
SPP	Small Power Producer
TOP	Tariff One Part
TOT	Transfer Operate and Transfer
UK	United Kingdom
US$	United States Dollar
WFOE	Wholly Foreign Owned Enterprise
WTO	World Trade Organization

EXECUTIVE SUMMARY

Since 1978, but especially over the past decade, China has made extensive policy reforms and infrastructure investments. China's highways now carry more than 15 billion tons of freight and 15 billion people a year. Since 1993 growth in traffic has averaged 8 percent a year, and since 1998 annual investment in roads has been more than 200 billion renminbi ($24 billion), or 2.5 percent of GDP. Between 1990 and 1998 the capacity of water production plants and the length of the water network increased nearly 50 percent—the result of 86 billion renminbi ($10 billion) in investment over the same period. China's power generating capacity exceeds 300 gigawatts, making it the second largest in the world.

Though there has been great success over the past decade, a greater challenge lies ahead with the huge investment needed for the next decade. In his report on the new Five-Year Plan at the fourth session of the Ninth National People's Congress, Premier Zhu Rongji emphasized the importance of intensifying construction of water, transportation, energy, and other infrastructure facilities and of recognizing the enormous importance of strategic issues related to China's resources. To develop infrastructure and clear bottlenecks, some $750 billion will need to be invested over the next decade—with annual investments close to the peak level reached in the past. The task is even more challenging given the government's urgent plans to develop western China.

Despite the enormous financing involved, over the past decade more than 90 percent of infrastructure investments came from the public sector. Private capital can be instrumental in building infrastructure capacity, allowing government funds to be used for pressing social, education, and health needs. Yet private capital accounted for just 10 percent of infrastructure investments over the past decade.

China has experimented with many models for private participation in infrastructure, but none has been fully developed and implemented. Most infrastructure projects involving the private sector have been negotiated and carried out through joint ventures between private operators and government or quasi-government entities. Although such arrangements provide political comfort,

they raise concerns about conflicts of interest between government's role as regulator and as the (indirect) owner of project companies.

In accordance with the 1995 BOT Circular, three pilot BOT (build, operate, transfer) projects have been procured through competitive public bidding—with mixed results. The projects are Chengdu Water, Laibin B Power, and Changsha Power. Most project companies are wholly foreign-owned entities, which helps reduce conflicts of interest. These projects have attracted a lot of attention from investors because they have strong political support from the central government as well as more stringent procurement procedures and tighter contract structures. However it is not clear how the BOT model can be used more widely. Moreover, the pilot BOT projects have not had fully satisfactory outcomes, and BOT is not necessarily the most appropriate model for private participation in infrastructure. Thus China needs to implement other models on a pilot basis.

Chinese laws and regulations are a major obstacle to broader private participation in infrastructure. Among the weaknesses:

- ***A comprehensive legal framework is needed to consolidate the various pieces of legislation.*** In recent years China has made tremendous progress in improving the investment environment, issuing a series of crucial laws—including the Bidding Law, unified Contract Law, Security Law, and Project Finance Measures. Still, a comprehensive, consistent body of legislation is needed for private participation in infrastructure. In particular, the BOT Circular has limitations and should be replaced by a comprehensive framework law for private infrastructure projects. A framework law could establish a basic legal structure applicable to a wider range of private investment models (leases, concessions, and so on) and funding sources (foreign and domestic) than are covered by the BOT Circular. A framework law could also establish basic contract rights for private infrastructure projects, including the right to collect tariffs, the right to receive termination payments, and the right for lenders to "step in" to a project in cases of default.
- ***The legal system leaves many important, routine decisions to administrative authorities, through an approval process that should be streamlined.*** To start a project, an investor (through the local government) has to obtain approvals from many government ministries, bureaus, commissions, and agencies. State Development Planning Commission approvals are required for most project proposals and feasibility studies for projects involving foreign capital and more than $30 million in investment. State Administration of Foreign Exchange approvals are required for foreign financing, security packages, and the like. Approvals are also required to establish and register the project company, followed by a third layer of approvals for starting operations. The cumbersome approval process is sometimes redundant and overlapping, with unclear legal effects, and has often created delays and uncertainty in project initiation and disputes in implementation.

  Many efforts are needed to streamline the approval process. Legislation on approvals should be tightened The number of post-award approvals should be minimized. Approval authorities should be given more specific mandates. Central and local government responsibilities and authority should be clarified. Approval requirements should be made more transparent. Some approval procedures should be standardized. Communication between central and local approval authorities should be improved. The $30 million threshold should be raised where appropriate, and criteria for exemption from central approval should be clarified. The practices of one-stop approval shops should be reviewed. A standard approval process should be introduced for small projects. Long-term commitments should be given to approvals of tariff adjustments.
- ***Increasing private participation in infrastructure has put pressure on local governments to strengthen their capacity as granting authorities.*** Building capacity will require local

governments not only to share knowledge, skills, and best practices but also to secure strong commitment and technical assistance from the central government. The central government should prepare and disseminate standard materials for private infrastructure projects, promote and publicize the framework for private participation in infrastructure, develop pilot projects based on best practices, provide technical support, establish a network of expertise among granting authorities, and benchmark utilities. To perform these tasks, the central government could first establish a central coordinating office.

- ***The rules, institutions, and instruments of independent regulation have not been developed.*** Independent regulation is especially important for infrastructure because of infrastructure's direct influence on the public and its monopolistic nature. Independent regulation should be guided by at least two basic principles: the institutional structure should clearly separate policy and regulatory functions from ownership and management responsibilities, and the regulator's decision making process should be independent and transparent.

Most of the private investment in China's infrastructure has been foreign and has been primarily equity, with little debt financing. To mobilize domestic financing and to ensure sustainable foreign capital inflows—which have slowed in the wake of the East Asian financial crisis—several issues should be carefully addressed:

- ***The need for sustainable financing for infrastructure projects requires that risks be balanced between public and private parties.*** Some Chinese officials have expressed concern that certain contracts for private infrastructure projects provide investors with excessive returns and require government to assume too many risks, especially commercial risks. Such contracts, to some degree, reflect China's inadequate laws and regulations investors demand favorable commercial terms to compensate for legal and regulatory risks, which should instead be borne by government Only after these risks have been mitigated will foreign investors lower their requirements for commercial terms. This principle also applies to domestic private capital, as domestic investors will seek similar protection against the risks that have hindered foreign investments. Although risks vary by project, international best practice is that risks should be carefully assessed and allocated prior to contract signing or bidding. Furthermore, some risks can be mitigated more effectively by introducing performance-based contracts
- ***Project Finance Measures need to be better defined.*** Project financing has not been a major form of funding for private infrastructure projects in China. The main concerns involve the credit risk of the counterparts and the constraints and uncertainties arising from the 1997 Project Finance Measures and 1995 Security Law. To get a foot in China's market, foreign investors in the three BOT pilot projects relied on their corporate balance sheets to secure debt financing from banks. But this approach is not replicable or sustainable for investors who want to pursue a lot of investment projects in China. Investors have come to realize that the interpretation and application of the Project Finance Measures is not simply a matter of predictable law and regulation. Rather, the granting of project finance approval is an investment policy tool as well as a means of regulating foreign loans. While governments have valid concerns about the key issues involved in a typical infrastructure project—the scale of capital investments, foreign exchange obligations, potential effect on domestic inflation, possible risk exposure of state entities through foreign debt and guarantees, and so on—more clarity could be provided to investors to broaden the scope of project financing, better define the applicability of Project Finance Measures, and reduce dependence on the complex approval process.
- ***Although the Security Law has played a crucial role in China's efforts to provide an enabling investment environment, its implementation should be strengthened.*** Investors, especially lenders, have encountered many problems with the creation and enforcement of

securities, whether guarantees, mortgages, or pledges. This is partly due to underdeveloped property rights and courts, and partly to weaknesses in regulation and administrative systems.

- The *registration system* needs to be strengthened by providing better training to registration staff, incorporating securities that existed before the system was established, unifying registrations of security on land and buildings, and making registration records available to the public (or at least potential lenders).
- The prohibition on *guarantees* in a number of laws should be clarified and narrowed, with more flexibility for large infrastructure projects. For example, guarantees on termination payments should not be considered repayment guarantees, which are prohibited.
- Security on *contract rights*, which is crucial for infrastructure projects to obtain debt financing, should be provided by granting a legal basis for the full assignment of contract rights for infrastructure projects, granting full security on such contract rights in the Security Law, and establishing a registration system for such security.
- The provision and enforcement of *mortgages* can be improved by strengthening the registration system on grant fees for land and clarifying legal provisions for third-party rights, including easement rights; unifying land and building registries; allowing mortgages on future or after-acquired property, such as allowing a land mortgage to cover buildings to be constructed on the land, or a mortgage against machinery and equipment to include after-acquired equipment; permitting lenders to unilaterally carry out registration based on a prior mortgage; providing a legal basis for floating charge; and providing a legal basis for maximum amount security (security over accounts receivable, inventories, fluctuating credit balances, and the like).
- Restrictions on *domestic entities providing security to foreign entities* should be relaxed, especially when foreign currency loans have already been approved and registered.
- Claims on secured interests needs to be effectively *enforced* by disassociating asset appraisal firms from local governments, giving lenders opportunities to present their recommendations in front of a judge in state enterprise bankruptcy cases, and granting lenders clear legal right of appeal to a higher court.

☐ ***Domestic banks play a limited role in financing infrastructure projects*** because of interest rate controls imposed by the People's Bank of China, project finance restrictions imposed by the State Administration of Foreign Exchange, the lending and risk assessment capacity of domestic banks, and other constraints. Given the natural hedge that domestic currency financing can offer, bank reform (though beyond the scope of this report) should be expedited.

☐ ***Bonds also provide limited funding for infrastructure projects.*** Bonds can be instrumental in facilitating private participation in infrastructure. Relative to banks and equity investors, bondholders take less risk and so require higher financial disclosure and a tighter security package. Development of the bond market is beyond the scope of this report, but it requires introducing mandatory credit ratings, relaxing pricing restrictions imposed by the People's Bank of China, and removing regulatory restrictions on primary market participation by insurance companies and pension funds.

In addition to the issues affecting all sectors, those affecting roads, water, and power generation deserve separate attention, given sector-specific needs for private participation and different stages of reform.

Private participation models for roads have been limited to joint ventures and securitization of assets, and even these have experienced difficulties. To broaden private participation, including by *domestic investors, government policy* toward the public and private sectors must be clarified. As a first step toward increased financing for roads, especially for projects not attractive enough on their own (such as those in western China), *provincial toll road authorities* could be created to consolidate projects into a viable pool for financing.

For **water** the key issue is the financial viability of water and sanitation utilities. Sector reforms, especially *tariff reform and further corporatization* of water and sanitation utilities, is of particular importance These utilities should be operated on a commercial basis, with better investment planning to improve service, independent management and professionally audited financial statements, accountability for performance and easy monitoring of performance data by the public, and more transparent subsidies (if needed) targeted at the poorest groups. Furthermore, most private investment in the sector has involved BOT schemes for water treatment plants financed by foreign capital. Despite potential savings, *direct private participation in water networks* has not been allowed. However, it was reported in recently that the government plans to end the state monopoly on the vast urban water supply system by allowing private investors to build water distribution systems—welcome news for investors This initiative could be carried out through pilot concessions for large systems and by awarding leases, management contracts, or small-scale concessions to smaller systems to domestic private investors. Finally, although water and sanitation services are municipal responsibilities, strong *technical assistance from the central government* is essential for sector reforms and private investments to proceed smoothly.

For **power,** an ongoing policy dialogue between the government and the World Bank is promoting liberalization of the sector through market reform. Thus this report only examines weaknesses in the *current transitional market structure* that are not conducive to private investment, such as weaknesses in the legal and regulatory framework that prevent expansion of pilot pool markets, the lack of a mature structure for market governance, limited access to market settlement information that could facilitate long-term planning by investors, and so on. Just as important is identifying ways to adapt *existing long-term power purchase agreements* to fit into the pool market structure, and to ensure investors' interest and confidence in the sector. Investors' interest in the power purchase agreements can be protected in the context of market reform by using an intermediary (like the market trader in Australia pool market) that isolates the agreements from the obligations imposed by the market rules, or by adopting a vesting contract for differences that provides for the transferability of the rights and obligations under such contracts (including the assignment or transfer of such rights as security for financial obligations). Furthermore, investors will not buy into the pool market concept unless cross-ownership of assets by the government is resolved. Thus new generation capacity needs to be procured through various private infrastructure models—but not with the traditional joint venture approach, which creates conflicts of interest between government's role as both owner and regulator. *Divestiture of generation assets* by the State Power Company also has to be accelerated

This report studies the above issues in detail and offers recommendations for dealing with them. The recommendations are distilled from academic research, cross-country experiences, and domestic and international best practices. If the recommendations are consistently and systematically implemented, they should aid considerably in facilitating private infrastructure investment in China

SUMMARY OF RECOMMENDATIONS

Recommendations for the Legal and Regulatory Framework

Recommendations *Details*

Enact a framework law for private participation in infrastructure

The law should:

- ☐ Establish a framework of laws for private infrastructure investments.
- ☐ Apply to all private infrastructure projects.
- ☐ Cover both foreign and domestic financing.
- ☐ Establish basic contract rights for private infrastructure projects, including the right to collect tariffs, the right to receive termination payments, and the right for lenders to "step in" in cases of default.
- ☐ Provide flexibility.
- ☐ Refer to model contracts to facilitate implementation, but not oblige parties to use standard contract terms.
- ☐ Grandfather all existing projects.
- ☐ Be consistent with sector laws.

Streamline the approval process

The central government should:

- ☐ Tighten legislation on approvals.
- ☐ Minimize the number of post-award approvals.
- ☐ Assign more specific mandates to approval authorities.
- ☐ Clarify the division of responsibilities and authority between the central and local governments.
- ☐ Make approval requirements more transparent.
- ☐ Standardize some approval procedures.
- ☐ Improve communications between the central and local approval authorities.
- ☐ Increase the $30 million threshold where appropriate and clarify criteria for exemption from central approval.
- ☐ Review the practices of one-stop approval shops.
- ☐ Implement a default approval process for small projects.
- ☐ Provide long-term commitment to approvals of tariff adjustments.

Strengthen the capacity of granting authorities

The central government can help granting authorities by:

- ☐ Preparing and disseminating standard materials on private infrastructure investment.
- ☐ Promoting and publicizing the framework for private participation in infrastructure.
- ☐ Developing pilot projects based on best practices.
- ☐ Providing technical support.
- ☐ Establishing a network of expertise among granting authorities.
- ☐ Benchmarking utilities.

To perform these tasks, the central government should consider establishing a central coordinating office.

Establish an independent regulatory framework

Transparent framework	The framework should establish: ☐ Regulatory rules. ☐ Legal instruments containing the rules. ☐ The institutional structure of the regulatory agency.
Independence of regulator	Independent regulation requires establishing at least two basic principles: ☐ Regulators should be established in a way that clearly separates policy and regulatory functions from ownership and management responsibilities. ☐ Regulators' decisionmaking should be transparent and independent.
Institutional structure of regulator	Careful consideration should be given to whether: ☐ Regulatory agencies cover an industry, a sector, or several sectors. ☐ Regulatory agencies are established at the national or local level for each sector.
Regulatory methodology	Several types of economic and tariff regulation should be considered: ☐ Rate of return. ☐ Cost plus pricing. ☐ Price-cap regulation. In many cases a combination of methodologies can be used.

Recommendations for the Financing Framework

Recommendations	*Details*
Establish an efficient mechanism for allocating risks	
Risk mitigation	The party best placed to control a certain kind of risk should assume and manage that risk. ☐ The government should assume legal, approval, and regulatory risks ☐ The private sector should assume commercial risks. ☐ Some risks should be shared between the public and private sectors. Some risks can be mitigated more effectively by introducing performance-based contracts.
Negotiation of risk allocation	Risks should be carefully assessed and allocated prior to contract signing or bidding.
Modify the Project Finance Measures	
	☐ The scope for using project financing should be broadened. ☐ The applicability of the Project Finance Measure should be better defined. ☐ The approval process for project financing should be streamlined.
Strengthen enforcement of the Security Law	
General	Property rights should be reformed and the court system should be deepened.

Registration of security	The registration system should be strengthened: • Training should be provided to registration staff. • Securities that existed before the registration system was established should be incorporated into the system. • Registrations of security on land and buildings should be unified. • Registration records should be made available to the public.
Guarantees	The prohibition on guarantees in a number of laws should be clarified and narrowed for large infrastructure projects. For example, guarantees on termination payments should not be considered repayment guarantees, which are prohibited.
Security on contract rights	• General legislation should provide a legal basis for the full assignment of contract rights for infrastructure projects. • The Security Law should provide for full security on such contract rights. • A registration system should be established for such security.
Mortgages	• Land—strengthen the registration system for grant fees and clarify legal provisions on third-party rights, including easement rights. • Buildings—unify land and building registries. • Future or after-acquired property—allow land mortgages to cover buildings to be constructed on the land, and mortgages against machinery and equipment to include after-acquired equipment; and permit lenders to unilaterally carry out subsequent registration based on prior mortgages. • Floating charge—provide a legal basis for floating charge. • Mortgage of a maximum amount—provide a legal basis for security over accounts receivable, inventories, and fluctuating credit balances.
Security granted to foreign entities	Once foreign exchange loans have been approved and registered, restrictions should be relaxed on domestic entities providing security for these loans.
Enforcement of secured claims	• Separate asset appraisal firms from local governments. • Provide lenders with opportunities to present their recommendations in front of a judge in state enterprise bankruptcy cases. • Provide lenders with a clear legal right of appeal to a higher court.
Insurance	• Allow private infrastructure projects to place part of the insurance with international insurance companies rather than just domestic ones. Consider allowing lenders to take security on reinsurance proceeds.
Promote domestic bank lending	
	• Loosen People's Bank of China interest rate controls. • Loosen State Administration of Foreign Exchange restrictions on project finance. • Strengthen domestic banks' capacity in risk assessment and structured financing. • Promote participation of foreign banks in renminbi lending
Promote bond financing	
General	Encourage high financial disclosure and tight financing and security structures.

Domestic bond market	☐ Require credit ratings. ☐ Loosen People's Bank of China pricing restrictions. ☐ Remove regulatory restrictions on primary market participation by insurance companies and pension funds.

Recommendations for Roads

Recommendations	*Details*
Policy	Establish clear policy on government's role in the sector, encouraging wider private participation.
Institutional structure	Corporatize toll road entities into provincial toll road authorities
Domestic participation	Foster the development of domestic private sponsors

Recommendations for Water Supply and Sanitation

Recommendations	*Details*
Sector reform	Pursue water tariff reform and further corporatization of water and sanitation utilities, which should be operated on a commercial basis with: ☐ Better investment planning to generate specific improvements in service. ☐ Independent management and professionally audited financial statements. ☐ Accountability for performance and easy monitoring of performance data by the public ☐ More transparent subsidies (if needed) targeted at the poorest groups.
Private investment in water networks	☐ Develop pilot projects for concessions of complete water and sanitation systems. ☐ Promote domestic private investment in the water sector.
Central government commitment	The central government should help municipalities carry out such reform, including by helping to establish systems for benchmarking and sharing information among water and sanitation utilities, and by implementing pilot projects.

Recommendations for Power Generation

Recommendations	*Details*
Market structure	The structure of the power market should be strengthened to accommodate the forthcoming liberalization of the wholesale market. ☐ Establish a consistent legal and regulatory framework, including by amending the Electricity Law and developing market rules that covers, at minimum, the responsibilities of the market operator and effective regulation of the wholesale power market. ☐ Establish a market governance structure, including an independent regulator, to ensure independent and economic merit order

dispatch, open access by generators to transmission assets, and a transparent and non-discriminatory approach to transmission pricing.
Enhance information access by releasing information to the public on market rules and other legal instruments, short- and long-term power plans of provincial power companies, and results of pilot market operations, including (at a minimum) the market price and actual system demand.
Protect existing power purchase agreements (see below).
Develop the financial securities market for hedging instruments such as contracts for differences.
Improve the creditworthiness of market participants by requiring provincial power companies to increase disclosure of their financial information
Deregulate fuel markets.

Existing power purchase agreements

Existing power purchase agreements should be protected. This can be achieved by introducing a market trader as an intermediary to isolate the agreements from the obligations imposed by market rules or by adopting vesting contracts for differences that provide for the transferability of the rights and obligations under such agreements (including the assignment or transfer of such rights as security for financial obligations).

Generation assets

Continue to procure new generation plants through private infrastructure models, but avoid the joint venture approach.
Expedite the divesture of generation assets from the State Power Company

1

INTRODUCTION

Private participation in infrastructure provides significant benefits to governments, consumers, and economies. It:

- Expedites investments in infrastructure and frees governments from heavy administrative and fiscal burdens.
- Lowers the cost of public services by increasing efficiency and improves performance through output-based contracts and incentives.
- Transfers capital, managerial expertise, and technological innovations to a country or region, stimulating the growth of domestic private infrastructure industries and capital markets.
- Shifts risks to private investors and operators, who are often better at handling them.
- Supports social and economic policy objectives, including poverty alleviation

These benefits explain the rapid worldwide growth in infrastructure projects involving private participation since the 1980s, especially in such sectors as power, water, transportation, telecommunications, natural gas, and waste management Chile, for example, has privatized its power, gas, and telecommunications industries. In addition, the private sector provides most water supply, sanitation, port, and highway services. Airports and railroads have mixed ownership, with both public and private participation. The private sector also participates in sectors mostly owned by the state, such as irrigation and urban roads (Jadresic 2001). In Australia large-scale privatizations have attracted $A60 billion in private investment—$A16 billion of it in 1999 and 2000—in infrastructure assets including power facilities, toll roads, water treatment, gas transmission and distribution, railroads, airports, prisons, hospitals, telecommunications, and ports (Porter 2001).

Concepts and Models for Private Participation in Infrastructure

In most models for private participation in infrastructure, a government or quasi-government entity responsible for delivering a public service contracts a project company to take on all or part

of the responsibilities for operating or financing the service (or both). The public entity is the granting authority, and the project company is set up by or with private investors. Table 1-1 shows the main models along a continuum of private sector involvement, from the least (service and management contracts) to the most (divestiture). The model a government chooses mainly depends on its objectives for private participation—social and economic considerations, investment needs, service quality, technology transfer, and so on.

Service and Management Contracts and Leases

With service and management contracts, the private operator (project company) does not have an ownership or investment stake and is responsible only for managing a facility or utility. At the next level are leases (also known as affermage), where the private contractor pays a leasing fee and is responsible for providing the service at its own risk. With leasing the project company operates and maintains the infrastructure but usually does not invest in new facilities or infrastructure.

Service and management contracts and leasing arrangements are often used when:

- Governments want to obtain the benefits of private management or technology but the private sector considers the political, financial, technical, or economic risks too high to own or invest in the system.
- Governments are reluctant to relinquish ownership due to their desire to maintain control or unwillingness to implement needed reforms.
- Continued government ownership provides access to low-cost funds (such as tax-exempt or donor funds) or grants that otherwise would not be available to a private utility.
- A state enterprise is in bad shape, and a service or management contract is being used in an attempt to turn it around before privatization.

Many water projects in Africa involving private participation use management contracts because technical and collection risks have been perceived as being too high and utilities are not considered creditworthy. Modified leasing arrangements were recently used in the Philippines to introduce private management of water services in small towns.

Concessions and BOT and BOO Schemes

Higher private commitment can be achieved through a concession or a BOT (build, operate, transfer) or BOO (build, own, operate) scheme. Under a concession a private entity manages a public service for a given period during which it assumes significant investment risks and some commercial risks. The concessionaire is responsible for delivering services to users in accordance with terms and conditions specified in the concession contract but is usually allowed to choose the means for

TABLE 1-1. [illegible] FOR PRIVATE [illegible]ION IN INFRASTRUCTURE

	Service or Management Contract	Lease	Concession	BOT or BOO	Divestiture
Ownership of assets	Public	Public	Public	Public/Private	Private
Capital investments	Public	Shared	Private	Private	Private
Operational efficiency	Limited	Yes	Yes	Yes	Yes
New services	No	No	Yes	Yes	Yes
Typical duration	1–5 years	8–15 years	25–30 years	20–30 years	Indefinite unless limited by license

Note: BOT stands for build, operate, transfer. BOO stands for build, own, operate.

meeting those targets. The public sector retains ownership of the assets. Concessions are common for water and transport projects.

Under a BOT scheme a private developer builds, owns, and operates a new facility at its own risk and transfers ownership of the facility to the government at the end of the contract. Revenue is ensured through long-term take-or-pay contracts for bulk supplies, or the government can provide minimum revenue guarantees. During the contract period the assets are privately owned and can be used as loan security. The BOT structure is often used for power generation in both emerging and advanced markets

A BOO scheme is similar to a BOT except that physical assets are not transferred to the public granting authority at the end of the contract. The choice between a BOO and a concession often hinges on political and constitutional considerations. In many countries the constitution prohibits private ownership of public goods. Officials in these countries often decide not to delay reforms by pursuing constitutional amendments, and choose concessions over the BOO structure. Constitutional considerations were a major reason concessions were used for water services in Manila (the Philippines).

Divestiture

Divestiture involves transferring to the private sector, through a trade sale to a strategic investor or a public offering of shares on the stock market, the ownership of existing assets and responsibility for future expansion. A number of factors should be weighed when deciding whether divestiture should occur through the stock market or through sale to a strategic investor, including the quality of the enterprise's management, its financial performance, its corporate governance, its need for new technology, industry-specific characteristics such as access to alliances and export distribution networks, and access to international financial markets.

Strategic investors make decisions based on their assessments of the future cash flow of what could be a poorly performing asset before they turn things around. A poorly performing company would not be able to access the stock market, however. The decision of which approach to take is essentially guided by perceptions of risk, which is one of the main reasons for the differences between the sales of British Telecom and of telecommunications companies in Eastern Europe (in addition to the sophisticated stock market in the United Kingdom). British Telecom, which was exposed to competition before its privatization and had a credible track record, was sold through an initial public offering (IPO). Most telecom companies in Eastern Europe were sold to strategic investors

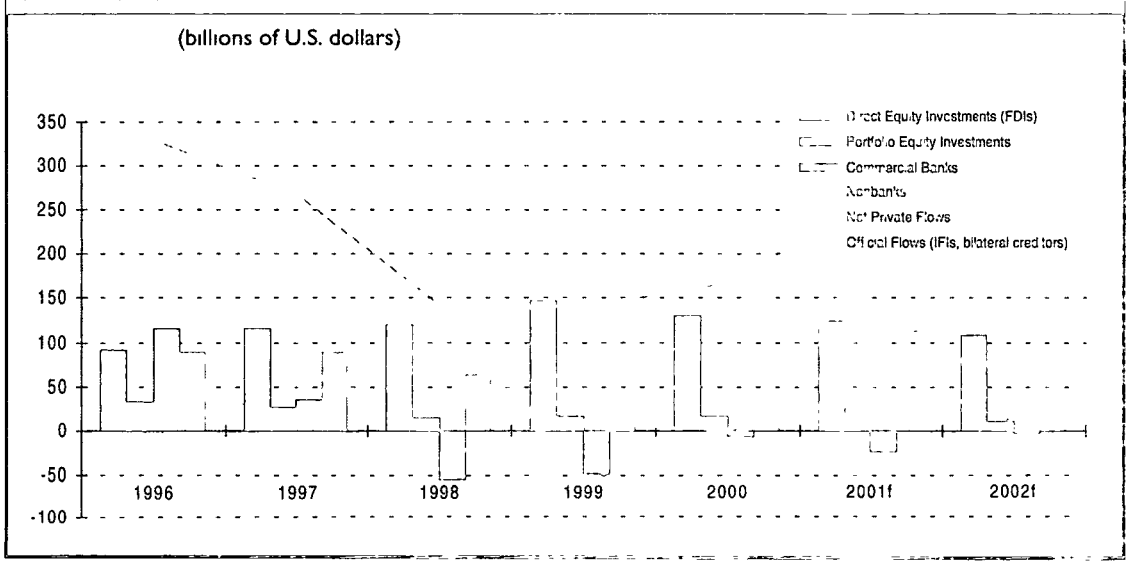
It is worth noting that private participation in infrastructure may involve both foreign and domestic funding. For example, many operations involve partial or complete divestment through the local stock market over the life of the project—contributing to the development of emerging capital markets because the privatization provides critical mass, creates investment opportunities, and generates new and broader types of investor participation (Lieberman and Kirkness 1998).

Foreign Capital Flows and Infrastructure Investments

During the 1990s net private capital flows to emerging markets grew rapidly, from $77 billion in 1990 to $330 billion in 1996, the year before the East Asian crisis hit. Though flows started to recover somewhat in the late 1990s, they are projected to fall to about $113 billion in 2002, down from $167 billion in 2000 (Figure 1-1). The decline reflects risks resulting from the September 2001 terrorist attacks in the United States, the sharp slowdown in global activity, and the effects of earlier crises in Argentina and Turkey (Institute of International Finance 2001)

Foreign direct investment dominates foreign capital flows and has been the most stable and least affected by financial crises. Portfolio equity investment has picked up a bit in recent years but remains sensitive to developments in the financial markets of industrial countries. In debt markets bank lending, though still important, continues to be less extensive than nonbank lending, such as bond financing (Institute of International Finance 2001).

FIGURE 1-1: [illegible] TO [illegible] 1996–2002



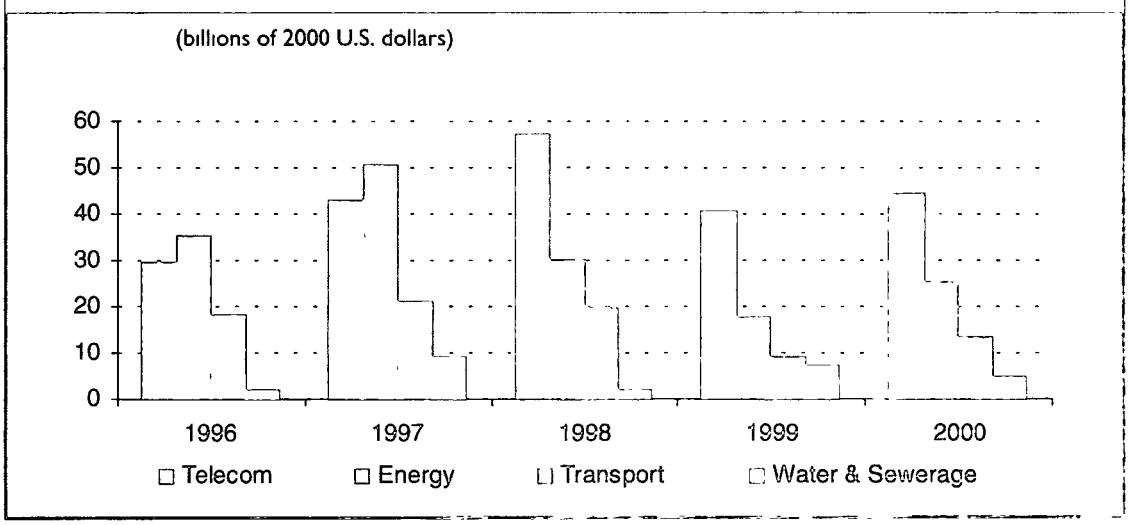
f = forecast.
Source: Institute of International Finance 2001.

Infrastructure is the primary destination for capital flows to emerging markets. Telecommunications and power are the favored sectors, accounting for 44 and 33 percent of infrastructure investments during 1996–2000 (Figure 1-2).

Regional Variations in Approaches to Private Infrastructure Investments

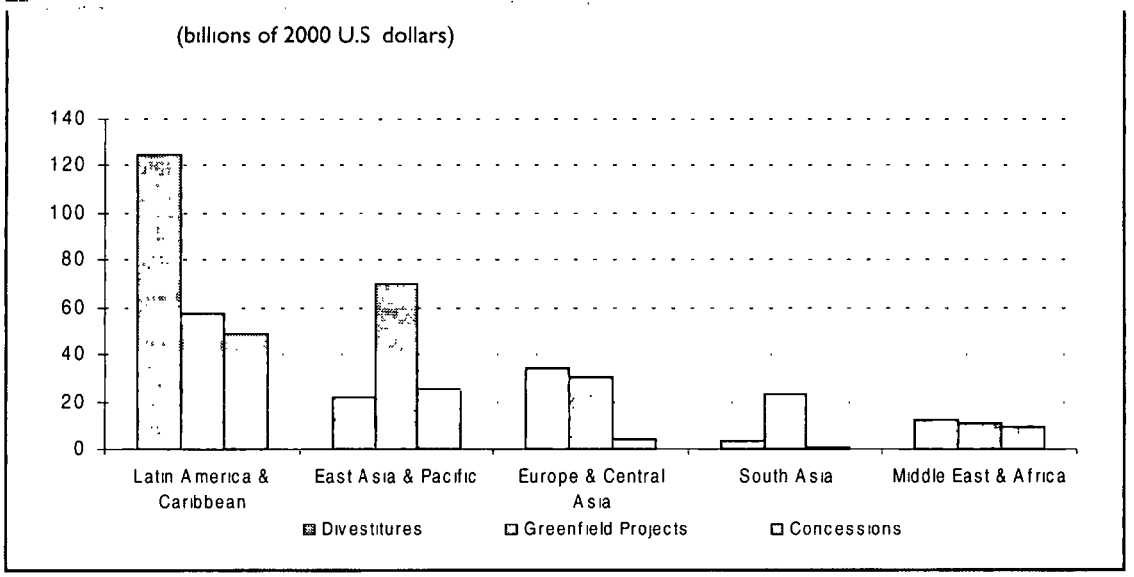
Different regions prefer different models for private participation in infrastructure (Figure 1-3). Latin American countries typically take a broad approach to infrastructure liberalization, combin-

FIGURE 1-2: [illegible] WITH PRIVA[illegible] BY [illegible] 1996–2000



Source: World Bank data.

FIGURE 1-3: INVESTMENT IN INFRASTRUCTURE PROJECTS WITH PRIVATE PARTICIPATION IN EMERGING MARKETS, BY REGION AND TYPE, 1996–2000



Source. World Bank data

ing private projects to create new capacity with privatization of existing assets. East Asian countries, by contrast, focus on creating new capacity with limited sector reforms.

Sectoral Variations in Approaches to Private Infrastructure Investments

Varying government objectives also explain different approaches in different infrastructure sectors (Table 1-2). In the water sector most developing countries need to expand capacity and distribution networks and face high levels of unpaid-for water and inefficient services Concessions improve management and maintenance of water networks and bring in private capital. Similarly, concessions for transport services allow governments to increase efficiency and investment while retaining ownership of infrastructure considered important for national security. Concessions are used for nearly all privately financed transport projects in Latin America.

Power and telecommunications, by contrast, tend to involve greenfield projects (investments in new capacity, usually through BOT or BOO schemes) and divestitures. In power, private participation has been driven by growing demand for new capacity, which requires significant investment, and by the value of unbundled assets and reform-led divestments that emphasize distribution efficiencies. The liberalization of telecommunications in recent decades has attracted significant capital commitments to the sector, mostly in the form of fresh investment or divestiture, thanks to the sector's strong potential for earning hard currency and low tariff risk

TABLE 1-2: REAL INVESTMENT IN INFRASTRUCTURE PROJECTS WITH PRIVATE PARTICIPATION, IN EMERGING MARKETS BY CONTRACT TYPES, 1996–2000 (PERCENT)

	Water	Power	Telecommunications	Transportation
Greenfield	15	48	47	17
Concessions	66	6	1	75
Divestiture	19	46	53	8

Source· World Bank data.

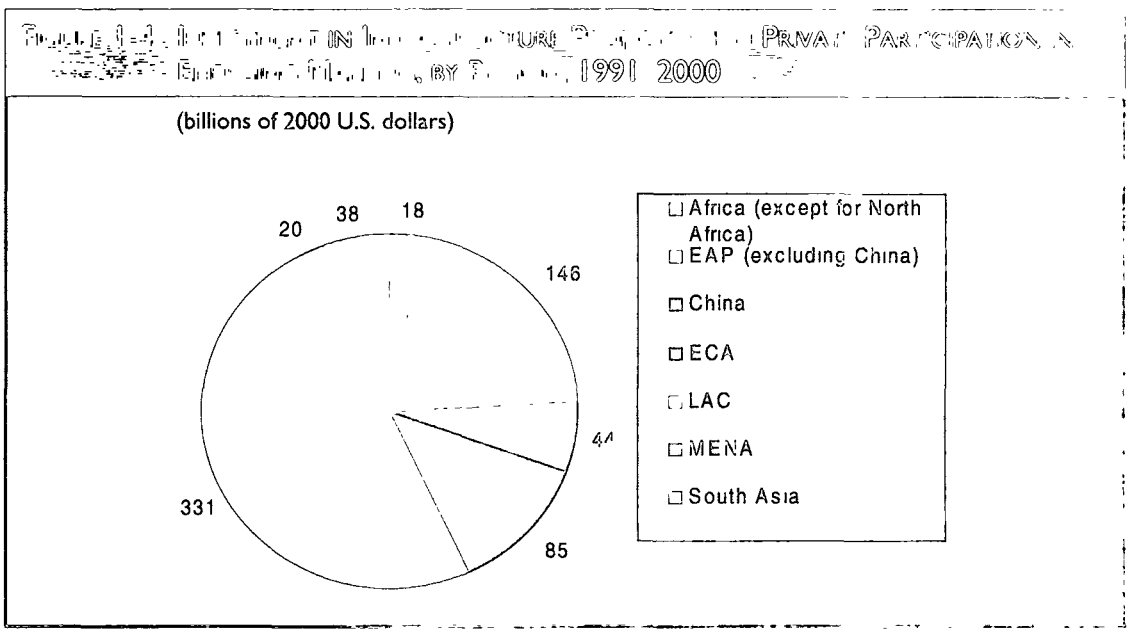
Private Participation in [illegible]ure in [illegible]

In China investments in private infrastructure projects totaled $44 billion in 1990–2000, accounting for 6 percent of such investments in emerging markets (Figure 1 4). Although enormous investments were channeled into China's infrastructure over the past two decades, only in the late 1980s and early 1990s did the government start to allow private investment As a result private investment accounted for less than 10 percent of the funds that flowed into infrastructure over the past 10 years. Most comes from foreigners; investment from the domestic private sector has been minimal.

Most of the private investment in China's infrastructure has been equity rather than a balanced mix of debt and equity. The dominance of equity is in line with general foreign investment in China. For example, of the $352 billion private capital that China received in the 1990s (that is, total capital inflows minus those from international financial institutions and official bilateral creditors), 90 percent was equity investment (Figure 1 5). Bank lending and bond financing together accounted for just 10 percent. These patterns contrast sharply with those in other developing countries and reflect lenders' reluctance to assume credit risk in China.

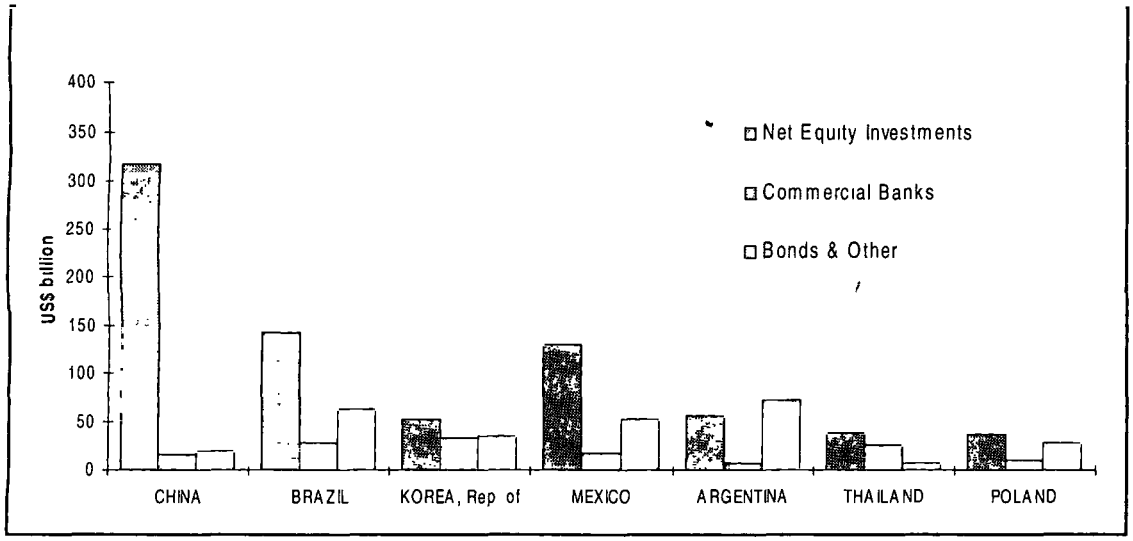
China has experimented with many approaches to private participation in infrastructure, as is discussed in detail in later chapters on roads, water and sanitation, and power generation, but none of the models has been fully developed. The projects in China can be broadly classified as "nonconcessional" or "concessional." Most traditional infrastructure projects involving private participation are nonconcessional projects, carried out by joint ventures between a foreign equity investor and a domestic company directly or indirectly owned by the central or local government. In these projects government is not a direct party to the contract and does not directly undertake the domestic company's obligations under the contract (other than providing a "support letter," which is not legally binding). A major disadvantage of nonconcessional projects is the conflict of interest between government's role as regulator and as (indirect) owner of the project company.

Since the issuance of the BOT Circular in 1995 (see Chapter 2), more concessional projects have emerged. These projects have a concessional nature broader than the concessions discussed



Note: EAP–East Asia Pacific; ECA–East & Central Asia; LAC–Latin America; MENA–Middle East & North Africa
Source: Word Bank data

FIGURE 1-5: FOREIGN DIRECT INVESTMENT AND PRIVATE DEBT FLOWS TO SELECTED DEVELOPING COUNTRIES, 1991–2000



Source: Institute of International Finance data.

earlier in this chapter, and include concessions, BOT and BOO schemes, and so on Under concessional projects the rights and responsibilities of operating a public service are granted to a private company The government, acting as the granting authority, provides a direct undertaking (or primary obligation) to the project company, usually through a legally binding, project-specific concession measure. Most of China's concessional projects have involved BOT schemes, the most prominent of which are three pilot BOT projects implemented strictly following the BOT Circular and closely monitored by the State Development Planning Commission—Chengdu Water, Laibin B Power, and Changsha Power. Most of the project companies for these projects are entirely foreign-owned.

An important breakthrough of these concessional projects is that most are procured through public competitive bidding. Through the pilot BOT projects the State Development Planning Commission wanted to develop a standard model for private infrastructure projects—including standard bidding procedures and project documents—that could be replicated nationwide by local governments. The commission hoped that a standard model would increase the transparency of project procurement by the central and local governments, lower project costs by creating competition among investors, and curb corruption.

The concessional projects have had mixed results. While Chengdu Water and Laibin B have successfully attracted foreign capital and technology, Changsha Power has yet to be closed. Investors were encouraged by the much stronger government commitment at the highest level and by the projects' much clearer, tighter regulatory and contract arrangements. Yet, but for several reasons, local governments were less satisfied with the concessional projects

- Without assistance from a foreign partner at the beginning of the project (which would be available under a negotiated approach), it was hard for them to perform the feasibility study and project structuring.
- Because of strict procedural requirements, competitive bidding requires much more time and greater effort during the preparation phase than does the negotiated approach.
- Competitive bidding has not lowered project costs, as was hoped.

The East Asian crisis scared away some sources of foreign funding.
Although the 100 percent foreign ownership resolved the potential conflict of interest, it hindered domestic private participation in infrastructure projects. This issue is of particular importance because China hopes to develop its own "Fortune 100" to counter foreign competition as it joins the World Trade Organization.

It was against this background that the State Development Planning Commission asked the World Bank and International Finance Corporation to study China's framework for private participation in infrastructure, determine how China can diversify funding sources for infrastructure projects, and promote a wider range of investment models (in addition to BOT schemes). The study was to cover infrastructure in general and roads, water, and power generation in particular.

This report summarizes the findings of that study, compares China's experiences with those of various developing and industrial countries, and offers recommendations for improvements. Chapter 2 reviews China's legal and regulatory framework for private infrastructure projects. Chapter 3 analyzes issues related to the financing of private infrastructure projects in China. Chapter 4 to 6 examine in detail additional issues specific to roads, water supply and sanitation, and power generation.

2

Laws and Regulations for Private Participation in Infrastructure in China

For this study the project team interviewed the various parties involved in a typical infrastructure project with private component—Chinese government officials (ministerial agencies, granting authorities, regulators), the domestic and foreign developers and sponsors, and the domestic and foreign banks. From these interviews the team was able to identify the participants' main concerns about private participation in infrastructure in China.

On the one hand, the government is not happy with contractual arrangements that provide investors with "overly favorable" returns and shift certain risks to domestic parties. On the other hand, investors have reservations about China's business environment—especially the complex but incomplete and ineffective legal and regulatory framework and approval process, which make it difficult and time-consuming to initiate, execute, finance, and close projects.

Although the government is trying to strike a balance between public interests and private returns, it might be overlooking the very different perceptions of risks by the parties involved in the projects. For investors, the risks involve more than just construction and revenue risks for individual projects. Investors are also assessing and pricing risks outside projects, and are especially concerned about the legal risk, the approval risk, and the regulatory risk—that is, the general risks associated with doing business in China If these broader risks can be mitigated by sound regulation, investors will be willing to take on more project-specific commercial risks and forgo guarantees on the rate of return In this regard the BOT Circular (see below) is a step in the right direction· it provides a legal basis that, together with experiences from the BOT pilot projects, can be applied to other private infrastructure projects. Still, as discussed below, significant improvements are needed to establish a broader law on private participation in infrastructure

This issue has broad implications as China develops its private sector and moves toward a market-based economy. China has achieved success with some privately owned domestic manufacturers, such as Haier, Changhong, and Wahaha The domestic private sector will also start playing a more important role in infrastructure, beyond just providing labor and equipment. China

needs to develop large, strong domestic firms that can compete against international firms in infrastructure both within China and abroad. But domestic private investors will seek similar protection against the risks that have hindered foreign investment. For example, to compete effectively nationwide, a domestic firm needs a strong national framework that limits interference and unfair treatment by local governments, especially when it operates in a region or province different from its home base. As with other industries in China, the needs of domestic investors will likely help drive the development of a more transparent, efficient legal and regulatory framework for private participation in infrastructure.

Sound regulation is also needed for China to revitalize its financial sector. Only when domestic firms are used to operating according to market rules and exhibit financial discipline will banks achieve reasonable repayment rates for their loans. If the framework for private participation in infrastructure is not carefully designed, there is a risk that domestic banks—lacking sufficient capacity in assessing sophisticated project risks and flexibility in pricing such risks—will be exposed to additional nonperforming loans.

Yet, a legal framework involves more than just passing legislation. In many cases the implementation and enforcement of the legislation—including processes for project approval and subsequent regulation—are more problematic to investors than the laws themselves. Thus an effective legal system should incorporate such fundamental elements as the rule of law, respect for contract rights, and an independent court system.

General Legislation for Private Participation in Infrastructure

China has made impressive progress in establishing laws and regulations for private investment in infrastructure. These include:

- The General Principles of the Civil Law (1986).
- The unified Contract Law (2000)
- Administration of Land Law (1999).
- The Foreign Investment Catalogue—including the "Interim Provisions on Guiding Foreign Investment Direction" and the "Catalogue for the Guidance of Foreign Investment Industries" (1995), issued by the Ministry of Foreign Trade and Economic Cooperation—which stipulates permitted foreign equity participation in each industry, including infrastructure sectors.
- Company laws, including the Company Law (1994); joint venture laws, applicable to equity joint ventures (profit sharing based on equity holding) and cooperative joint ventures (profit sharing based on contract terms regardless of equity holding); and the Wholly Foreign-Owned Enterprise Law.
- The Security Law (1995), followed by numerous interpretations offered by various government entities.[1]
- The Project Finance Measures.[2]
- The Bidding Law (1999).

1. Including "An Explanation of the Security Law of the People's Republic of China" (1995) by the National People's Congress, "Interpretation of the Supreme People's Court on Certain Questions Relating to the Application of the Security Law" (2000), and other explanations and regulations issued by the Supreme People's Court, People's Bank of China, State Administration of Industry and Commerce, State Development Planning Commission, Ministry of Land and Natural Resources, Ministry of Communication, and State Administration of Foreign Exchange.

2. Including "Provisional Measures on the Administration of International Project Finance" (1997) issued jointly by the State Development Planning Commission and State Administration of Foreign Exchange, and the "Measures for the Administration of Borrowing of International Commercial Loans by Domestic Organizations" (1998), which includes four articles on project financing, promulgated by the People's Bank of China and State Administration of Foreign Exchange.

- The BOT Circular (1995).[3]
- Sector-specific laws, discussed in later chapters on roads, water, and power.

The regulatory framework relevant to private participation in infrastructure involves a series of laws, regulations, notices, circulars, and implementing rules issued by agencies at the central[4] and local[5] levels. As the central government is still in the process of developing China's legal system based on the principles of a socialist market economy, laws and regulations are subject to changes and improvements in accordance with changes in economic policies. In fact, laws are intentionally drafted in a broad fashion to permit future legislative flexibility. However, the underdeveloped legal system leaves many important and routine decisions to administrative authorities—often with inconsistent results.

For example, the Asian Development Bank studied the three main regulations granting operating rights for toll roads: the Highway Law issued by the National People's Congress, the Notice of Strengthening the Administration of Transfer of Infrastructure Assets issued by the State Development Planning Commission in 1999, and the Measures of Transfer of Operating Right of Highway with Compensation issued by Ministry of Communication. Table 2-1 summarizes the contradictions among the regulations identified by the study.

China's piecemeal approach to legislation and lack of clarity have created confusion for investors on answers to basic questions:

- Which laws are applicable, and what are the legal effects of the various notices, circulars, and approvals?
- Which approving authority at the central or local level should be involved, and what is that authority's scope of approval? The jurisdictions of government agencies and delegated authorities tend to overlap, often resulting in unnecessary delays.
- What protection and recourse are available to investors to prevent the undue delay or unreasonable withholding of a particular approval or permit?

The BOT Circular was intended to clarify some of the issues involved with private participation in infrastructure, such as concession terms, granting authorities, convertibility of foreign currencies, procurement, and government support This is definitely a move in the right direction but, as discussed below, the circular was drafted as a limited experiment and so needs further work and considerable improvement. The government has three options for dealing with inconsistent legislation and providing a clear framework for granting authorities and investors. The first is to tighten existing laws and procedures without passing specific legislation on private participation in infrastructure. The second option is to pass the BOT Circular into law. The third option is to pass a new law covering a broad range of models for private participation in infrastructure. Different countries have taken different approaches to dealing with the legal framework for private participation in infrastructure (Box 2-1).

3 The circular's official name is "Several Issues Concerning the Examination, Approval and Administration of Experimental Foreign-invested Concession Projects Circular" (1995), promulgated by the State Development Planning Commission, Ministry of Electric Power (the predecessor to the State Power Corporation), and Ministry of Communications, which synthesizes a series of regulations on BOT projects There is also a subsequent "Notice on Certain Issues Concerning the Examination, Approval and Administration of Experimental Foreign-invested Concession Projects" (Jing Wai Zi 1995, No 1208)

4. Including the State Development Planning Commission, State Administration of Foreign Exchange, Ministry of Foreign Trade and Economic Cooperation, line ministries, People's Bank of China, State Administration of Industry and Commerce, and so on

5 Including municipal and provincial governments, environment protection agencies, land bureaus, customs bureaus, and so on

TABLE 2-1: INCONSISTENCIES BETWEEN KEY REGULATIONS ON PRIVATE TOLL ROADS

	Highway Law (National People's Congress)	Notice of Transfer of Infrastructure Assets (State Development Planning Commission)	Measures of Transfer of Highway Operating Rights (Ministry of Communication)
Definition of "operating right"	Toll right	Not addressed	Toll right and operating right of ancillary businesses along the road (restaurants, gas stations, and the like)
Approval authorities	National toll roads—Ministry of Communication; Others—provincial government, filing with the Ministry of Communication	The commission or its provincial or municipal branches, depending on the investment cost	National toll roads and toll roads financed by the central budget—Ministry of Communication Others financed by local budgets—provincial government, filing with Ministry of Communication
Term of transfer	Not addressed	<25 years	<30 years
Re-transferability	Not addressed	Allowed after three years of the first transfer, subject to approval from original approval authorities	Not allowed

Source: Asian Development Bank.

Option 1: Tighten Existing Laws

Under the first option no new law would be passed for private participation in infrastructure. Rather, existing laws would be reviewed and improved. In terms of financing, this would likely involve improving the Project Finance Measures and the Security Law, particularly as they relate to infrastructure projects (see Chapter 3). In addition, legislation should try to address important issues such as intercreditor concerns and the further development of arrangements for combined financing using renminbi and foreign currency. Improvements are also needed in individual sectors to tighten legislation in line with central government policies on liberalization and development of each sector.

BOX 2-1: INTERNATIONAL EXPERIENCES WITH THE LEGAL FRAMEWORK FOR PRIVATE PARTICIPATION IN INFRASTRUCTURE

In some countries private participation in infrastructure has benefited from significant legislative refinements. In Brazil the constitution was amended to open certain sectors to private investment through concessions. Similarly, in Malaysia the federal constitution and the Pensions Act were among the laws and regulations amended to allow privatization.

Hungary and the Philippines took a different approach, introducing specific legislation on private participation in infrastructure to establish a legal basis and provide a clear framework for private investment. The BOT Law in the Philippines and the Concession Law in Hungary allow for private investment in most areas of the economy.

Source: Clifford Chance and; and Credit Agricole Indosuez. (Annex 4)

The advantage of this approach is that investors are familiar with existing laws and would not have to wait for a new law on private participation in infrastructure to be drafted, discussed, tried, passed, and implemented—a process that takes a long time and might have an uncertain outcome.

The disadvantage of this approach is that the political and legal environment in China may not permit the changes in laws needed to improve the environment for private participation in infrastructure And without a central direction to rationalize infrastructure legislation, it will be hard to ascertain how, in what order, and over what period the various sectors will tighten their frameworks, because different government entities have different agendas and priorities in setting economic policies. Thus it would be difficult for investors to ensure their compliance with all the different laws.

Option 2: Pass the BOT Circular into Law

Under the second option the BOT Circular would be broadened to cover more than the pilot BOT projects. The greatest benefit of a central law on private participation in infrastructure is that it could remove the ambiguity involved with the various laws that apply to each project, and could fill the gaps in the current legal structure for such projects. A central law would demonstrate the government's support at the highest level, in the form of a legally binding law rather than the "comfort letters" and "concession measures" that have been used for individual projects. This option would also build on the momentum and features established by the BOT Circular and the pilot BOT projects:

- The projects are concessional, and the granting authorities have the primary obligations for meeting the contract terms—reducing risks for investors.
- Bidding is transparent and competitive, minimizing the possibility of corruption.
- The project company is able to effectively construct and operate the project during the concession period.
- The tariff bid by the winning bidder is guaranteed by the concession agreement.
- The convertibility of renminbi revenues and the availability of foreign currency to facilitate such conversion are assumed in the concession agreement.

However, the BOT Circular is too brief on many important provisions and has material flaws that if passed into law could impede private participation in infrastructure. The circular·

- Applies only to a handful of pilot projects approved by the State Development Planning Commission—Chengdu Water, Laibin B Power, and Changsha Power. It is unclear whether other projects—even those of a BOT nature, such as the Beijing #10 Water Project—will be undertaken under the provisions of the BOT Circular.
- Applies only to projects with foreign financing. The circular indicates that its purpose is "to encourage foreign investors to make investment in Chinese infrastructure construction and to standardize the operation of foreign investment Build-Operate-Transfer (BOT) projects." " 'BOT projects' . . refer to the infrastructure projects built, operated and transferred (BOT) by foreign investors."
- Applies only to BOT projects, as indicated by the above definition.
- Prohibits domestic financial and nonfinancial institutions from providing any guarantees for project financing

Because of these weaknesses, the BOT Circular would have to be significantly amended to enable implementation of a full range of options for private participation in infrastructure and domestic financing

Option 3: Pass a Framework Law for Private Participation in Infrastructure

The third option offers similar benefits to the second option—removing ambiguity in current legislation and establishing a legal basis for projects involving private participation in infrastructure. But the third option would also enable lawmakers to draft a more comprehensive, effective law covering the full range of possible options for private participation in infrastructure, regardless of the source of financing (foreign or domestic). Such a framework law should:

- *Establish a framework of laws specifically for projects involving private participation in infrastructure.* A framework law should address, eliminate, and prevent inconsistencies in existing legislation. The framework law can clarify such inconsistencies by not repeating other laws (such as the Project Finance Measures, the Bidding Law, the Security Law, and the Contract Law) but by referring to them as they develop or by referring to the preferred law.

  For example, competitive bidding for public services is used worldwide. The BOT Circular, passed in 1995, stipulates conditions for the preparation, publication, and submission of bids but is silent on certain aspects of the bidding process—notably bid evaluation and selection. The Bidding Law, passed in 1999, provides complementary rules, which has created confusion and inconsistency between the two pieces of legislation. A framework law could clearly define the scope and type of projects that require competitive bidding and require that they be tendered according to the Bidding Law, but does not need to provide separate rules on bidding procedures.

  Similarly, if an element of another law needs to be changed but it is not realistic to do so, the framework law could specify the correct clause and state that its inclusion in the framework law supersedes the other laws as they apply to infrastructure projects For example, the Project Finance Measures (see Chapter 3) might apply to a narrower range of infrastructure projects than the BOT Circular. If the government decides to broaden the application of project financing for infrastructure projects but does not want to change the Project Finance Measures, the framework law could state that project financing can also be applied to those other types of infrastructure, and that the procedures should be the same as in the Project Finance Measures. That way, investors would know which legislation is relevant when deciding whether a project qualifies for project financing and, if so, which procedure to follow.
- *Apply to all projects involving private participation in infrastructure.* In particular, the framework law will apply to projects involving the government as the granting authority, granting the rights and responsibilities for providing public service to a private operator. Like Hungary's Concession Law and the Philippines's BOT Law (see Box 2-1), the law could cover concessions, management and leasing contracts, BOT and TOT projects, and so on.
- *Cover both foreign and domestic financing.* The framework law will permit foreign enterprises, joint ventures, and domestic entities to invest in infrastructure projects. Including domestic investors in the law will put domestic companies on equal footing with foreign investors, creating fair competition for all participants, and help curb domestic corruption.
- *Emphasize the development and protection of basic contract rights for projects involving private participation in infrastructure.* Investors in infrastructure projects consider it important to have security over tangible project assets. But in addition, because most of these assets are state-owned, investors and developers want assurance that negotiated terms and contract rights will be fully enforced and protected under Chinese law. Investors need a strong legal basis to protect their rights throughout the term of the contract, both contractually and from a statutory point of view, and to be fairly compensated by the government in the case of termination or expropriation.

  Among the rights for which investors need seek protection and enforcement are the right to use or expropriate needed lands; the right to collect revenue at agreed or regulated rates; the right to financial compensation if tariffs are not adjusted according to contract terms,

the off-taker defaults on its obligation to take and pay, or there is discriminatory change in law, the right to terminate the contract and be properly compensated if the other party defaults on the contract terms; and the right of lenders and their nominated entities to "step in" to these property rights or to receive compensation in cases of default on loans. As indicated, special statutory rights will need to be developed for project companies and project lenders to make private participation in infrastructure more feasible—particularly in "core" local infrastructure sectors such as roads, water, wastewater treatment, and municipal gas distribution.

- *Provide flexibility* so that project terms—such as the level of applicable government support, the financing structure, and investment or service requirements—will not be stipulated or prohibited by the law, but be left for negotiation between the granting authority and the investors. The law will require, however, that such information be presented in the bid or contract documents.

  For example, one striking feature of the BOT Circular relates to guarantees. As noted, the circular prohibits domestic financial and nonfinancial institutions from providing any guarantees for project financing Such a provision is unreasonable (see Chapter 3), yet it is repeated in the Project Finance Measures, the Security Law, and other laws. Contract terms should be open for negotiation and subject to the provisions of the Security Law rather than the framework law.
- *Refer to model contracts to facilitate implementation, but should not oblige parties to use those contract terms.* The BOT Circular provides important guidance to granting authorities in developing project documents. It stipulates that a BOT agreement should include clauses on project design, construction, operation, and maintenance standards; the schedule and extension of the project, and the outcome of termination; the construction price of the project and the billing plan; the criteria and procedure for handing the project over to the government after the BOT term expires; the rights and responsibilities of government authorities and the project company; risk-sharing mechanisms, and the transfer of the project company's rights and responsibilities.

  In addition, as part of its program of corporatization, leasing, and securitization for China's roads sector, the Asian Development Bank has developed standard contract templates for the State Development Planning Commission, including concession agreements, leasing agreements, and the like. These templates offer a useful reference for the granting authorities but are subject to changes to be negotiated between the parties involved in individual projects.
- *Grandfather all existing projects* to provide protection and certainty to existing investors.
- *Be consistent with sector laws.* For example, current market reforms in the power sector should be taken into account when considering the application of the framework law for private participation in infrastructure. Hungary's Concession Law, for example, does not cover the power sector

The Approval Process

Getting government approvals for investment projects in China is a confusing, frustrating, and time-consuming experience for investors, who are seldom certain about what approvals are needed, which approving authorities (central or local, ministerial or regional) should be consulted, whether they have received all the approvals, and whether the approvals they obtain are legally effective—including what exactly has been approved. The protracted approval process increases project preparation costs, scaring away potential investors (including banks) and placing an extra financial burden on consumers. The unclear approval process also compromises the enforceability of project contracts.

The official review and approval process for infrastructure projects generally has three stages: project approval, project company approval, and operational approvals.

Project Approval

State Development Planning Commission approval is generally required for projects with investment exceeding $30 million (State Council approval is required for those exceeding $100 million) and for those involving foreign capital. With its limited staff, the State Development Planning Commission is thinly spread in approving numerous projects. Since 1999 a few exceptions have been made, with local governments allowed to approve projects that are "encouraged" by the Foreign Investment Catalogue and that have "comprehensive balancing." Yet, the criteria for "comprehensive balancing" are highly variable, and since the revenues of infrastructure projects are normally in local currency and the funds for these projects are normally in foreign currency, it is almost impossible to achieve "comprehensive balancing" from a foreign exchange point of view. Thus most large infrastructure projects involving private participation still need central approvals from the State Development Planning Commission.

In addition to the Ministry of Foreign Trade and Economic Cooperation and the State Development Planning Commission (or their designees), a wide range of ministries, bureaus and commissions, and agencies are involved in granting project approvals, including the relevant line ministries[6] and authorities responsible for safety, planning, land use, the environment, and so on. Projects applicable under the BOT Circular must have the concession agreement approved by the State Development Planning Commission (and the State Council where necessary).

Finally, infrastructure projects involving foreign financing need two other important (and difficult) approvals related to project financing. First, the State Administration of Foreign Exchange, before granting its approval for currency conversion and profit remittance, must be satisfied that the financing terms are competitive—a concern that really should be negotiated by the parties to the project or addressed by the market through competitive bidding. Even if the government insists on granting such an approval, criteria for competitiveness should be well spelled out for investors in relevant regulations, as this area could cause serious delay at the later stage of a project. Second, a number of approvals from ministries, the State Development Planning Commission, and the State Administration of Foreign Exchange are required to create securities on a project; see Chapter 3.

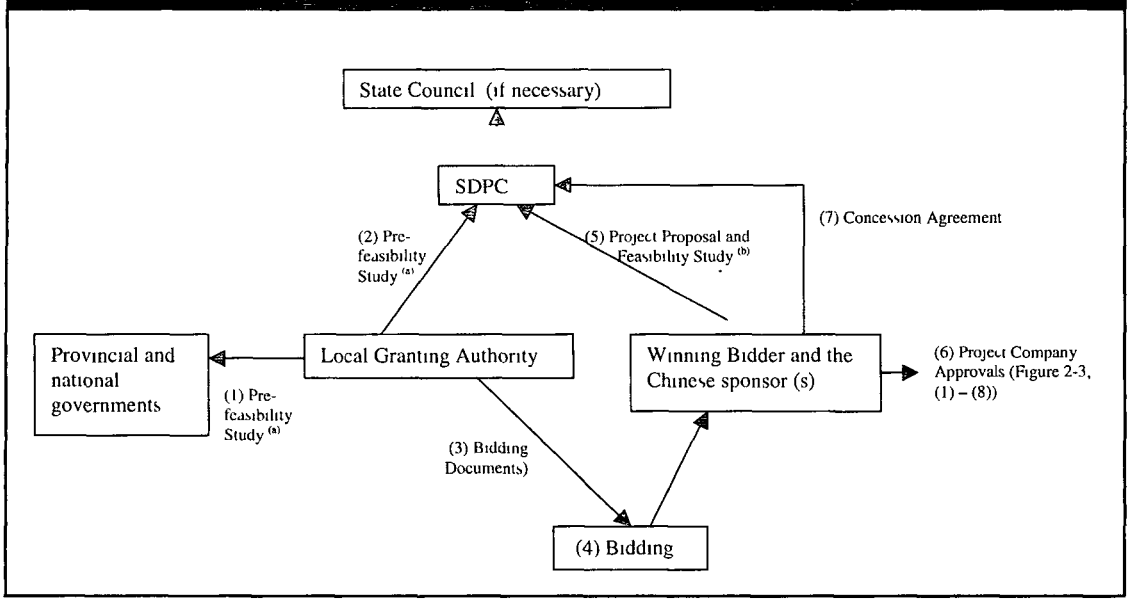
Project approval requirements vary both within and across sectors. The main approval requirements for the pilot BOT projects are shown in Figure 2-1. Though the approval process for those projects was significantly streamlined, it still involves approving authorities at various levels of government.

In addition, the figure shows only the basic structure of the approval process. Behind each of the main approval steps are many smaller approvals, consultations, and filings with various government agencies. For non-BOT projects or projects initiated by local governments, the approval process usually involves even more steps. For example, although non-BOT projects generally do not require a pre-feasibility study, the approval of the project proposal and feasibility study report involves a more complex web of approval requirements, as shown in Figure 2-2. And while the project proposal and feasibility study report have the same approval procedures and the approvals are granted by the same authorities, the approvals have to be obtained separately in a sequential (rather than parallel) order, which often leads to further delays.

Even with the delays, investors are often less concerned about the time spent than about the uncertainty of delays and the outcome of the approval process. For example, for BOT pilot projects the State Development Planning Commission approves the feasibility study report, which includes the final financing plan and concession agreement, only after the bidding is complete. Thus bidders bear a great degree of uncertainty because they do not know at the time of the bidding whether there will be changes to the draft financing plan and concession agreement included in the bidding

6 State Power Corporation for power, Ministry of Construction and Water Resources Bureaus for water, or Ministry of Communications for transportation.

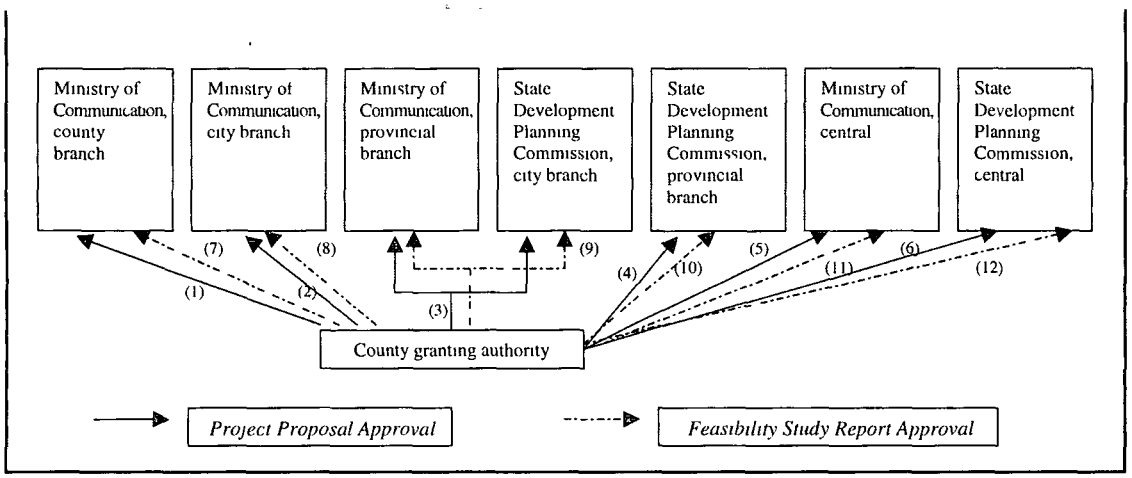
FIGURE 2-1: BASIC PROJECT APPROVAL PROCESS FOR PILOT BOT PROJECTS



Notes.
(a) Includes, among others, preliminary financing plan and draft bidding documents
(b) Includes, among others, the final financial plan and concession agreement.
Source: White & Case (2001).

documents. For another example, with the Beijing #10 Water Project it was not clear at the time of the bidding whether domestic financing would be approved for the project. Bidders were asked to submit two sets of bids, one assuming 100 percent foreign financing and the other 50 percent of the debt financing from domestic banks. Having two sets of bids made evaluating the bids harder for the government and less transparent for the bidders

FIGURE 2-2: APPROVAL PROCESS FOR PROJECT PROPOSAL AND FEASIBILITY STUDY REPORT FOR A COUNTY-LEVEL TOLL ROAD PROJECT WITH $50 MILLION IN INVESTMENT



Source. Asian Development Bank

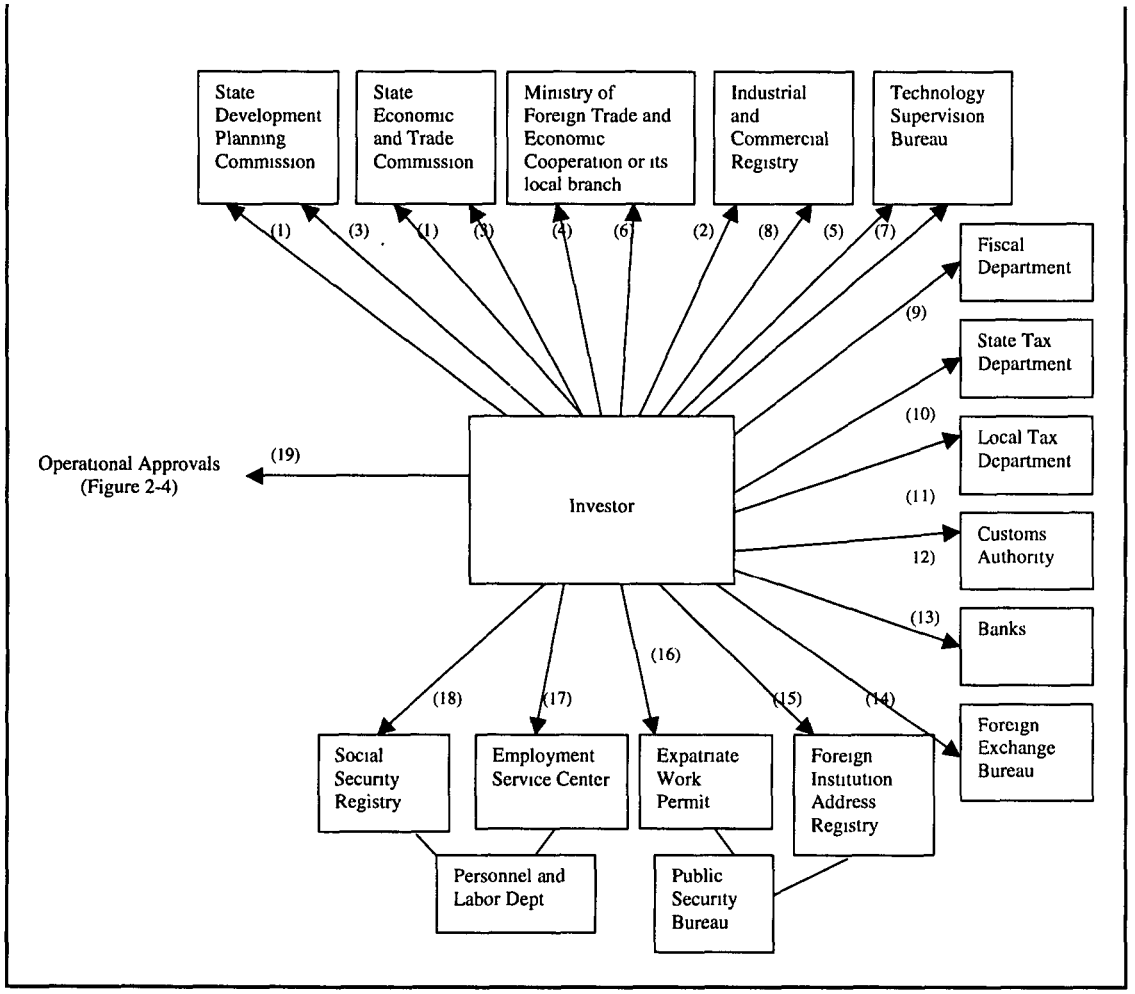
Project Company Approval

Numerous approvals are also needed to establish and register the project company in accordance with company laws, including the Company Law of 1994, and the Joint Venture Law or Wholly Foreign-Owned Enterprise Law. The Foreign Investment Advisory Service (FIAS), a joint agency of the Internal Finance Corporation and the World Bank, advises governments on how to improve the business environment for foreign investment. According to a recent study it performed for a provincial government in western China, up to 18 approvals are needed to establish a company in that province (Figure 2-3), some of which come from the same approval authorities but must be obtained sequentially on different visits.

Operational Approvals

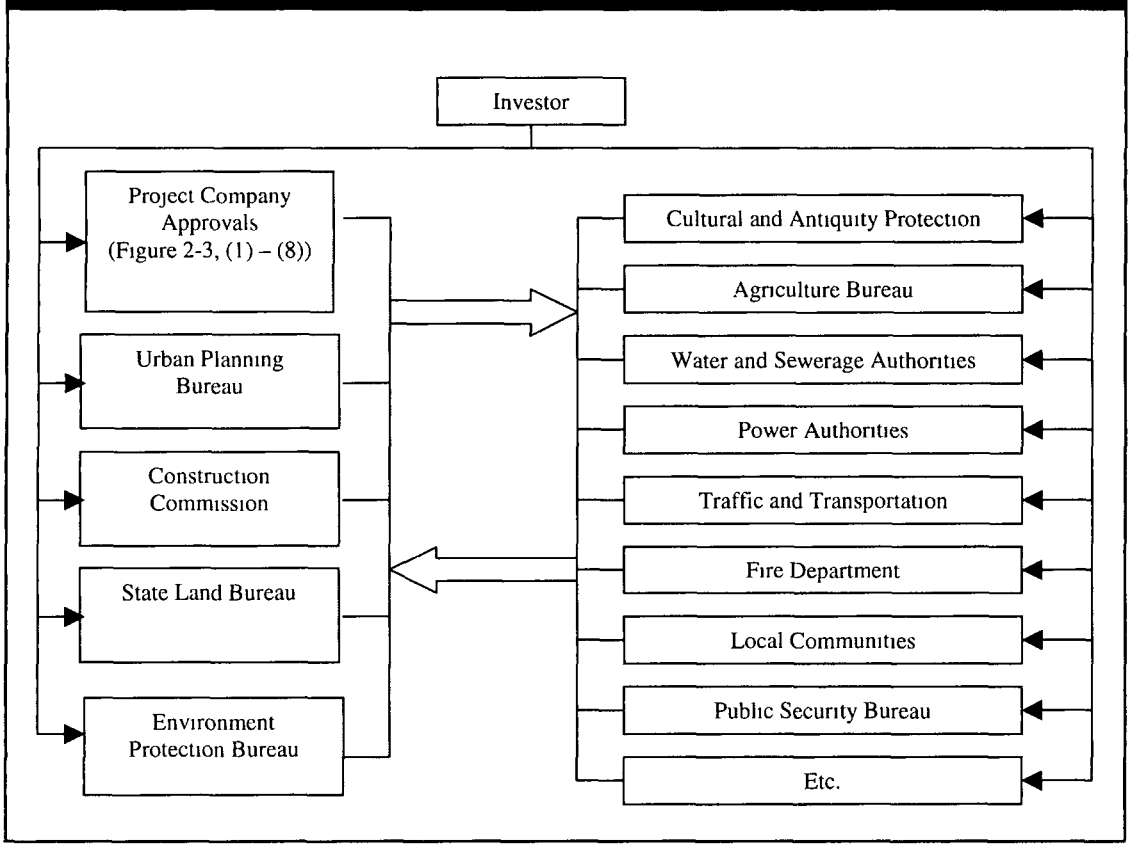
Once the project company has been established, more than 10 other approvals are needed to acquire land and start construction (Figure 2-4). Many of these approvals could be eliminated or

FIGURE 2-3: APPROVAL PROCESS FOR ESTABLISHING A JOINT VENTURE OR WHOLLY FOREIGN-OWNED ENTERPRISE



Source: FIAS.

FIGURE 2-4: OPERATIONAL APPROVAL FOR PLANT LOCATION AND CONSTRUCTION



Source. FIAS.

expedited through a detailed zoning plan, published by the government, specifying acceptable uses of land This approach is common in many industrial countries.

Finally, the approval process is not over when the project starts. Companies are also bothered by site inspections from numerous local government agencies—the police, environmental bureau, women's association, and so on—that create interference in the company's normal business.

Streamlining the Approval Process

China's cumbersome approval process is a direct outcome of its underdeveloped legal system, which leaves many important and routine decisions to administrative authorities. Thus the first step in improving the approval process should be to tighten the legislation. Many laws are underdeveloped due to uncertainty in economic policies (see below). It remains extremely challenging for Chinese policymakers to develop well-defined, well-articulated economic policies.

Still, better approval procedures are possible even within the current legal framework. Post-bidding approvals increase uncertainty and so reduce the benefits that could be gained from competition. When a project is procured under competitive bidding, approvals should be advanced as much as possible to the pre-bidding stage, and the number of post-award approvals should be minimized Past projects show that a pre-bidding approval and consultation process could shorten project closing by 2–3 months with no loss of public oversight.

In addition, responsibilities should be more clearly delegated between central and local approval authorities, and rules and regulations for the approval process must be made more transparent. The

government could also consider standardizing some approval procedures—for example, using standardized inquiry and submission forms.

Investors are most concerned about uncertainty and delays with approvals at the central level. Such concerns are increased by local governments' own confusion about the approval process and by their efforts to circumvent central requirements, only to learn later that a project is not permitted by the central government. Thus, better communication is needed between the central and local governments. In addition, the $30 million threshold for central approvals needs to be increased because all infrastructure projects cost more than that. This unrealistic threshold simply encourages local governments to implement projects piece by piece, eliminating any benefits from economies of scale. Moreover, a clearer definition of "comprehensive balancing" is needed so that investors and local governments will know whether a project that falls under the "encouraged" category but involves more than $30 million in investment can be approved locally rather than by the central State Development Planning Commission.

One-stop shops have been created in many parts in China, as in many other developing countries where the government is unwilling to let foreign investments proceed without screening (Box 2-2). Since the late 1980s Shanghai has had an Investment Commission made up of staff from four agencies that previously shared power for approving foreign investments (municipal branches of the State Development Planning Commission, State Economic and Trade Commission, Ministry of Foreign Trade and Economic Cooperation, and Ministry of Communication). The commission is the municipality's sole foreign investment approval authority, responsible for approving all stages of foreign investments. Moreover, its approval guarantees all subsequent approvals and permits required by other agencies (such as those in charge of land, environment, electricity, water, and telecommunications).

There are many types of one-stop shops (Table 2-2). The setup of a shop is less important for its success than the government's political will to truly facilitate the screening process. One-stop shops are usually successful if there is strong support at the highest levels of government. But with-

Box 2-2. [illegible]

The Philippines established a One Stop Action Center to help investors understand the process of obtaining consents and permits. The center houses representatives of different government agencies responsible for accepting and processing investment applications. The representatives have the authority to act on all investment matters under their jurisdiction, which helps ensure the center's effectiveness.

Through Invest Australia, Australia's federal government runs a Major Projects Facilitation service that provides investors with advice and information on approval processes and facilitates major investment projects. A project is eligible for assistance if it involves capital spending of more than A$50 million, requires federal government approval to progress, and the developer can demonstrate the project's commercial viability and the developer's readiness to proceed through the approval process. If a project is granted Major Project status, Invest Australia identifies relevant federal approvals and prepares timelines for all approvals at all government levels. It also coordinates federal and state or territorial requirements so that they progress in line with commercial requirements. It also identifies government policies and programs that may benefit a project. It has been suggested that the federal government make the Major Projects Facilitation service available to all transjurisdictional projects.

Providing all relevant approvals under a singles statute is one way to simplify the approval process. This approach is used in some Australian states and was used in some early transport projects in the United Kingdom, with the government passing legislation that enabled the private sector to avoid making separate applications to relevant agencies and local authorities.

Source: Clifford Chance and Credit Agricole Indosuez. (Annex 4)

TABLE 2-2: MODELS OF ONE-STOP SHOP INVESTOR SERVICES

True one-stop shops	Investor servicing centers are granted, by law, the power to approve investments, grant licenses, and make decisions related to investments. Few countries have tried to establish entities with comprehensive legal power on investment issues, and most attempts to do so have failed for political and regulatory reasons.
Delegated powers model	In this model (used in Indonesia) government authorities delegate their approval powers to investor service agencies within certain limits. In most cases only limited powers, covering relatively minor approvals and licenses, are delegated. Hence this approach has marginal effects.
Single-window model	Empowered officials of relevant authorities are required to work together in a single office to provide investors with needed clearances, licenses, and approvals. This model is expensive and hard to maintain in countries with few investors and varying service requirements. In such cases the model becomes a clearance point for various agencies and is ineffective at delivering quality investor services.
Account executive model	This model can be effective when applied by full-service investment promotion agencies. Each account executive is assigned a portfolio of investors for whom the executive is required to provide a full range of services, including facilitation of approvals and licenses. The executive serves as a point of contact and information and uses a network of government contacts to aid the investor. This approach has been applied successfully in Ireland and Singapore.

Source: FIAS.

out adequate support a shop can become, in the worst case, a "one-more-stop" shop, creating an additional hurdle for investors (FIAS 1993).

Some cities have adopted a default approval process for small projects, where a project is considered approved if the relevant approval authority does not respond within a certain period. But the legal implications of this process are unclear. Because most applications for approvals are submitted by local government officials on behalf of the project companies, the private participants are always concerned about what was submitted for approval and whether an existing approval was granted properly.

Finally, uncertainty about the long-term enforceability and adjustability of tariffs is a major deterrent to infrastructure investment. National and local price bureaus approve prices only on a short-term basis and are reluctant to formally commit to future pricing. With limited certainty on prices and revenues, investors either negotiate hard for a guaranteed rate of return or invest only in small, equity-financed projects, where local political support is easier to obtain for future tariff adjustments. The BOT Circular addresses these issues in its model concession agreement—a step in the right direction.

Granting Authorities

Although the clear regulatory and contractual arrangements of the pilot BOT projects have generated a lot of investor interest, local governments have not been as enthusiastic. The main reason is that the public tender approach requires local governments to prepare bidding documents—a time-consuming, challenging task. With the joint venture approach, a local government usually works with the foreign partner from the beginning to review and design the project, usually at no additional cost to the government. Thus the tender approach may entail higher transaction costs and greater risks that the project is not properly designed.

Although the concerns of local governments are valid, public tendering is the only effective way to introduce fair competition and to curb corruption. Higher short-term transaction costs, before local governments build their capacity in handling infrastructure projects, are a price worth paying. Moreover, international competitive bidding will also motivate local governments to strengthen their capacity as granting authorities.

To help strengthen the capacity of local granting authorities, the central government can:

- Prepare and disseminate standard materials on private participation in infrastructure, including contract templates, technical indicators, and tariff adjustment mechanisms. In doing so, the central government must make it clear that these standard materials are only for reference, and that specific contract terms should be left for negotiation between local granting authorities and potential investors, in order not to pose unnecessary rigidity on local governments.
- Promote, monitor, and publicize implementation of the framework for private participation in infrastructure, and develop pilot programs based on domestic and international best practices.
- Provide technical support to local governments, such as help with the feasibility study and advice or resources throughout procurement and project implementation.
- Establish a network of expertise among granting authorities to facilitate the sharing of knowledge and best practices at the local and national levels.
- Expand and improve the benchmarking of utilities, to provide incentives for privatization.

This assistance could be provided by a newly established Coordinating Office, similar to the Treasury Taskforce in the United Kingdom (Box 2-3), staffed by individuals with strong private sector experience. The office could also be the focal point for general investor queries on private participation in infrastructure.

The Regulatory Framework

Regulation is another important aspect of government involvement in infrastructure projects. Regulation is especially important for infrastructure because of the sector's direct effect on the public and its monopolistic nature. For example, the regulator has to ensure that low-income users have

BOX 2-3: INTERNATIONAL EXPERIENCES WITH A CENTRAL COORDINATING OFFICE

The U.K. Treasury Taskforce helped central government departments develop a better understanding of the private sector's requirements and expectations. It succeeded in doing so because it was staffed by individuals recruited from the private sector, though the taskforce operated on the side of the granting authorities. This approach contrasts with the traditional pool of civil service recruits in the United Kingdom and most other countries—well-educated individuals with no commercial training or experience working in the private sector.

The Treasury Taskforce was so successful in promoting private participation in infrastructure that, at the end of its two-year life span, two bodies—the Office for Government Commerce and Partnerships U.K.—were created to take over its role. The Office for Government Commerce is intended to provide government departments with a central resource of procurement skills, promoting best practices in the public sector. One of the office's first tasks was to establish a common framework for all government procurement. Partnerships U.K. is a company that will eventually sell some of its shares to the private sector. It will work in partnership with the public sector but will charge for its services, and will help the public sector obtain the best possible deals in private investment programs by providing project advisory and implementation skills.

Source: Clifford Chance and Credit Agricole Indosuez. (Annex 4)

affordable access to privately operated public services. Thus an effective regulatory framework is crucial. It consists of three elements·

- ☐ *Rules*—governing tariffs and tariff adjustments, service standards, penalties for noncompliance, and so on.
- ☐ *Instruments*—the laws, decrees, contracts, and licenses that contain the rules.
- ☐ *Institutions*—the agencies that enforce the rules and update them as needed.

The instruments establish the principles of independent regulation, which clearly separates policy and regulatory functions from ownership and management responsibilities, and which ensures that the regulator's decisionmaking process is transparent and independent. This section focuses on the institutions and the rules, particularly for tariff adjustments.

Institutional Structure

Infrastructure regulators monitor and enforce regulatory and contractual rules on prices and service quality. Among a regulator's most important tasks are awarding licenses and concessions, administering rules in licenses and concessions (such as on prices), settling disputes between parties (governments, operators, consumers), monitoring operators' compliance with regulatory norms, and prosecuting operators for noncompliance, including imposing penalties.

A regulatory agency's design is important in ensuring effective regulation. Important design issues include:

- ☐ *Independence* or autonomy.
- ☐ *Coverage*—does the agency regulate an industry (such as power or telecommunications), a sector (such as energy or communications), or several sectors?
- ☐ *Location*—is the agency located at the national, provincial, or municipal level in government?

Independence. Agency independence is one of the important design issues for effective regulation. Independence is especially important in infrastructure because of the large-scale, long-term nature of the capital investments Investors require credible commitments from government that their funds can generate a reasonable return. Only an independent regulator can assure investors that their rights—based on fair rules and contract provisions—will be honored and impartially enforced through the term of the project.

Kerf and others (1998) identify the crucial elements in designing the institutional structure of an independent regulator To ensure the agency's independence:

- ☐ The regulator's mandate must be clearly defined by law, and not be subject to the discretion of political authorities.
- ☐ The executive branch's discretion in making appointments should be constrained by legislative provisions specifying certain qualifications
- ☐ The tenure of individuals on a regulatory board should be staggered to reduce the influence of any one administration.
- ☐ Arbitrary removal should be prevented to provide security of tenure.
- ☐ Regulators can be given access to independent sources of funds, such as user fees.

The authors also noted that the option of a completely independent regulator could meet substantial political resistance. If that happens, alternative models or intermediary steps can be used to compensate for the lack of independence For example, independent agencies with an advisory role could be established. To increase transparency, their recommendations and the government's final decision (together with a justification for any deviation from the recommendations) should be published together.

Coverage. There are many different approaches to sector coverage. For example, many countries have separate power regulators—though because of the convergence of energy forms, all energy is increasingly regulated by a single agency. The United Kingdom initiated this approach, creating separate regulators for power and gas, but these have since been merged into a regulator that covers the entire energy sector.

Nearly every country has a telecommunications regulator, but in some countries these are part of agencies covering all communications, including broadcast media. In Australia, Brazil, Canada, and the United States, states and provinces have established cross-sectoral agencies that regulate all key infrastructure sectors at the state level. In New Zealand the Commerce Commission oversees all infrastructure sectors. In developing countries with limited capacity, a multisector regulator can achieve economies of scale and reduce interference from line ministries.

Location. Should the regulator be located at the national, regional, provincial, or local level? The answer largely depends on a country's political and legal structure, and is worth further investigation in China. A centralized regulatory system may offer consistency, but it could sacrifice flexibility and knowledge of local conditions and needs. But while a decentralized system would place the regulator close to the service provider and the community, the regulator may not benefit from the larger pool of expertise available at the national level, and may suffer from higher corruption.

Design issues are often related. For example, in federations single-sector or single-industry regulators are common at the national level and cross-sectoral regulators are more common at the state or provincial level. U S. states have established cross-sectoral regulators, while single-sector agencies exist at the federal level (such as the Federal Communications Commission and Federal Energy Regulatory Commission). The responsibilities are divided so that the federal agencies oversee interstate issues and the state agencies tackle local issues such as setting local rates and supervising utilities that fall within their purview.

Taking the water sector as an example, in England and Wales the economic regulator works at the national level. In Canada and France water utilities are regulated at the municipal level. There are also project-specific regulators, as in Manila (the Philippines), where the regulator reports to a Board of Trustees representing central and local government organizations (Box 2-4).

Tariff Regulation

There are many possible ways of regulating tariffs to achieve certain objectives, but most tariff adjustment procedures are based on the formula defined in the contract (Box 2-5). Disputes should be resolved by an independent panel of experts. The contract should also specify alternative financial compensation when a request to adjust tariffs is refused because of political or social concerns. Common alternatives include extending the contract, providing direct or indirect public financial support, and relaxing certain service requirements. The two main models for regulating tariffs on infrastructure projects are:

- *Rate of return regulation or cost plus pricing.* With this method the regulator evaluates the capital and operating costs of providing the service and sets a rate of return on capital or assets. This approach tries to limit the profits of the operating company and, in some cases, provide the investor with a minimum return. Rate of return regulation is used in the United States, where public companies supply water to about 85 percent of the population. One problem with this method is that it does not provide incentives for efficiency or technological innovation.
- *Price cap regulation.* With this method the price cap is linked to the retail price index increase minus a factor corresponding to efficiency or productivity gains expected or required by the regulator. Price cap regulation encourages the operator to manage its resources efficiently and obliges it to share the productivity gains with consumers through smaller tariff increases. This approach is used in Chile, England, and Wales (ADB 2000).

BOX 2-4: INTERNATIONAL EXPERIENCES WITH THE REGULATORY FRAMEWORK

After privatizing its water companies and policing organizations, in 1991 the United Kingdom established the Office for Water Services to balance the demands of legislation, service levels, company profits, and customer protection. The office is an independent organization headed by a regulator, appointed by the secretary of state for a 10-year period, who is assisted by about 200 staff members Among the office's responsibilities are:

- Periodically assessing the global tariff formula for each company using price cap regulation. This mechanism is supposed to share with consumers part of the productivity gains made by each operator.
- Every five years, setting the investment levels required of companies (taking into account their assessments) and deciding what share of these costs can be recovered through the water tariff.
- Assessing each company's technical performance and gathering information on customer satisfaction. Companies face penalties if they do not achieve the performances levels defined by the regulator.
- Publishing an annual report on the state of the water industry and water management. This report is discussed by all stakeholders, such as consumer associations and environmental groups.

A cornerstone of the U.K. approach is the use of yardstick competition, which compares the technical, economic. and financial performance of the water companies. Having comprehensive data on the performance of each operator helps the regulator justify its economic and technical requirements.

In the Philippines, after the successful concession of Manila's water and wastewater services, the city government developed regulation based on recommendations from the International Finance Corporation and principles defined in the concession contracts:

- A ten-person Board of Trustees presided over by the Ministry of Public Works established the Regulatory Office.
- A three-person Appeals Panel was created to solve conflicts between the regulators, the granting authorities, and the concessionaires.
- The Regulatory Office has 5 members and a staff of 60. Members are appointed for five-year terms, but the term of two of the initial members (other than the director) will be three years. No member of the Regulatory Office may be removed unless agreed by a majority of the members of the Appeals Panel. The Regulatory Office mainly covers financial and technical contractual issues (tariffs, consumer complaints, achievement of technical performance, and so on)
- The Board of Trustees must work with the concessionaire to implement tariff adjustments as instructed by the Regulatory Office or, as appropriate, by the Appeals Panel

Source· International Finance Corporation; Economie et Humanisme; Mott MacDonald (2001).

BOX 2-5: INTERNATIONAL EXPERIENCES WITH TARIFF REGULATION

Among the countries studied there were three main approaches to regulating tariffs: tariffs can be set by government departments, agencies, or regulators, by market forces; or by a contract. Whatever method is used, it must be robust against legal challenges If it is not, prospective investors will be wary.

In the United Kingdom the water regulator (which is independent from government) increases tariffs based on a formula related to inflation. The regulator uses its power to fix prices as a means of creating "comparative competition" among the 10 regional water companies, which are effectively monopolies in their areas. The companies are required to provide information on all aspects of their business, from water quality to capital spending. The companies are compared, and pressure is put on those that do not compare well by restricting price increases until better performance is achieved.

Source Clifford Chance and Credit Agricole Indosuez (Annex 4)

TABLE 2-3 [illegible] FOR [illegible] IN SELECTED CO[illegible]

Country	Tariff regime	Comments
Indonesia	Initial tariffs require presidential approval. Concession company proposes tariff adjustments every 2–3 years based on a formula linked to inflation. Tolls are collected by the operator based on use.	There is no guarantee that tariff adjustments every 2–3 years will be approved. Uncertainty over toll approval and adjustment procedures is unattractive to investors.
Philippines	Tariff set in concession contract. Revised each year based on a formula that takes into account inflation, interest rates, exchange rates, and the cost of construction materials. Tolls are collected by the operator based on use.	Revised tolls must be published before becoming effective, and users can challenge the reasonableness of the revised tolls. If toll road investors happen to receive a windfall, they keep all the upside.
United Kingdom	Under the latest projects, operators receive shadow tolls based on availability and use of the road. Payments are made by the U.K. Highways Agency to the operator.	About three-quarters of the tariff is based on availability, limiting the demand risk (and making financing easier). Tolls are not collected directly from road users, though contracts contain provisions for this to occur at a later date at the option of the U.K. Highways Authority (with mechanisms that ensure the operator's overall income is not prejudiced).

Source: Clifford Chance and Credit Agricole Indosuez. (Annex 4)

There are many variations of these two models, and many private infrastructure projects around the world have used a combination of methods (Box 2-5). For example, an economically sustainable price cap can be achieved through negotiations with various investors or through competitive bidding. Price caps should apply throughout the term of the contract, but to ensure that the operator is not making excessive profit or that the project is solvent for debt service purposes, the regulator could review and rebase the price cap every 5–10 years. Another approach is to benchmark the various cost components against a group of comparable utility companies to determine the revenue requirements of the utility involved. Finally, exogenous cost (such as the cost of raw water to a water distribution company) should be passed on to consumers. Examples of tariff regulation regimes for roads are shown in Table 2-3.

3

Financing Private Infrastructure Projects in China

Infrastructure projects have high initial investment costs and returns that hinge on profitability over the long run. Accordingly, most private infrastructure projects are financed by equity and a significant share of debt. Debt accounts for 60–70 percent of financing for an average infrastructure project. Private infrastructure projects in China, however, *have been financed mainly by equity.* This sub-optimal funding structure results in a higher weighted average cost of capital that will ultimately lead to higher tariffs. Moreover, it is unsustainable. Limited debt financing prevents developers and sponsors from leveraging their capital and hinders their ability to invest in more projects.

Because the revenues from road, water, and power projects are in local currency, assumption of local currency debt avoids currency mismatches and reduces foreign exchange risks—especially in countries where foreign exchange is tightly controlled. Yet, *domestic financing for private infrastructure projects has been negligible* in China, creating another concern for investors and an additional risk premium in their cost of capital

How a project is structured and how risks associated with the project are allocated among the participants ultimately determine the cost and availability of each type of funding for the project. One reason international lenders are skeptical about China's market is that they perceive *excessive credit risk among their Chinese counterparts.* Many of these counterparts are quasi-government entities or recent corporate spin-offs of government entities, and there is almost no information on their financial viability. As a substitute, support letters have been sought from governments to ensure that the Chinese counterparts will meet their contract obligations These support letters are not legally enforceable and have become of little value with the fallout from the International Trust and Investment Corporations (ITICs), which the government refused to bail out upon request from international lenders. With the lack of creditworthy counterparts, foreign lenders will place more stringent requests for *security* on the project, including securities on project assets and contract rights. As discussed below, creating and enforcing securities is not easy for lenders.

Investors are also frustrated by *approval risk*. For example, several toll road companies that have issued bonds overseas—Zhuhai Expressway, Greater Beijing Expressway, Cathay International, Traffic Stream—experienced continuing difficulties in obtaining approvals from the State Administration of Foreign Exchange to repatriate earnings in foreign currency. These cases tarnished the reputation of China's private infrastructure projects in international bond markets, making it harder to secure bond issues

On the domestic side, *Chinese banks do not yet play a significant role* in financing private infrastructure projects. Bank regulations, suited to standard corporate lending to state enterprises, have not been adapted for more complex project finance The four state-owned commercial banks, which have provided significant funding to government-led projects, have participated in only a few private projects. As for domestic bond issues for infrastructure projects, they have been limited to government projects such as the Three Gorges Dams and some rail transport projects.

Issues with risk allocation and securities, just like issues with laws and regulations, are not limited to foreign investors. They are as important, if not more important, to the domestic financial sector. As the government cleans up non-performing loans and strengthens domestic banks, a sustainable flow of well-structured private infrastructure projects will provide the banks with solid and attractive lending opportunities, helping to lay a solid basis for bank reform.

Risk Allocation

Infrastructure projects involve a complex range of risks. Private participation offers a major benefit by shifting some commercial responsibilities and risks to the private sector, mitigating risks for the public sector and making resource allocation more efficient. In addition to commercial risks, infrastructure projects face political and macroeconomic risks. All these risks should be carefully assessed and allocated among the parties *prior to contract signing*, to provide clarity to the potential investors and so enhance project procurement and implementation. A flow of well-structured projects is crucial for achieving sustainable private financing. In the past, risk allocation mechanisms for projects in China have often been inconsistent, even between different projects in the same sector, and have been unsatisfactory to granting authorities, the central government, or investors

While many issues related to project structuring are subject to case-by-case negotiation, there are standard international best practices. A balanced allocation of risks is crucial to achieve the objectives of the various participants (the public sector, investors, and consumers) and will offer them the best value from private infrastructure projects. The guiding principle in structuring and negotiating the allocation of risks is that *the party best placed to control a certain risk should assume and manage that risk*. The public sector usually assumes political and environment risks, including risks involved in procuring approvals, risks of discriminatory changes in laws, land acquisition risks, and so on (Table 3-1). Requiring the private sector to bear risks that could be better managed by the public sector would raise financing costs to the detriment of consumers, and reduce sources of funds.[1]

In China investors are most concerned about *legal risks, approval risks (including tariff approval risks), and regulatory risks*, all of which should be borne by the government. When a sound legal and regulatory framework mitigates these risks, investors are willing to assume more commercial risks, such as project completion risk, operating risk, and demand risk. When such a framework is lacking and investors are forced to assume legal, approval, or regulatory risks, they will either not participate in the project or be unwilling to assume as much commercial risk. This point is demonstrated by the fact that investors have asked for a guaranteed rate of return in many private infrastructure projects.

1 When neither the public nor the private sector has the capacity to bear some of the risk, the government could consider using the risk-mitigating instruments provided by multinational institutions In several countries products offered by the World Bank, International Finance Corporation, and Asian Development Bank—such as partial risk and partial credit guarantees provided by the World Bank—have secured private investments in projects where commercial banks were not prepared to take political or long-term commercial risks

TABLE 3-1: RISK ALLOCATION IN CONCESSIONAL PROJECTS

What is the risk?	How does it arise?	How should it be allocated?
Design and development risk		
Design defect	Design error in tender specifications	Public sector should bear risk.
	Contractor design error	Liquidated damages—a sum of damages to be paid by the contractor, as agreed upon in the contract—should be paid by the contractor. Once liquidated damages are exhausted, project company's returns should be tapped.
Construction risk		
Cost overrun	Within construction consortium's control: inefficient construction practices, waste, and so on	Contractor should bear risk through fixed-price construction contract plus liquidated damages. Once liquidated damages are exhausted, project company's returns should be tapped.
	Outside construction consortium's control: changes in the overall legal framework (changes in laws, taxes, and so on) or government actions that directly affect the project (delays in obtaining approvals or permits, and so on)	Risks to be shared between the public sector and insurance companies if insurance is available.
Delay in completion	Within construction consortium's control: lack of coordination among subcontractors, and so on	Liquidated damages should be paid by the constructor. Once liquidated damages are exhausted, project company's returns should be tapped
	Outside construction consortium's control· force majeure and so on	Insurer risk, if risk was insured Once insurance proceeds are exhausted, project company's returns should be tapped.
Failure of project to meet performance criteria at completion	Quality shortfalls, construction defects, and so on	Liquidated damages should be paid by the constructor. Once liquidated damages are exhausted, project company's returns should be tapped.
Operating cost risk		
Operating cost overruns	Change in operator practices at project company's request	Project company should bear risk.
	Operator failure	Liquidated damages should be paid to the project company by the operator. Once liquidated damages are exhausted, project company's returns should be tapped
Failure or delay in obtaining permissions, consents, or approvals	Public sector discretion	Public authorities should bear risk.
Changes in prices of supplies	Higher prices	Allocation of risk to the party best able to control, manage, or bear it (supplier, project company, or users).
Supplies not delivered by public authorities	Public sector failure	Public authorities should bear risk.

(*continued*)

TABLE 3-1: RISK ALLOCATION IN CONCESSIONAL PROJECTS (*Continued*)

What is the risk?	How does it arise?	How should it be allocated?
Revenue risk		
Changes in tariffs	In accordance with the terms of the contract (for example, indexation of tariffs leads to lower demand)	Project company should bear risk.
	Government breach of contract terms	Public sector should bear risk.
Changes in demand	Drop in demand	Public and private sector should share risk according to the terms of the contract.
Shortfall in quantity or quality leading to reduced demand	Operator failure	Liquidated damages should be paid by the operator. Once liquidated damages are exhausted, project company's returns should be tapped.
	Project company failure	Liquidated damages should be paid by the project company to public authority.
Financial risk		
Exchange rates; interest rates	Devaluation of local currency; fluctuations	Project company should bear risk to the extent that changes in exchange rates and interest rates exceed what is provided for in the tariff (and borne by users).
Foreign exchange	Nonconvertibility or nontransferability	Public sector should bear risk. In cases of contract termination, compensation should be paid by government.
Force majeure risk		
Acts of God	Floods, earthquakes, riots, strikes, and so on	Insurer risk, if risk was insured. Otherwise risk should be borne by the project company.
Changes in law	Changes in general legal framework (taxes, environmental standards, and so on)	Normally, project company should bear risk with proper compensation provided the government.
	Changes in legal or contractual framework that directly and specifically affect the project company	Public sector should bear risk.
Performance risk		
Political force majeure	Breach or cancellation of contract, outright or creeping expropriation, failure to obtain or renew approvals	Insurer risk, if risk was insured. Otherwise risk should be borne by the public sector. In cases of contract termination, compensation should be paid by government.
Environmental risk		
Environmental accidents	Operator failure	Liquidated damages should be paid by the operator. Once liquidated damages are exhausted, project company's returns should be tapped.
	Preexisting environmental liability	Public sector should bear risk.

Source: Kerf and others (1998).

Another example comes from power sector reform. Part of the reason that power sector liberalization in countries like Australia, Chile, and the United Kingdom has attracted private investment is the strong regulatory framework established in these markets. As a result investors are willing to take greater commercial risk and participate in the competitive wholesale market. In China, without a credible regulatory framework, investors have been hesitant to enter the power sector, even without liberalization of the wholesale market.

Besides allocating risks, there is the issue of how to mitigate them more efficiently. *Performance-based contracts* can help parties do so. Such contracts define the performance targets that the private operator is required to achieve within a given period and the consequences of compliance (or non-compliance), but the contracts do not stipulate how the operator should achieve the targets. The Chinese private infrastructure projects we reviewed often over specified technical issues, an approach that can inhibit the private operator from using its full expertise and most appropriate technology and from demonstrating innovation and creativity in solving problems. As a result service improvements were limited and tariffs were not minimized.

In other countries performance-based contracts have generated consistent savings in civil construction. In the United States such contracts have become the preferred approach for water investments in less than 10 years. Savings of up to 40 percent have been realized in civil projects with contracts based on performance output rather than materials input.

Project Financing Regulation

A common approach used by investors in infrastructure projects worldwide is to structure the project on a limited recourse project financing basis. This arrangement allows investors to recoup their investments (through debt and dividend payments) only from the cash flows of the project, except in cases such as force majeure events or when the contract is terminated due to material breach by either party [2] The project financing structure allows sponsors to invest in projects with limited risk exposure for their corporate balance sheets. For the largest international infrastructure companies, the project financing approach is the only way they can invest in a large number of projects all over the world (Figure 3-1).

For various reasons, in the case of the Chengdu Water project, Vivendi had to offer a guarantee for lenders based on its own corporate balance sheet. Although Vivendi was willing to do so given the project's strategic value as the first BOT scheme in China, this structure is not sustainable as these sponsors look into other projects in China, and there are only a few international water companies in the world.

To standardize the approach to international project finance, the State Development Planning Commission and State Administration of Foreign Exchange jointly issued the Project Finance Measures in 1997.[3] But the much-needed explanations and implementing rules that usually follow regulation do not appear to be near completion for these measures.

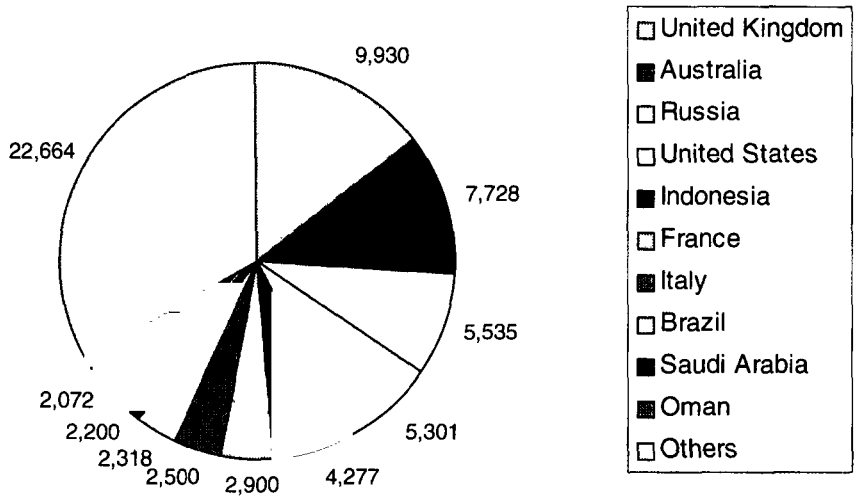
The biggest problems investors have with the Project Finance Measures are their definition and applicability Investors have to apply for an approval that their project will be granted project finance status. But they have come to realize that the interpretation and application of the Project Finance Measures is not simply a matter of predictable law and regulation. Rather, the granting of project finance approval is *an investment policy tool* as well as a means of regulating foreign loans. This is due to government concerns about the important issues typically involved in a large-scale

2 In these cases the lenders will request the debt to be paid regardless of the source of the payment, even if it has to come from cashflows outside the project itself

3 Including "Provisional Measures on the Administration of International Project Finance," issued by the State Development Planning Commission and State Administration of Foreign Exchange in 1997, and "Measures for the Administration of Borrowing of International Commercial Loans by Domestic Organizations," which includes four articles on project financing, effective as of January 1998, promulgated by the People's Bank of China and State Administration of Foreign Exchange

FIGURE 3-1: PROJECT FINANCE LOANS BY COUNTRY, 1997

(millions of U.S. dollars)



Source: Project Finance International; Macquarie Bank; Porter (2001).

infrastructure project, including large capital investments, foreign exchange obligations, potential impact on domestic inflation, and possible exposure of state entities to risks through foreign debt, guarantees, and the like.

In fact, some investors suspect that the Project Finance Measures were issued to stop Chinese companies from registering overseas and coming back to China as foreign investors, then carrying out murky "project finance" transactions with domestic governments that were asked to offer excessive guarantees. One way of stopping such practices was to require additional review and approval by the State Development Planning Commission and State Administration of Foreign Exchange. But this requirement also delayed and discouraged qualified foreign investors from seeking true project financing. Another way to discourage the abuse of the project finance structure would be to procure projects through public tenders and set strict ownership, technical, and financial criteria that could be met only by reputable strategic investors.

For example, the Project Finance Measures provide for foreign exchange convertibility, but to enjoy this privilege investors' projects must be granted project finance status by the State Development Planning Commission. The application for project finance status has to be part of the financing plan included in the Feasibility Study Report (see Chapter 2). When the State Development Planning Commission approves a Feasibility Study Report, including a plan for project financing, the approval document contains a statement such as: *"The required investment, apart from the registered capital, will be obtained through foreign and local loans raised by limited recourse project financing."*

However, such approval is very hard to get. In theory, the State Development Planning Commission evaluates every large-scale project to determine whether it dovetails with state policy and whether the risks of large-scale foreign financing for a renminbi-earning project may be acceptable. When policy priorities cannot be sufficiently articulated or agreed, it becomes almost impossible to further define the rules—as appears to be the case with the Project Finance Measures. Some investors have been told that their Feasibility Study Reports could be approved faster if the "investors are responsible for raising the loans." In that case the State Development Planning Commission's approval document contains a statement such as: "*Investment beyond the*

registered capital will be obtained by the joint venture company through foreign and domestic loans, with security provided by the investing parties in proportion to the ratio of their respective contributions to registered capital."

The commission's approval is strictly followed by other relevant government agencies, most notably the Ministry of Foreign Trade and Economic Cooperation in its review of the joint venture contract and the State Administration of Foreign Exchange, which registers foreign debt and approves all securities involving foreign parties. These processes result in delays and unnecessary rigidity in financing. In addition, the State Development Planning Commission approves the Feasibility Study Report (including the final financing plan and concession agreement) only *after* bidding (see Figure 2-1 in Chapter 2), which creates a lot of uncertainty for the bidders because they do not know for sure at the time of the bidding what financing structure they can use and, accordingly, *whether they will be able to get foreign or domestic loans.*

Even so, the excerpts from the two approvals shown above point to two of the more fortunate types of projects. Although the approval process is not transparent, once approval is obtained from the State Development Planning Commission the investors in these projects know where they stand. In many cases the wording of the Feasibility Study Report approval is not so clear, and investors must try to gauge for themselves which financing structure is acceptable. They must also try to ascertain the risks of carrying out a financing plan that has not been explicitly approved by government authorities—a risk that lenders now know too well because of the problems with International Trust and Investment Corporations

The Security Law

To control their risk exposure, one of the first things that lenders look at in assessing potential financing opportunities is the kind of security scheme available. A security scheme can provide various kinds of protection in the event of default, including recourse to the project assets, the ability to take over control of a project by stepping into the operation or transferring it to a third party, and priority ranking in claims.

The China Security Law has played a critical role in China's efforts to promote a favorable investment environment since its promulgation in 1995. Nevertheless, investors, especially lenders, have had many problems with the creation and enforcement of the Security Law International comparisons show that China's security regime is more restrictive and less attractive to private investors (Box 3-1). For example, floating charge (that is, effective security over a company's movable assets such as its stock in trade) is recognized under common law systems and was recently adopted by Hungary, a civil law country. But it is not recognized in China.

This section discusses some of the problems with creating and enforcing securities in China, and possible solutions. But before discussing the details of the legislation, it is worth noting two complementary aspects of the legal system without which a security law would not be effective One is the framework for defining and regulating *property rights* The difficulty of enforcing security in China partly lies in the fact that many borrowers do not truly own their assets Unlike other civil law jurisdictions, China does not have a civil code that establishes the basic principles of property law. China's first unified Contract Law just went into effect in 2000, and the draft property law is still under discussion. Because some of the problems discussed below might be addressed by the draft property law, it is important to ensure consistency between the two laws and subsequent implementing regulations

The other aspect required for an effective security law is the *court system,* which lenders must be able to rely on to enforce security rights against competing claims on the same property. This area also needs to be strengthened in China, to ensure timely enforcement of security rights by local courts.

The Security Law provides for three main types of securities related to infrastructure projects—*guarantees, pledges, and mortgages.* The registration, creation, and enforcement of these security items are discussed below.

Box 3-1: International Experience with Security Issues

The security regime in England and Wales (Scotland has a slightly different regime) is perceived to be lender-friendly. Registration and enforcement are straightforward, and there is a well-established regime incorporating a full range of security instruments, including floating charge. In addition, lenders are able to acquire step-in rights.

In Hungary it is possible to take security over most assets, and recent reforms have improved the processes for taking and enforcing security. For example, floating charges and mortgages over movable property have been possible since 1997. In addition, in 2000 a new registration system was established for these mortgages. Lenders are also able to take security assignments over project contracts. Most analysts believe that step-in rights are possible under Hungarian law, and they are generally provided to lenders to infrastructure projects involving private participation. The effectiveness of such rights has not yet been tested before Hungarian courts, however.

Source: Clifford Chance and Credit Agricole Indosuez. (Annex 4)

Registration of Securities

The registration system for securities needs to be strengthened. Varying sophistication and training among the staff responsible for registering titles and securities have caused considerable frustration among lenders. Examples include demanding a two-page "standard form contract" even if the parties have negotiated a far more sophisticated agreement, requiring a definite "expiration date" even when the parties have agreed that the security will remain in effect until the debt is fully paid off, and refusing to register a security if the value of the loan differs from the value of the asset Finally, registration offices around the country have not developed a standard approach to indicating the priority of the mortgage.

The public title and security registration are not easily accessible by the public, which is inconsistent with the Security Law. It is often not easy for lenders to get sufficient information on borrowers' titles to assets and on securities that other lenders might already have on the assets. Securities that existed before the registration requirements also need to be clarified and brought into the current registration system

Guarantees

Chinese laws, including the Security Law, prohibit government agencies from providing repayment guarantees except for loans from foreign governments. As a result, for the pilot BOT projects a great deal of effort was expended trying to insulate what was effectively a guarantee by the granting authority of the offtaker's payment and termination obligations from being characterized as a guarantee. The prohibition on guarantees goes against international standard practice and will make future infrastructure projects impossible for private investors.

We understand that the Project Finance Measures only prohibit guarantees for the repayment of debt considered contrary to the "nature of project financing." Performance guarantees for ancillary project agreements (such as an offtaker agreement) seem to be permitted as long as they are not from financial institutions, are properly approved, and do not "alter the nature of project financing " Yet, the prohibition needs to be *clarified and narrowed down for large-scale infrastructure projects.* For example, to the extent that termination payments reflect outstanding loan amounts and are payable directly to the lender, they should be allowed as performance but not repayment guarantees.

Pledges

The biggest problem with pledges involves the creation of *security over contract rights.* Chapter 2 discussed the need for the provision of some fundamental contract rights (such as "step-in" rights) in a general statute, such as the proposed framework law for private participation in infrastructure.

Here we discuss how to create security over such contract rights—a subject that is, at best, not at all clear in China's regulations.

Due to a lack of specific provisions for assigning contract rights for infrastructure projects, lenders traditionally have relied on provisions of the Civil Law, the Contract Law, and foreign laws. These alternative Chinese laws do not clearly indicate what an assignment actually accomplishes—whether it constitutes a full assignment of all contract rights or just some.

The Security Law is silent on this issue Besides movable property, it lists only four types of rights that may be pledged.

- Bills of exchange, checks, promissory notes, bonds, certificates of deposit, bills of lading, and warehouse receipts.
- Shares and share certificates that are transferable by law.
- Economic rights in patents, trademarks, and copyrights.
- Other rights that may be pledged by law

The Supreme People's Court Interpretation[4] added only one category of rights for inclusion under the fourth group. earnings from immovable property, including road bridges, tunnels, and ferry crossings. The list is far from complete for a comprehensive security over core contract rights

The lack of clarity is not helped by the approval process for securities. The Ministry of Foreign Trade and Economic Cooperation approves assignments of contract rights if they involve only ownership transfer. If security is to be created on such assignment rights, a separate approval will be required at the time of the enforcement of the security (that is, when the title changes), which means the security is still uncertain—and this is certainly not acceptable to lenders.

Thus it is urgent that the government *develop a clear legal basis for assigning security on contract rights, and regulatory procedures for establishing a system of registration for the same.* The legal rights associated with a pledge of contract rights need to be fully identified, including step-in rights and the point at which the rights become operative.

Mortgages

The most problematic area with mortgages involves the mortgages of land, although the problems have more to do with creating and enforcing land mortgages than with the legislation. In China land belongs to the state, and land use rights used to be allocated to state entities for free In 1986 a system was introduced granting long-term land use rights to private entities, although the fees for many such rights have not been properly paid

Both allocated and granted land may be mortgaged, but the mortgagee cannot enforce the mortgage if the grant fee has not been paid in full at the time of the enforcement, and the grant fee often exceeds the value that can be realized from the land use rights. To reduce front-end costs, in a number of BOT projects the project company has been encouraged or forced to use allocated rather than granted land, which will create problems later if lenders need to enforce the mortgage against the land use right In addition, allocated land does not afford the user security of tenure or a right to compensation for expropriation. *The government should strengthen the system of grant fees, and the granting authorities should be prepared to be asked by investors to put aside sufficient resources in a secured account for paying the grant fee if the mortgage is called.*

A separate issue on land mortgages of particular importance to water projects—given the lack of a property law—is the sketchy legal framework for easement rights owned by project companies. As China introduces private investment in more infrastructure projects involving pipelines, *a legal definition of third-party rights, including easement rights, needs to be clarified.*

Mortgage issues also affect other types of assets; these are summarized in Table 3-2.

4 The Interpretation of the Supreme People's Court on Certain Question relating to the Application of the Security Law, issued and effective in December 2000

TABLE 3-2: ISSUES [illegible]

Item	Issues	Recommendations
Building	Chinese law generally does not allow land and the buildings on it to be separated in a transfer of ownership. Land use rights are granted by the Ministry of Land and Natural Resources, while the Ministry of Construction is responsible for the registration of ownership and other interests in buildings, under a separate system with different rules. Although land and building registries in major centers have begun to share facilities, they still retain separate systems and report to separate bureaucracies.	Unify the land and building registry systems.
Future or after-acquired property	The Security Law does not allow mortgages for future or after-acquired property. A lender who has obtained a mortgage on vacant land would need continuing cooperation from the mortgagor to register a mortgage on the new buildings on the land once construction reaches certain stage. The same problem applies to mortgages of machinery and equipment. In a complex infrastructure project where equipment is delivered over months or years, multiple contract signings and registrations are required, as well as the continuing cooperation of mortgagors.	Allow a land mortgage to be drafted to cover buildings that are to be constructed on the land, and a mortgage on machinery and equipment that includes after-acquired equipment. Permit lenders to unilaterally carry out subsequent registration based on the prior mortgage so that the mortgagor cannot block such registration by not assisting. We understand that the draft property law takes such mechanisms into consideration.
Floating charge	Chinese law does not allow floating charge, which could create problems for power projects that need to take security over fuel reserves, or for water projects that need to secure supplies of chemicals. Similar forms of asset security established by means of a general security agreement are available in numerous jurisdictions, including Hong Kong (China), Hungary, and Singapore.	We understand that the draft property law would expand the scope of mortgage rights to cover floating charge.
Mortgage of a maximum amount	While the Security Law provides for the giving of specific collateral to secure a revolving debt, there is no provision for the opposite—namely, providing changing collateral to secure a specific debt. Lenders who are persuaded to take such security in China must rely on foreign law, and incur the risk that a People's Court will not recognize the arrangement upon enforcement.	Provide a legal basis for taking security over accounts receivable, inventory, and fluctuating credit balances.

Source: Freshfields.

Granting Security to Foreign Entities

Under China's exchange control system a separate layer of registrations and approvals is required when the secured party is foreign. Unless the approvals are obtained, the loan is invalid and the State Administration of Foreign Exchange will not authorize the conversion and repatriation of debt service payments, termination payments, proceeds of any security, and so on.

Under this system the State Administration of Foreign Exchange must first approve all foreign loans and the establishment of offshore escrow accounts. In addition, any security arrangement provided by a domestic third party for any such loan has to be approved and registered with the administration. For example, the Project Finance Measures require that for foreign loans taken on a project financing basis, the financing documents (including all security documentation) have to be submitted to the State Administration of Foreign Exchange to determine whether the financial terms comply with the State Development Planning Commission's approval of the Feasibility Study Report and are sufficiently "competitive." This process could be substantially simplified: *once foreign exchange loans have been approved and registered, restrictions on domestic entities providing security for those loans should be relaxed.*

Enforcement of Secured Claims

The Security Law makes local courts primarily responsible for enforcing security claims if the debtors and creditors cannot reach an agreement, but the court system needs to be strengthened to limit interference from local governments, and legal training should be provided to judges.

In enforcing claims, the first step is to confirm the borrowers' ownership of the assets used as security. With the restructuring and corporatization of state enterprises still under way, it remains challenging to identify state assets held by state enterprises, joint ventures in which state enterprises have a majority interest, domestic collective enterprises, and limited liability companies.

Once assets are identified as state assets, claims on them cannot be enforced without an authorized appraisal, which is often inflated (not least because the appraisal fees are based on a percentage of appraised value). After the appraisal the assets will first be auctioned, but for a minimum price based on the appraisal value. If the auction does not succeed, the court can order the property to be transferred to the creditor at a value based on the appraisal. Though, there are many ways for a debtor, particularly a state enterprise or otherwise well-connected entity, to delay or block these court actions for a long time, if not indefinitely The Ministry of Land and Natural Resources has issued a circular requiring that *all land appraisal firms be disassociated from local governments,* but the circular has yet to be effectively implemented.

The general rule for *bankruptcies* in China is that secured property is outside the bankruptcy regime, except for the special state enterprise bankruptcy procedure applicable in the 111 cities under the Capital Structure Optimization Program, where employee settlement payments come before secured creditors. This practice reflects China's current approach to state enterprise reform. One key issue, however, is that bankruptcy laws and regulations give local judges the power to decide nearly all questions that arise in a bankruptcy proceeding by "order"—a summary decision that generally does not impart a right of appeal.

To increase creditors' confidence in the bankruptcy procedure (and more broadly, in the state enterprise reform program), issues relating to the substantive rights of third parties who are not before the bankruptcy court—such as secured creditors—should not be decided by summary order. Where the local court decisions on such third-party rights contradict the law, the involved parties should have a clear right of appeal to a higher court, as they would in any other court action. While it is always possible in China to petition a higher court to exercise its supervisory jurisdiction over a lower court, this is not by right—and unless special influence is brought to bear, there will generally be no response.

Finally, an issue not so much within the scope of security regulation but relevant to securities in general is *insurance.* First, it is required by law that direct insurance be placed with Chinese insurance companies, which essentially forces lenders to rely on the creditworthiness of Chinese

insurance companies. This is an excessive risk for lenders because in large-scale infrastructure projects, insurance claims can run into billions of U.S. dollars. This could also impose lace unnecessary risk on the government. For example, in some cases the narrow range of products provided by domestic insurance companies compelled the government to assume force majeure risk to the extent that losses are not sufficiently covered by insurance proceeds. Second, lenders are not allowed to take security over reinsurance proceeds, except in the case of Laibin B. Neither of these restrictions is consistent with standard practice in many major markets around the world, and requires attention as China opens its insurance industry as part of its World Trade Organization accession obligations.

Domestic Bank Lending

As a hedge against foreign exchange risk, domestic lending is used extensively in the financing of infrastructure projects in a range of countries (Table 3-3).

The domestic loans are even more valuable in China. This is not only because the revenue from infrastructure projects is primarily in local currency, but also because the government requires that a certain proportion of equipment be procured domestically. But while China's financial markets have developed impressively over the past decade, domestic financing and particularly domestic lending have not played a significant role in financing infrastructure projects.

One reason is the various rules on domestic financing and loan syndication. Traditionally, ventures with foreign equity were allowed to borrow renminbi only in proportion to the domestic equity in their shareholding structure. Although renminbi loans for foreign entities have been allowed since 1999, the old policies and practices of domestic banks still prevail. Indeed, weak institutional capacity is another reason domestic banks provide only limited financing for infrastructure, as indicated by:

- *Limited availability of long-term local currency loans*—the availability of domestic loans is limited, especially for large amounts, which may be further affected by government policy. The tenor of term debt is generally limited to eight years, and a 1997 notice from the People's Bank of China limits working capital loans to three years.
- *Restrictions on standard project finance practices*—the State Administration of Foreign Exchange is reluctant to endorse certain standard project finance practices. For example, the administration and the People's Bank of China need to work out regulations that allow domestic banks to issue standby letters of credit for credit enhancement and foreign debt service, and that address intercreditor issues when lending alongside international banks (including service charge for offshore and onshore accounts).
- *Interest rate restrictions*—China has started deregulating foreign currency lending rates and plans to liberalize renminbi interest rates in the near future. Renminbi interest rates are set by the People's Bank of China and prone to fluctuation. Accordingly, there is no such thing

TABLE 3-3: LOCAL SHARE OF DEBT FINANCING FOR POWER PROJECTS WITH PRIVATE PARTICIPATION, VARIOUS ASIAN COUNTRIES, 1997 (PERCENT)

Country	Share
Australia	100
Malaysia	94
Thailand	72
China	34
Philippines	1

Source: Clifford Chance and Credit Agricole Indosuez. (Annex 4)

as a "fixed rate" loan, and a "floating rate" loan has to be within the boundaries set by the bank at any given point of time. Thus interest rates could be subject to significant influence from government policy and much less reflective of market conditions and project risks.

- *Undeveloped lending capacity*—Chinese draft loan documentation is often brief and does not contain the detailed, sophisticated provisions typical of infrastructure project loans. Domestic bank lending on a project finance basis (as for the Jingyuan Power and Shangdong Zhonghua Power projects) was met with enthusiasm by private investors. In these cases Chinese banks share security with international lenders under common terms. Working alongside international banks helps domestic banks develop expertise in credit evaluation, financial structuring, and risk management. And as in other countries where the commercial banking sector has not yet fully developed and government-sponsored policy banks provide long-term loans to infrastructure projects, the China Development Bank could be instrumental in nurturing longer-term lending markets.
- *Limited participation of foreign banks in renminbi lending*—foreign bank branches in China are not allowed to take renminbi deposits and so have limited capacity in extending renminbi funding to infrastructure projects. Allowing foreign bank branches to finance infrastructure with renminbi would stimulate domestic banks and accelerate the building of capabilities to assess, underwrite, and manage the risks of private participation in infrastructure.

Bond Financing

Bond can be an important source of financing for infrastructure projects. In the United States, for example, local governments are able to mobilize significant private financing through the bond market even though 43 percent of the water sector (mostly systems in small communities, serving 86 percent of the population) is publicly owned. This is party due to the fact that the U.S. tax code allows political subdivisions to issue bonds that are exempt from federal, sate, and local taxes Interest rates on nontaxable bonds can be as much as 2 percentage points lower than the rates on conventional debt.

Another important factor is the disciplined public financing market in the United States. As a separate investor group, bondholders take less risk than banks and equity investors, and accordingly require significantly *higher financial disclosure and tighter financing and security structures* for projects. U.S. government agencies have the sophistication and ability to structure the security so that utility bonds are isolated from the fluctuations in a municipality's general finances, allowing U S. cities to exploit the municipal bond route Denise Leonard (2000) provides a detailed explanation of the structure of the New York water revenue bonds (Box 3-2 and Figure 3-2).

From this structure it is clear that to leverage the international bond market on a meaningful scale, Chinese bond issuers have to significantly improve their creditworthiness through much tighter regulations and contract arrangements. Credit can also be partly enhanced through security mechanisms offered by multilateral agencies, domestic banks (as with telecom bond issues in Malaysia), or insurance companies (as in the United Kingdom).

Just as important is leveraging the domestic bond market China's bond market, with issues of about $40 billion a year and $419 billion outstanding, remains underdeveloped. *Government securities dominate issues* in the bond market. Corporate bonds account for just 4 percent of outstanding issues, while treasury bonds account for 62 percent and financial bonds for 34 percent. A significant amount of bond issuance is for infrastructure projects. Table 3-4 provides a breakdown of the infrastructure bonds issued between 1996 and 1999 that were rated by China Chengxin International Credit Rating Company, which in 1999 rated 98.5 percent of the bonds issued. The State Development Planning Commission, in approving corporate bond issues, tends to prefer infrastructure projects sponsored by large state-owned enterprises. But these bonds, like most of the other *nongovernment bonds are issued on a company basis,* not a project basis.

In addition to the small size of corporate bond issuance and limited types of debt securities, China's bond market suffers from incomplete *laws and regulations* on corporate governance, risk

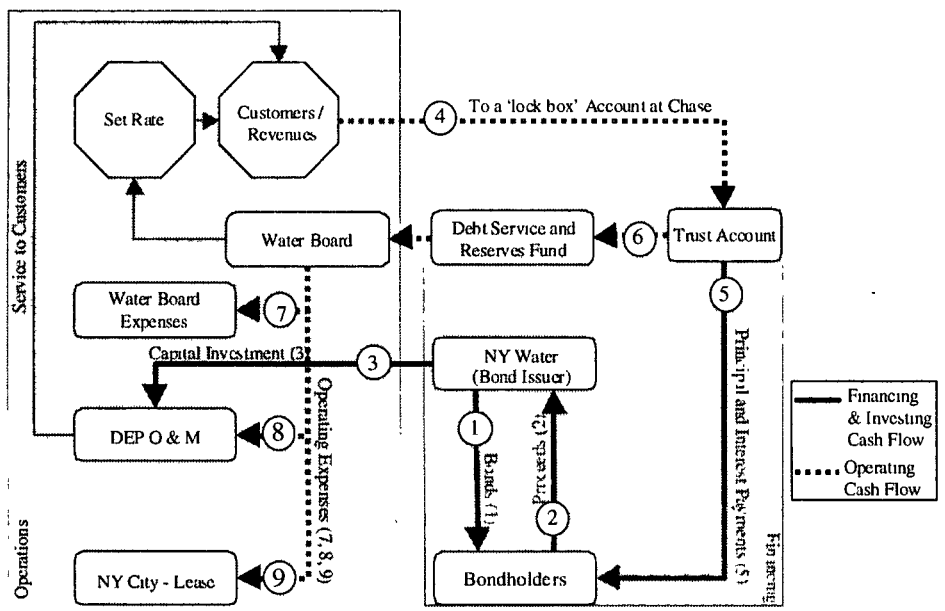
BOX 3-2: INTERNATIONAL EXPERIENCES WITH STRUCTURING UTILITY BONDS

The **New York** City Municipal Water Authority (the "Authority") was created in 1984 as a public benefit corporation for the purpose of issuing debt to finance capital improvements of the water and sewer system. A second public benefit corporation, the New York City Water Board (the "Board") was also formed to lease the water system from New York City and to maintain the system for a term of 40 years or for the life of the outstanding revenue debt. The board was also granted the authority to set rates and charges as necessary to meet its operating, maintenance as well as debt service expenses.

The arrangements were developed with a view to isolating the credit of the water and sewer system from that of the city (which was at the time rated Baa) by providing bankruptcy protection and automatic rate setting. To protect it from bankruptcy (i) the board and the authority were constituted as bankruptcy remote entities, neither had the ability to file for bankruptcy, (ii) the lease agreement between the board and the city establishes the boards' ownership of the revenues, (iii) the revenues are pledged pursuant to the financing agreement to the bondholders, (iv) these agreements also provide for an operating reserve fund and a debt service fund, (v) the city's annual lease payment is subordinated and (vi) finally, legal opinions have been provided that the system's revenues many not be combined with the city's should the latter file for bankruptcy protection.

With regard to tariff setting, the legal structure also provides for independent third parties, the rate consultant and the consulting engineer, to ensure that the rates are not subject to political manipulation. Additional protection includes: (i) if the board does not set adequate rates, the authority can petition for the appointment of a receiver to administer on behalf of the board and ensure that adequate rates are imposed; (ii) cash flow requirements for debt service are monitored on a monthly basis and rate adjustments can be made as necessary over the course of the year; (iii) the rate setting process is formula driven, rates and changes are set to equal 1.15 times projected debt service of senior debt payable in the current year as well as 100 percent of operating expenses and required deposits, which include subordinated debt; and (iv) in order to take on additional debt (a) revenues for the last two years and (b) for the next five years, as projected by the rate consultant, have to pass the previous test.

FIGURE 3-2: NEW YORK WATER REVENUE BONDS



Source: Leonard 2000.

TABLE 3-4: DOMESTIC INFRASTRUCTURE BONDS RATED BY CHINA CHENGXIN INTERNATIONAL CREDIT RATING COMPANY, BY SECTOR, 1996–99

(millions of renminbi)

Year	Power	Water	Rail	Road	Telecom	Others	Total
1996	250	200	3,600	3,130	0	11,040	**18,220**
1997	1,960	15	1,690	120	1,000	5,032	**9,817**
1998	6,501	0	2,220	1,010	50	6,825	**16,606**
1999	3,187	35	4,110	700	0	4,177	**12,209**
Total	**11,898**	**250**	**11,620**	**4,960**	**1,050**	**27,074**	**56,852**

Source· China Chengxin International Credit Rating Co., Ltd.

management, bankruptcy, and the like, and from a *lack of institutional investors*—the primary market is open only to banks, and closed to foreign investors and nonbank financial institutions such as domestic insurance companies and pension funds. In addition, *credit rating* is recommended but not mandatory.

As with the lending rates of domestic banks, domestic bond pricing in China is based on deposit rates determined by the People's Bank of China—rates that do not necessarily reflect market conditions In industrial countries the spread between high-yield bonds (used to finance development projects) and government securities has averaged 5 percentage points in recent years, while investment-grade corporate bonds often carry spreads below 1 percentage point. Having such *price flexibility* in China would broaden the scope of bond issues and enable maximum liquidity in all market areas.

To make bond financing more attractive for infrastructure projects, regulatory reforms should aim at increasing transparency standards for bond issues, improving credit rating, deepening the long-term bond market, and developing the corporate bond market. Reform should also try to broaden the *demand for infrastructure bonds,* including by allowing nonbank financial institutions to invest in them. For instance, given their long-term liability structure, pension funds and insurance companies are well suited for funding private investments in infrastructure (Box 3-3) The development of the contractual savings sector entails reforms that are beyond the scope of this report, however, it is important that this sector not be restricted to only a small number of eligible investments.

Equity Financing

There are three types of equity financing for infrastructure projects: direct investment by strategic investors, private equity financing from institutional investors, and "public" equity issued on stock markets. During the privatization of Chile's water companies, for example, $1.8 billion of direct investment went to purchase existing and new equity shares and $144 million of shares were listed on the stock exchange (including $99 million sold to workers). Together these two types of equity financing account for two-thirds of the market value of the privatized water companies (Jadresic 2001) On the Australia Stock Exchange infrastructure assets account for about one-third of market capitalization (Table 3-5) (Porter 2001).

BOX 3-3: INTERNATIONAL EXPERIENCES WITH DOMESTIC BOND FINANCING

Malaysia, with its Employee Provident Fund, and **Australia,** with a developed pension and mutual fund system, are able to source large amounts of local bonds for private participation in infrastructure. In Australia most companies involved in infrastructure (such as privatized airports or power generation units) raised their initial financing from banks, then refinanced in the bond markets after a couple years, having established investor comfort based on their performance. **Thailand** is moving in the same direction.

Source Clifford Chance and Credit Agricole Indosuez. (Annex 4)

TABLE 3-5: [illegible] CAP[illegible] OF [illegible] ASSETS ON [illegible] AUSTRALIA STOCK [illegible]ANGE, BY SECTOR, 2001

Sector	Value (billions of Australian dollars)	Number of issues among top 100 companies
Telecom	60	3
Power generation	35	8
Power distribution	30	10
Water	20	4
Gas	5	2
Road transport	5	1
Rail transport	10	2
Airports	5	2
Total	170	32

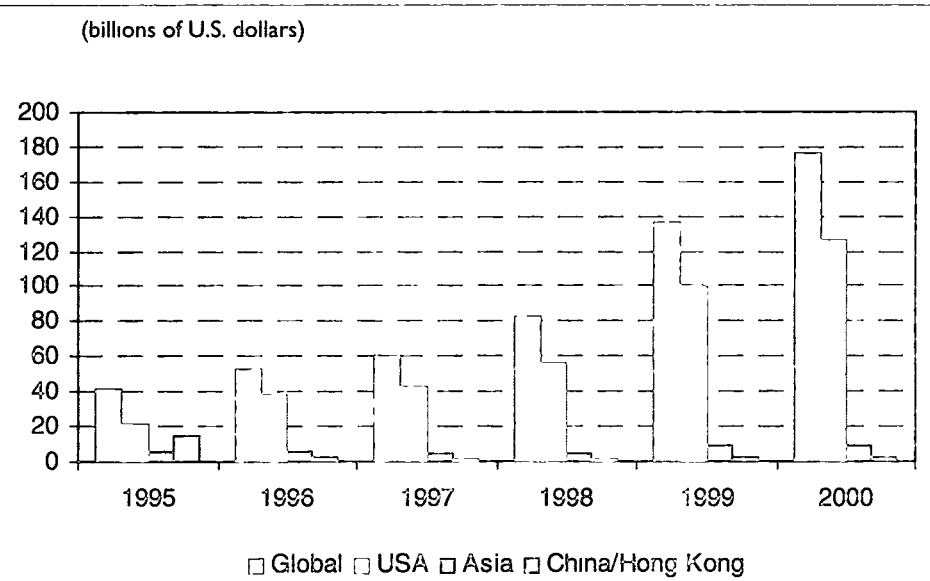
Source: Porter 2001; Macquarie Bank Group.

China has been successful in attracting foreign direct investment and listing infrastructure companies on its stock exchanges, but it only recently began using private equity funds. In 2000 at least $177 billion, or 0.6 percent of global GDP, was invested worldwide—but only about $3 billion, or 0.2 percent of China's GDP, was invested in China (Figure 3-3).

Infrastructure has been the main sector attracting private equity investment in China, but traditional sources of private equity financing—such as insurance companies and pension funds—have not yet been extensively mobilized (Figures 3-4 and 3-5).

Strategic direct investment and private equity investments share some common concerns—including project economics (for example, tariff, currency, and security risks), the regulatory

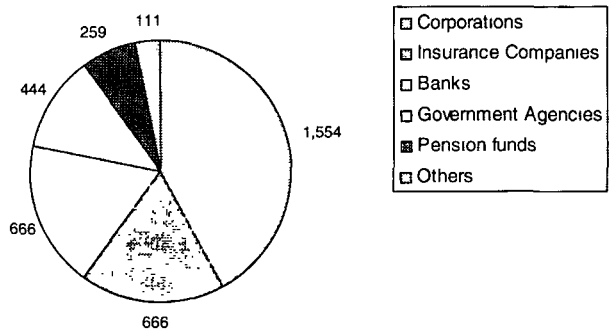
FIGURE 3-3: GLOBAL PRIVA[illegible] 1995 2000



Source: Collated by AIF Funds Management LTD from "Asian Venture Capital Journal 2001 Guide to Venture Capital in Asia," and "3i/PriceWaterhouseCoopers Global Private Equity 2001."

FIGURE 3-4: PRIVATE EQUITY INVESTMENT IN CHINA, BY SOURCE, AS OF 1999

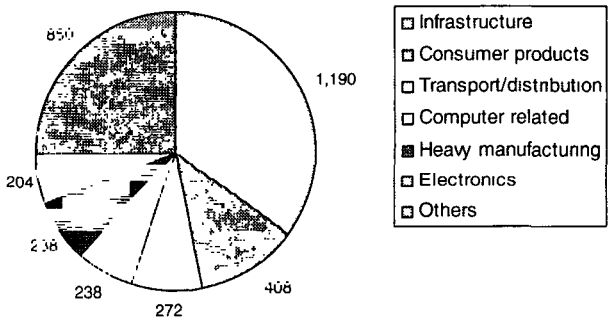
(millions of U.S. dollars)



Source: Collated by AIF Funds Management LTD from "Asian Venture Capital Journal 2001 Guide to Venture Capital in Asia."

FIGURE 3-5: PRIVATE EQUITY INVESTMENT IN CHINA, BY INDUSTRY, AS OF 1999

(millions of U.S. dollars)



Source: Collated by AIF Funds Management LTD from "Asian Venture Capital Journal 2001 Guide to Venture Capital in Asia."

environment, foreign exchange control, and the availability of debt financing. One critical concern for private equity funds is means of exit, which ranges from listing on local or offshore capital markets to trade sales, mergers and acquisitions, and refinancing in industrial markets. But these options are extremely limited in China. China's financial sector reform needs to broaden the range of issuable securities such as preferred stocks, convertibles, and options to facilitate the exit by private equity funds.

4

Road Issues and Recommendations

Over the past 10 years a national trunk highway system and a network of urban and provincial expressways have emerged in China. Still, an estimated $75–100 billion needs to be invested in highway construction over the next 15 years. Thus the challenge for the road sector is to raise large-scale financing, because government loans and tax revenues will not be sufficient to cover future capital requirements. Significant private funds have been invested in roads, but the system developed to attract private participation depends on projects that are generally led by the public sector and does not ensure access to the widest possible range of private capital. This section reviews the situation in the road sector and recommends measures to increase private investors' interest in projects crucial for government road policy.

The Situation

Highway investments significantly increased in the late 1990s and reached 2.5 percent of GDP (around $27 billion). New construction has been historically dependent upon mainly public spending and the private sector has contributed less than 10 percent if total commitment to new construction, although total private funds acquired make China a leader among developing countries for highways. Few models have been used for private participation in roads and have experienced drawbacks.

Capacity Planning and Development

Rapid growth in passenger and freight traffic underscores the importance of highway development in China. According to the State Development Planning Commission, each year China's highways carry more than 15 billion tons of freight (equivalent to 704 billion ton-kilometers) and 15 billion people (636 billion person-kilometers), representing 14 percent of freight traffic carried by all means and 48 percent of passenger traffic. Since 1993 overall traffic on highways has been growing by 8 percent a year.

Nearly all of the growth in roads has occurred since economic reform began in 1978. The road network has grown by more than 60 percent since 1980—and more than 40 percent since 1990—and covered 1.4 million kilometers in 2000, with expressways and high-capacity highways accounting for nearly 25,000 kilometers (Figure 4-1). During the 1980s annual investment in roads was less than 0.3 percent of GNP, but in 1998–2000 it reached $27 billion a year or 2.5 percent of GNP.

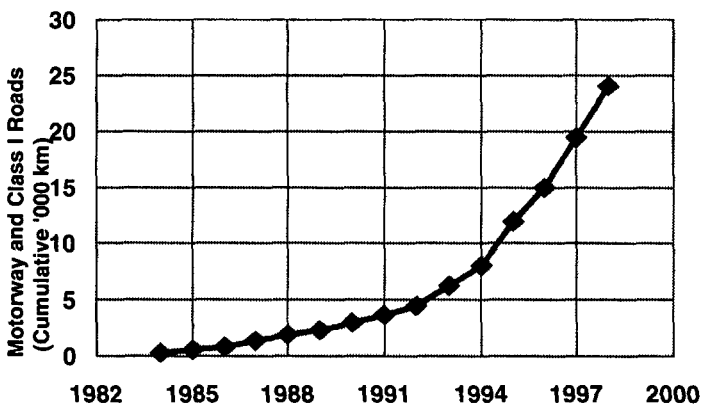
China had only 940 kilometers of roads per 1 million inhabitants in 2000, far below the density levels in industrial countries like the United States (25,326 kilometers) and Japan (9,096 kilometers) and even sparser than India (1,784 kilometers) and the former Soviet Union (3,335 kilometers). With increasing urbanization and economic development, the recent levels of investment and expansion in China's road network are expected to be maintained in the near future.

With considerably fewer technical and financial resources, and an economy and poverty level still within developing country standards, China is trying to duplicate the U.S. interstate highway system (which took 40 years to develop) in no more than 25 years. The national trunk highway system is a priority, and 35,000 kilometers of the system are scheduled for completion by 2020 (33 percent by the end of 2000) at a cost of about $150 billion. In addition, a 20-year highway development program was announced in 2001 for the 12 central and western provinces, including an 18,000 kilometer extension of the national trunk system with eight east-west and north-south corridors, 180,000 kilometers of national roads in western areas, and 150,000 kilometers of rural roads. The World Bank estimates that this program could cost about $200 billion over the 20-year period.

Public and Private Financing

New highway construction historically depended on public spending, through a combination of central grants, local budgets, and multilateral loans channeled through the public sector, and user charges collected by road authorities (Table 4-1). For example, since 1985 the World Bank has been a primary foreign lender to China's highway system. With 26 projects, the Bank had total exposure of $5.2 billion, contributing to 40 percent (3,500 kilometers) of the expressways built over the period. In addition, Bank funding helped upgrade, rehabilitate, and maintain 20,000 kilometers of secondary and rural roads. And until recently the Road Maintenance Fee and Vehicle Purchase Fee accounted for about 70 percent of highway funding.

FIGURE 4-1: HIGH-CAPACITY ROAD CONSTRUCTION IN CHINA, 1982–2000



Source: Mitchell Stanfield & Associates.

TABLE 4-1: PUBLIC AND PRIVATE HIGHWAY INVESTMENTS, 1981–2000

Revenue Source	Period	Billions of renminbi	Share of total (percent)
Public	1981–89	19	2
Public	1990–95	138	14
Public	1996–2000	805	84
Private	1990–2000	91	10
Total	**1981–2000**	**963**	**100**

Source: Mitchell Stanfield & Associates.

Today, however, the mix of highway funding is shifting toward domestic loans and user charges These sources have increased the availability of public funding for expressways and high-grade (class 1 and 2) highways (Table 4-2).

In the wake of the East Asian financial crisis, the Chinese government is encouraging public entities to take medium- and long-term infrastructure loans in renminbi. From 1998 to 2002, the government raised 660 billion renminbi ($79.5 billion) through public bonds, about 30 percent of which went to infrastructure development by local governments. In addition, some domestic commercial banks have provided provincial entities with medium-term (five to eight years) limited and nonrecourse project loans at annual interest rates just above 6 percent.

Moreover, largely because of the ambitious growth targets for the national trunk highway system, great importance is being attached to road tariffs and user charges. The 1998 Highway Law permits tolls on almost all major highways, whether constructed by public entities or private concessionaires. The Highway Law also stipulates a fuel tax that could initiate an overhaul of the country's highway finance system, perhaps replacing the Road Maintenance Fee as the primary source of funding for operations and maintenance. But while the National People's Congress has approved implementation of the fuel tax, its exact size and structure have not been approved by the State Council Most national roads are expected to retain existing tolls, particularly those pledged to repay financing.

Private financing has accounted for about 10 percent of highway investment during 1990–2000 (see Table 4-1), making China a leader among developing countries in acquiring private

TABLE 4-2: HIGHWAY INVESTMENTS BY TYPE, 1990–2005

	1990		2000		2001–2005 (est.)
Highway type	Investment (billions of renminbi)	Share of total (percent)	Investment (billions of renminbi)	Share of total (percent)	Investment (billions of renminbi)
Expressways	0.01	0.1	56	28	280
Highways					
Class 1	0.02	0.3	30	15	150
Class 2	0.20	4.0	60	30	300
Class 3	0.84	16.5	12	6	60
Class 4	2.60	51.0	27	13.5	135
Unclassified Roads	1.43	28.1	15	7.5	75
Total	**5.10**	**100**	**200**	**100**	**1,000**

Source: Mitchell Stanfield & Associates.

funds for highways. This capital is mainly invested in high-grade highways because all are toll facilities and, along with rising traffic, are generating increasing revenues for operations and maintenance and dividends for investors.

Even so, private funds have played a limited role in the funding of the highway network and still lag in the race to meet China's ambitious construction requirements. In addition, over the past decade about 80 percent of the private investments in highways have been concentrated in coastal provinces More important, most private financing has been limited to government-controlled toll road projects, particularly rehabilitation or expansion of existing roads with proven traffic (for example, 3,500–5,000 vehicles a day for expressways)—that is, brownfield projects. That means that in most cases all construction and traffic risks are assumed by the public sector.

Finally, there has been almost no long-term foreign debt raised on a project finance basis and very little foreign equity from sources other than Hong Kong (China). A few developers in Hong Kong have provided equity and raised international debt on the strength of their balance sheets (instead of the projects). One of the developers, New World Infrastructure, has also established a mainland subsidiary to complement its equity investments with borrowings in renminbi for at least one toll road project. But recent changes in central government policy on minimum return guarantees have affected developers' capacity to secure government payments stipulated in joint venture agreements. This has caused at least one firm to announce in 2001 that it is pulling back from substantial investments in future toll road projects.

Policy and Institutional Structure

The policy framework for private investment in highways was pieced together in the 1990s, complemented by cross-sectoral regulations and decrees. Regulations and decrees specific to roads and applicable to private, particularly foreign, investment include the "Provisions on the Establishment of the Foreign-Funded Construction Enterprises" (1995), which permits Chinese-foreign joint ventures and cooperative enterprises but prohibits wholly foreign-owned enterprises from engaging in civil engineering projects. Moreover, the new Highway Law has yet to be fully implemented.

The national highway program is administered by a combination of central agencies and ministries. It is often implemented by provincial communications departments with the involvement of many provincial and municipal entities (Figure 4-2). For example, tariffs must be approved by provincial governments according to guidelines set by the State Development Planning Commission, and managed by provincial price bureaus, often with the participation of provincial committees.

There is no arrangement at the central level for multiyear funding of projects, nor is there a formula for allocating funds to provinces based on population density, lane kilometers in operation, number of vehicles, and other factors.

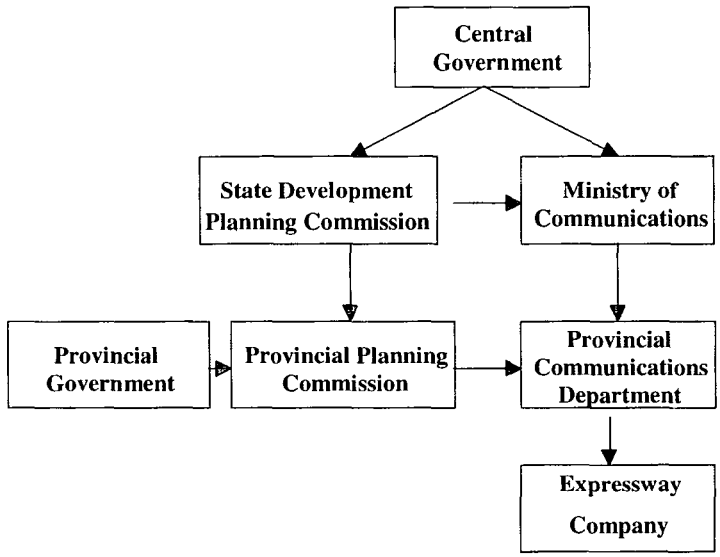
Models for Private Participation

The few models that have been used for private participation in roads have experienced drawbacks in their application.

Cooperative Joint Ventures. China has generated significant highway rehabilitation work and some new expressway construction through joint ventures between developers and provincial or municipal agencies. During 1990–2000 there have been more than 80 joint venture projects in 11 provinces, along with the Shanghai and Tianjin municipalities. The total capital cost of these projects is estimated at 112 billion renminbi, 61 billion of which is private funding (almost all from Hong Kong developers)—accounting for 54 percent of private investment in roads during this period.

The cooperative joint venture arrangement is in many ways a substitute for a broad legal and regulatory framework conducive to attracting foreign capital. In the absence of such a framework, foreign investors lack confidence that their Chinese counterparts will comply with contracts. The involvement of Hong Kong developers has been motivated by their capacity to negotiate arrange-

FIGURE 4-2: INSTITUTIONAL SETUP FOR HIGHWAY DEVELOPMENT



Source: Mitchell Stanfield & Associates.

ments, including preferential treatment (guarantees, tax incentives, foreign exchange loss protection, and so on). As a result cooperative joint ventures on the mainland are closed to non-Hong Kong developers and have been restricted to noncompetitive transactions.

The process could be made more efficient and perhaps cheaper for the project with competitive bidding for foreign partners, who could provide not just equity capital but also equipment and international experience in the commercialization of toll roads The current number of players seems too limited. Toll equipment and operations and maintenance services could be competitively procured on a contract basis A well-established legal and regulatory framework would encourage more foreign investors to participate in competitive bidding and reduce public subsidies It would also allow existing roads with limited traffic risk to be partially refinanced with passive foreign equity and regional infrastructure funds

International Debt Financing in the 144A Market. China has had great difficulty developing workable regulations to permit the financing of highway infrastructure with long-term debt secured in international markets. In the absence of a well-structured legal and regulatory framework, most mainland companies do not have access to large institutional investors (such as insurance companies) and are not able to secure significant renminbi debt from domestic banks. Major Hong Kong developers with large project portfolios and relatively lower credit risk are able to issue corporate bonds in the US based 144A market. Other firms who pursue this approach with project bonds are penalized with late tariff adjustments and difficulties in gaining access to hard currency for repayment of debt.

The 1997 Project Finance Measures (see Chapter 3) effectively gives international creditors no access to any assets, revenues, or guarantees outside a project. In the lack of a clear regulatory system, such regulations have almost halted commercial project financing of infrastructure projects—even in coastal provinces with stronger creditworthiness. The limited number of Hong Kong investors (New World, Road King, and Cheung Kong Infrastructure) who have secured long-term

debt on the strength of their balance sheets (instead of the projects) might see downturns in their financial results. The few non-Hong Kong foreign investors who have participated in China's transport sector also seem to be pulling back (see Box 4-1).

The entire system needs to be reorganized, with clear rules and lines of authority, and fairly administered approval procedures. Without these reforms, project financing in the 144A market will continue to be difficult to sustain.

Securitization of existing highway assets. Since 1996 eight expressway development companies—acting as financing vehicles for provincial governments—have been listed on the domestic stock exchanges, and five have been listed in Hong Kong, bringing in about $2 billion for the rehabilitation and expansion of existing transportation projects. Some provincial expressway companies have also explored overseas listings. Zhejiang Expressway Company, for example, has applied to the U.K. securities authority to have its H shares listed on the London Stock Exchange (Box 4-2).

Mature expressways and bridges with well-defined traffic levels are injected into these shareholding companies to generate immediate cash flows and profits, to attract public investors on the exchanges. It is also common for these shareholding expressway companies to have preferential, if not exclusive, rights to develop expressway projects in the province. The companies have also been granted first right of refusal to accept any future road concessions offered by the provincial governments.

The future level of asset securitization in the highway sector will fluctuate depending on market conditions and investor interest in and capacity for highway securities. In a more mature market, with limited share appreciation potential, the earnings and dividend performance of highway companies will also dictate how well new share issues are received in equity markets.

Build-Operate-Transfer (BOT). Since the mid-1990s China has considered using BOT schemes for highway projects involving foreign investors, but no such schemes have been implemented. For example, the World Bank sponsored a BOT feasibility analysis of the Junshan Bridge over the Yangtze River in Hubei Province, to test the concept. In 1998 the State Council decided instead

BOX 4-1: CHINA'S EXPERIENCE WITH INTERNATIONAL DEBT FINANCING

During 1996–98 four developers launched 144A financing for highway projects on the mainland, including two from Hong Kong (Cathay International and Traffic Stream Infrastructure) and two from the mainland (Zhuhai Highway Company and Greater Beijing First Expressways). In each case it appears that currency convertibility and repatriation of earnings to investors outside the mainland is a continuing problem. The central authorities have taken the view that the financing structures implemented by these developers were intended to circumvent regulations, especially approval from the State Administration of Foreign Exchange, and have penalized the companies at the expense of note holders. As a result three of the four developers (Traffic Stream, Zhuhai Highway, and Greater Beijing First Expressways) have defaulted on debt issues rated by Standard & Poor's. The remaining firm, Cathay International, has been downgraded to CC, with a negative outlook by Standard & Poor's.

Other Hong Kong developers (Road King, Cheung Kong Infrastructure, New World Infrastructure) have had to use their balance sheets to secure international debt for their infrastructure joint ventures with mainland provincial entities. All these companies have reported higher earnings on a year-to-year basis, with timely road tariffs and conversion of renminbi revenues to hard currency for repayment of debt. But recent restrictions on the provision of minimum return guarantees to developers and a prohibition on loan guarantees by subsovereign government units could change the situation.

The few non-Hong Kong foreign investors are also pulling back. In May 2000 First Group, the large U.K. transport company, sold its 26 percent interest in New World Holdings to a New World affiliate.

Source: Project team

BOX 4-2: CHINA'S EXPERIENCE WITH THE ZHEJIANG EXPRESSWAY

The Zhejiang Expressway Company develops, owns, and operates high-grade roadways in Zhejiang Province and engages in ancillary businesses such as billboard advertising and gasoline and automobile service stations Its primary asset is a 250-kilometer Class I highway connecting the cities of Shanghai, Hangzhou, and Ningbo.

The company is a joint stock company held by agencies of the Zhejiang provincial government (65 percent) and H share investors through the Hong Kong and London exchanges (35 percent). The company raised about $425 million in its 1997 initial public offering (IPO) of H shares, making it the second largest joint stock issuer in the toll road sector. Since its incorporation the company has maintained a conservative financial structure, with a debt to equity ratio of generally no more than 1 to 9. The company's largest creditor is the World Bank, which extended $170 million in loan facilities for the initial phases of construction. The balance of the company's debt, approximately $25 million equivalent in renminbi loans, is provided by domestic banks.

During 1999–2000 the company's shares traded at a discount following the East Asian financial crisis and in the wake of GITIC. But the share price recently bounced back for the following reasons:

- The company's location in Zhejiang Province, which continues to exhibit strong economic performance and has emerged from the Asian crisis and GITIC period with a relatively clean market reputation.
- The company's strong reputation with investors for disclosure and management practices.
- The company's conservative financial structure.

But the Zhejiang Expressway Project also raised questions for future projects on the following issues:

- The provincial government's ability to achieve competitive terms for follow-on projects where the original concessionaire holds a preemptive right.
- Foreign currency funding for a business that derives all of its income in renminbi.
- Conflicts of interest that may emerge in a transaction where government or quasi-government entities are playing the roles of regulator, manager, majority owner, and service contractor.
- The considerable risk of patronage in toll road projects, even in the most economically robust regions.

Source: ANZ Bank.

to finance the project with public funding as part of the Third National Highway Project sponsored by the World Bank. But the policy issues raised by the Bank in its Junshan feasibility study are still applicable. These include regulatory oversight, bidding process and evaluation, land acquisition and resettlement, permits and approvals, toll setting and adjustment, development rights, performance security, profit remittance, and dispute resolution.

It is time to review the existing BOT framework for use in road projects This framework, discussed in earlier chapters, should cover the allocation of risk between public and private partners. A sound framework could open the way for new sources of foreign direct investment and project financing in the sector.

Recommendations

Premier Zhu, in his report on the outline of the current Tenth Five-Year Plan, pointed out that "carrying out the strategy for western-region development to accelerate the development of the central and western regions is a major step taken to achieve the strategic goals of the third stage of the country's modernization drive. During the Tenth Five-Year Plan period, we need to place emphasis on key projects for a good beginning of the program Construction of infrastructure and protection of the ecological environment should take priority, and we should strive for major breakthroughs within five to ten years."

China has massive highway investment needs over the next 20 years, indicating great potential for private investment. Most of the opportunities for government to attract investors are in devel-

oped provinces and on corridors with significant traffic. Although road projects in less developed regions are of great social and economic development value, it is difficult to attract private financing without some public financing, given the less profitable traffic and economic outlook. So, although developing a viable road transportation system in China's central and western regions is an urgent concern for the government, private financing of that system should be designed in a cautious, phased approach.

Problems with existing road projects in the eastern region—including unclear government policy on public and private financing, lack of transparency in the approval process, weak contract enforceability, and defaults on loans and bonds—discourage international investment in the sector. Solving these problems would boost investors' confidence in China's road sector. In addition, broadening the scope and scale of private participation in infrastructure would enable the government to significantly reduce public funding in developed regions. To raise debt financing, government agencies in charge of toll road development need to be corporatized and legally separated. These reforms are needed if public funds and other resources are to be allocated more efficiently to the west. After a basic road network has been built with public funding and traffic has stabilized to a certain extent, the private sector can be brought in to the west to take over a "brownfield" project, or a pool of projects—including greenfield ones, which may have fewer risks and lower returns. Government funding freed by these "takeovers" can be used for road systems in even less developed regions.

Establish Clear Policy on Government's Role, Encouraging Wider Private Participation

The dominance of public investment and ownership has dampened the interest of international investors in China's highways. Thus the government should establish a clear policy on the extent to which the private sector should be involved in developing the highway network—especially in coastal regions, where properly structured projects can attract private investment.

Broadening the private sector's role and the scope of acceptable schemes for private participation would also allow government to develop, on a case-by-case basis, a cooperative structure with private investors. The new structure would be intended to optimize the use of private participation in meeting project objectives, addressing financial characteristics and requirements, and defining an acceptable risk profile for the parties.

International experience shows a variety of approaches (Box 4-3). For example, greenfield investments in the road sector are generally perceived as being too difficult to attract because of high construction and traffic risks. If the government can assume some risks that are under its direct control (planning risk, political risk, and so on) and participate in capital investment, the barrier to entry by the private sector will be lowered—especially in the first few years of the project, when traffic risk is highest. Greenfield projects could also be packaged with existing profitable projects to improve profitability and lower the risks of startup roads. Cross-subsidies have been useful for network expansion in many countries, including Japan. Finally, even where private investors' interest is limited, models for private participation involving less private capital investment but significant managerial and technical expertise—such as management or supply contracts, concessions, and TOT (transfer-operate-transfer) or ROT (rehabilitate-operate-transfer) schemes—would allow the public sector to allocate more commercial responsibilities to the private sector.

Private responses to policy changes will depend on the method of implementation. Policy reforms should be widely publicized at the conceptual stage, and provincial governments should also be fully informed and asked for comment. Possible reforms could include private participation models that were once rejected, but that with refinement could be acceptable to the central government. In addition, recommendations might be disseminated on the pros and cons of different models and practical solutions suggested to address key implementation concerns after testing them on specific projects. It is also important that policy issues be considered in parallel with the strengthening of the legal framework, to trigger renewed interest among investors after their main concerns on the structure for private financing of highways have been addressed.

BOX 4-3: INTERNATIONAL EXPERIENCES WITH PRIVATE INVESTMENT IN ROADS

Argentina and **Australia** undertook programs to privatize their mature road networks, railways, and airport operations and have seen the development of some greenfield projects. Asian countries, by contrast, generally rely on private participation in infrastructure to build the new transport infrastructure required by their fast growth.

In 1991 the Argentine government, lacking funds to properly maintain and rehabilitate its road network, simultaneously awarded twelve 12-year concessions of intercity highways through competitive bidding. Bidding documents required the consortiums to achieve prescribed service levels within a contracted period and to assume existing investment proposals. The decisive factor for selection was the ability to pay an up-front fee to the government on award of the concession. After 1992 the government awarded four 22-year concessions, including some greenfield projects, for access roads to Buenos Aires. This time the sole criterion was the lowest toll offered under serviceability constraints.

There are many privately run DBFO (design-build-finance-operate) roads in the **United Kingdom,** and the model for these concessions is being copied in several other companies, including **Ireland** and **South Africa.** Private operators generally acquire an existing road and are required to perform certain upgrading work or construct new sections of road and are subsequently permitted to operate the road under concessions, which usually run 30 years. U K. road operators are paid based on shadow tolls (determined by use and availability), and the government is comfortable that the revenue it must pay the private operators based on the shadow tolls will be less than it would have to pay were it to carry out the upgrading work and ongoing maintenance over the 30-year period.

Chile has experienced rapid economic growth for more than a decade. The need to increase investment in infrastructure was recognized in the early 1990s, when policymakers decided to introduce private capital in the transport infrastructure sector, covering roads and highways, bridges, tunnels, and airports. The chosen mechanism was a concession, whereby a private firm would finance and build a project and then operate the infrastructure for a set number of years. The concessionaire would recover its investment by collecting tolls from users.

Chile's experience is interesting for several reasons. First, for its size and scope: more than 2,000 kilometers of roads have been concessioned. Second, unlike in Mexico, Chile's program has been mostly successful. Although it is still early in the program, the projects that are in service have not confronted any major setbacks in terms of traffic levels, construction delays, cost overruns, or other problems. Third, the program has been the motivation and testing ground for some interesting innovations in tendering mechanisms The main one is the least present value of revenue auction, which has been used in the tendering of two road concessions.

In such auctions the bidding variable—rather than being toll levels or some other conventional variable—is the present value of revenue throughout the life of the concession that firms are willing to accept to undertake the project The firm that bids the lowest present value of revenue wins. The duration of the concession is then flexible and depends on the effective traffic levels encountered. If traffic levels are lower than expected, the duration of the concession is extended automatically, while if traffic is higher than expected the opposite occurs. Thus income uncertainty due to traffic variations is largely eliminated for the concessionaire.

Other advantages to this form of concessioning include the reduction in traffic risk, and hence the reduced need for the state to extend income guarantees. Likewise, such concessions may reduce the likelihood of bidders low-balling their bids with the expectation of renegotiating the contract later.

Nearly half of Chile's road infrastructure deficit has been covered by concessions (though not all through the least present value of revenue mechanism) The rest will be addressed through forthcoming projects funded by the private as well as the public sector. The program has generated, in present value terms, net revenues of $130–150 million (Gomez-Lobo and Hinojosa, 2000).

Source: Project team.

However, the full impact of policy changes on private capital flows can be achieved only under the following conditions:

- The establishment of a consistent legal and regulatory framework as discussed above.
- Fair, open competitive bidding for private investors, whatever their role in project development and financing, including partners in joint ventures.
- A strong legal basis for each project structure, with particular attention to provisions for contract compliance by government, regardless of whether the development method is concession or transfer of operating rights, BOT, lease, operations and maintenance contract, or another model for private participation in infrastructure.

Corporatize Toll Road Entities into Provincial Toll Road Authorities

Most tolled expressways constructed by provinces on a project-by-project basis are operated by provincial communication departments or by shareholding companies controlled by the parent government. Consolidating these projects in provincial toll road authorities with the capacity to manage large expressway networks would open opportunities to mobilize private participation in various roles, especially the funding of new investments.

To the extent that provincial communication departments are government departments instead of separate legal entities, it would be difficult in China's system for these departments to access financial markets for debt capital to fund large individual projects. In addition, shareholding companies established to operate single corridor projects do not have strong enough balance sheets or financial performance to attract large-scale capital in financial markets. Thus the high demand for capital in the road sector has created a need to consider new organizational methods for consolidating and managing existing toll roads, thereby leveraging income generating assets to raise private financing for future expressway projects A survey of international experience shows that publicly held toll road entities have been developed through a variety of structures and with diversified financing modes (Table 4-3).

All these schemes have succeeded in mobilizing private participation, though of a limited range relative to traditional private participation in infrastructure models, where private developers and lenders have wide latitude in construction and operations (Box 4-4).

As outlined in Table 4-3, country experiences, when taken together, may provide several alternatives for an institutional model suited to China's unique situation and constraints.

The provincial toll road authority concept can be used by Chinese provinces to create a larger pool of assets and a broader base of project revenue flows to leverage new capital from the private sector. The model that ultimately evolves in China must identify the needs of key stakeholders at the policy, investment, management, and service delivery levels—namely, the government, users, fund providers, and operator. Hence the new structure should also have the capacity to:

- Improve the cost efficiency of operations and maintenance of toll roads under management.
- Raise new funds for construction by leveraging expressways in a network or system fashion.
- Devise new financial instruments for raising private capital in domestic and foreign markets without the need for sovereign guarantees.

The move to provincial toll road authorities should evolve in two steps, continuing the move to an increased role for the market in the road sector as envisioned in the Tenth Five Year Plan. The first step would be to use the newly formed provincial toll road authority as an expressway management company for publicly funded toll roads. In the second step stand-alone provincial toll road authorities would assume full ownership and operating responsibilities for expressways, consolidate their operations in a network, and access financial markets for capital to expand, maintain, and rehabilitate the network.

In the first phase the provincial toll road authority provides utility-type services for management and operation of provincial expressways through close interfaces with provincial communication departments and other public agencies This model can mobilize private participation for

TABLE 4-3: PRIVATE PARTICIPATION DEVELOPMENT MODELS AND FINANCING MODES FOR HIGHWAYS

Development Structure	Financing Mode	Countries	Comments
Public entity			
Public toll road authority	◻ Long-term revenue bonds ◻ User fees	◻ Norway ◻ United States	◻ Requires strong operations and maintenance capacity and solid development track record
Expressway management company.	◻ Indirect user fees	◻ Australia ◻ Korea ◻ New Zealand	◻ Operations and maintenance service contracts administered by public agencies but funded off budget
Public highway corporation	◻ Sovereign-backed debt or equity ◻ User fees	◻ Portugal ◻ Slovenia	◻ Commercial financing supported by user fees ◻ External debt requires sovereign support
Asset securitization	◻ Equity offering	◻ China	◻ Market sensitive and costly to owner ◻ Limited capacity to fund large-scale development
Private participation models			
Joint venture shareholding company	◻ Public and private equity ◻ Bank loans ◻ User fees	◻ China	◻ Satisfies need for limited development capital ◻ Asset base too small for debt financing
Maintenance contracts or concessions	◻ Commercial debt and World Bank loans ◻ Government payments	◻ Argentina ◻ Brazil ◻ Chile	◻ Requires strong institutional oversight ◻ Needs stable budget allocations
Design-build-finance-operate contracts	◻ Projects implemented by private sector project debt/equity ◻ Shadow tolls paid by government	◻ Finland ◻ Netherlands ◻ Portugal ◻ United Kingdom	◻ Limited commercial risk transferred to concessionaire ◻ Needs stable public funding base ◻ Project credit related to strength of government payment mechanism
Private highway corporation	◻ Commercial debt ◻ Private equity	◻ Italy	◻ Best example is Italy's Autostrade, formerly owned by government, but sold in public offering in 1999
BOT concessions	◻ Public and private equity ◻ Project debt ◻ Government subsidy	◻ Chile ◻ Greece ◻ Mexico ◻ Spain	◻ High level of public and private risk sharing needed to secure debt financing

Source Mitchell Stanfield & Associates.

management, operational skills, and innovative technology, but it is not intended to provide access to private financing.

In the second phase the provincial toll road authority becomes a stand-alone concessionaire for the province, legally separated from provincial communication departments and with responsibility for operating a wide toll road network and developing new corridors (Figure 4-3).

The revenue from tolls would finance maintenance of expressways and new construction. Most important, a stable income flow would enable the provincial toll road authority to attract private

BOX 4-4: INTERNATIONAL EXPERIENCE WITH PROVINCIAL TOLL ROAD AUTHORITY PARTNERSHIPS WITH THE PRIVATE SECTOR

The **United Kingdom** is probably Europe's most notable recent example of highway management by a strong, well-capitalized central agency, the U.K. Highways Agency, with a large contingent of mainly European contractors, design firms, and toll operators who have formed private consortiums for a massive program of highway rehabilitation and expansion using the design-build-finance-operate technique. Rather than applying direct tolls to its most traveled roads, the Highways Agency compensates the consortiums for their maintenance activities through indirect user fees payable to concessionaires based on a set of road performance criteria.

The design-build-finance-operate program is concentrated in several corridors of high-capacity highways. New developments in the program call for an independent managing agent to interface the Highways Agency and the consortium to monitor and assist in the enforcement of performance standards for road operation. In contrast to BOT-type roads, the design-build-finance-operate projects are more easily financed in capital markets because they rely on the strength of the Highways Agency balance sheet rather than direct tolls as the source of payment to the concessionaire.

Source: Project team.

capital through long-term debt in financial markets, well beyond the proceeds of occasional equity listings. The structure of the New York City Municipal Water Authority, is an example (see Chapter 3, Box 3-2 and Figure 3-1). In China the provincial toll road authority could borrow funds from commercial banks and issue bonds secured by future toll revenues as collateral for debt service (Figure 4-4), if various conditions are satisfied.

FIGURE 4-3: ORGANIZATIONAL STRUCTURE OF A PROVINCIAL TOLL ROAD AUTHORITY

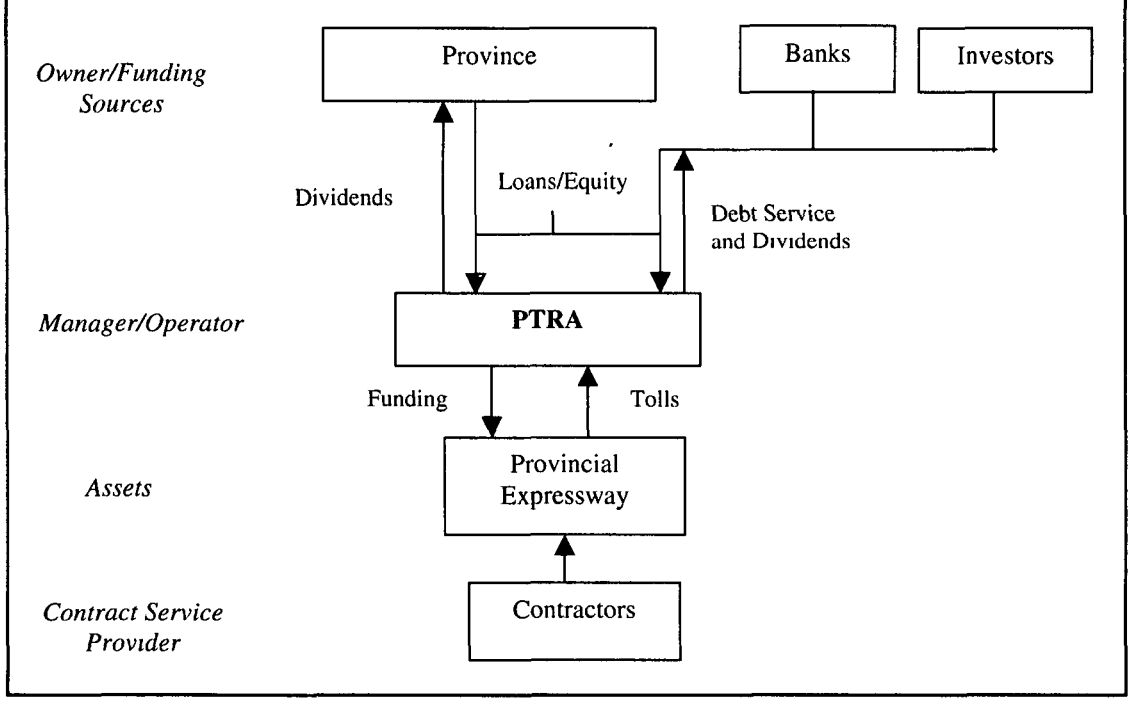
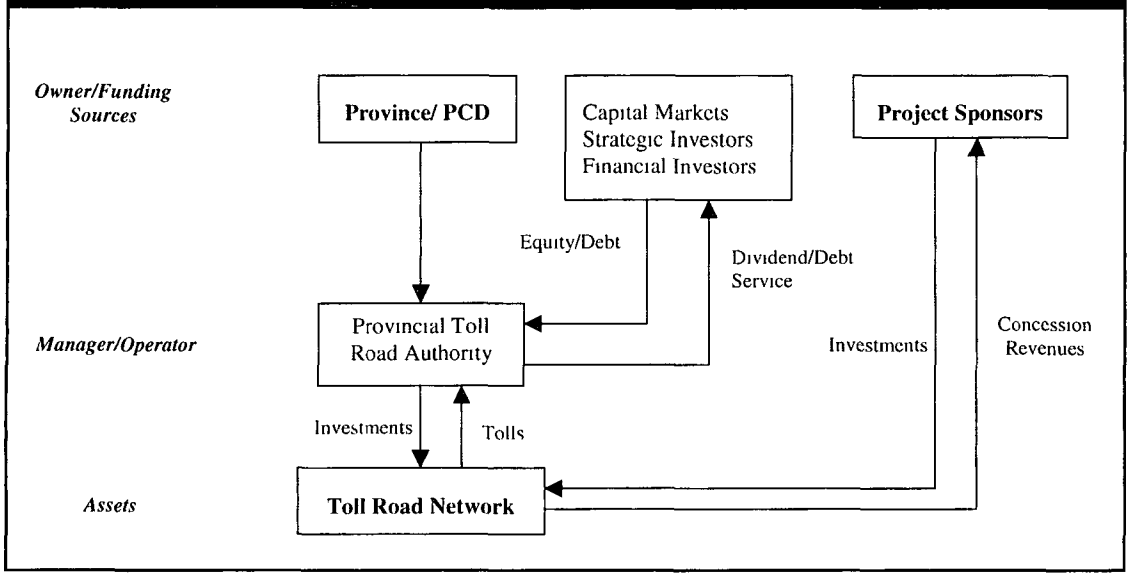


FIGURE 4-4: FINANCIAL STRUCTURE OF A PROVINCIAL TOLL ROAD AUTHORITY



The provincial toll road authority first needs to comply with disclosure requirements and achieve a sustainable level of creditworthiness, which will be evaluated by underwriters and bond purchasers mainly on the basis of ratings issued by bond rating agencies, with a well-defined set of criteria:

- Scope of activity of the provincial toll road authority, as defined in its article of association and the provisions of the agreement or concession signed with the province and delegating operating rights on toll roads.
- Current network traffic volume, growth potential, and assumptions underlying both.
- Historical cash flows
- Aggregate toll revenues, tariff levels, and likelihood of future growth
- Competing roads or bridges that may divert traffic.
- Political willingness to sustain needed capital and maintenance spending at an appropriate level to support network performance.

Lenders and bondholders may also require that a certain level of the toll road authority's operating cash flow be held in a reserve fund. Such a trust account would help preserve the authority's financial viability if, for example, contractually determined tariff increases are not approved by government and debt service ratios fall below a predetermined level.

A creditworthy structure for the provincial toll road authority should significantly improve the breadth and cost of financings that have been completed by provinces that have accessed financial markets. A prime example is the Zhejiang Expressway Company, where the provincial government collaborated with local government entities to develop a provincial-level Class 1 expressway under a clearly defined concession arrangement. Zhejiang raised anchor financing from the World Bank and then tapped the H share market in Hong Kong for funds to complete the construction. But the company did not raise funds on the bond market. The situation is the same in Guangdong, where the Guangdong Provincial Expressway Development Company raised about $127 million from B and A equity share issues in Shenzhen.

BOX 4-5: CHINA'S EXPERIENCE WITH THE SHANGHAI MIDWAY

Shanghai Midway Infrastructure (Holdings) Limited is one of the first private domestic companies principally engaged in investing in high-grade toll roads in China. The International Finance Corporation has invested in the company indirectly through Hansom Investment Limited (Hansom), which is registered in the British Virgin Islands. Midway owns substantial stakes in all its subsidiary companies, with ownership rights to six toll road concessions in the provinces of Zhejiang and Jiangsu. The total length of roads included in Midway's concessions is 205 kilometers.

The Narada Group, a private company in Zhejiang Province, directly and indirectly holds 70 percent of the equity in Midway. The International Finance Corporation and AIG Asian Infrastructure Fund II indirectly hold 15 percent.

The International Finance Corporation was attracted to the investment for several reasons, including:

- While Midway has municipal or provincial partners for all its projects, for the most part it remains in a majority position, with responsibility for toll road administration, operations, and maintenance. The projects were expected to benefit from local governments' financial interest in the returns of the project companies and the efficiencies of private management.
- Midway's strategic partnership with Narada Group, a strong local investor committed to the domestic toll road market, with international standards for corporate governance.
- China's need for new infrastructure investment and the government's commitment to use the private sector to spur development of infrastructure projects.

Although Midway's portfolio doubled in size between 1998 and 2000, the company has been able to limit the size and growth of management overhead. The company retains a small, highly skilled group of managers whose capacity is enhanced by the occasional use of experienced international consultants for financial and legal advisory services, traffic projections, and engineering and technical analysis.

Subsequent to the International Finance Corporation's investment, the Chinese government made available subsidized sources of funding, generally through state-owned banks, which crowded out new private investment. In addition, local governments responsible for enforcing individual road concessions came under pressure from local citizens and higher-level government authorities to lower the costs (either directly to users or indirectly through tax policy) of the toll roads to society, at the expense of Midway's investment return.

Source: International Finance Corporation.

Sustain the Development of Domestic Private Sponsors

A few large Hong Kong developers have captured a sizable share of the market in coastal provinces for expressway construction and highway rehabilitation and maintenance. But most of these projects are for high-traffic roads linking major cities and activity centers. Larger developers generally have not accessed the market for Class 1 and 2 highways at the subprovincial level, leaving new opportunities for private domestic companies in local road networks. With a growing number of Chinese domestic sponsors experienced in developing, constructing, and operating roads, public agencies should consider transferring more of these responsibilities to the domestic private sector.

Although the Shanghai Midway has had mixed results (Box 4-5), it may be suitable for private participation in infrastructure on a smaller scale. The model has the potential for indigenous application to China with public partners in a minority position, but who are willing to contribute right-of-way and necessary construction and environmental permits. Such smaller, focused companies can be used to develop roads at the municipal and provincial levels with streamlined local approval procedures and minimum involvement by central agencies.

5

Water Issues and Recommendations

The spectacular population and economic growth in China over the past decade has significantly increased the demand for water and sanitation services. In response, enormous public funding has been channeled to the water and sanitation sector The government wants to make the sector more efficient through numerous reforms, including adapting the laws and regulations related to water supply, implementing tariff reforms for water and wastewater, restructuring and corporatizing water utilities, experimenting with various forms of private participation, and so on. This chapter reviews the current situation and recommends a multifaceted approach to advance sector reforms.

The Situation

China's water resources are unevenly distributed. According to a recent World Bank report (World Bank 2001a), northern China contains 37 percent of the country's population and 45 percent of its cultivated land—yet has only 12 percent of water resources. Water is particularly scarce in the so-called "3-H" catchment area of the Huai, Huang, and Hai rivers, where about 35 percent of national GDP is produced. Water availability in the Hai-Luan basin, for example, is as low as 355 cubic meters a person a year, far below the internationally accepted definition for water scarcity of 1,000 cubic meters per person per year.

Over the past decade, population and economic growth, together with increased urbanization, have led to a *surge in the demand for water.* The water supplied by municipal water companies to nonindustrial users has been increasing by 7.5 percent per year (Table 5-1). Per capita consumption in urban areas is about 200 liters per day, higher than the consumption level in industrial countries. Leakages in the distribution networks of some old urban water systems are estimated to be as high as 30–40 percent.

The growth in demand puts *tremendous environmental pressures on water resources* (water shortages, pollution, falling groundwater table). The problem is rapidly approaching crisis proportions—particularly in the north, where downstream pollution of water resources is making further

TABLE 5-1: SELECTED INDICATORS ON URBAN GROWTH AND WATER AND SEWER SYSTEMS IN CHINA, 1991 AND 1999

Indicator	1991	1999	Annual growth (percent)
Official urban population (millions)	305	389	3.1
City-based nonagricultural population (millions)	148	202	4.0
Number of designated cities	479	667	4.2
City-based domestic water use (millions of cubic meters)[a]	10,626	18,969	7.5
Domestic water use per city-based nonagricultural resident (liters per capita per day)[b]	197	258	3.4
Municipal wastewater treatment capacity (millions of cubic meters)	1,703	5,779	16.5
Treatment capacity / domestic water consumption (percent)	11	21	8.4
City-based sewer network length (kilometers)	61,601	134,486	10.3

Notes:

a. Includes all nonindustrial municipal water supply, including institutional demands, urban irrigation, and so on.

b. Calculated as (city-based domestic water use/city-based nonagricultural population). The numbers seem to be twice as high as consumption levels in industrial countries. Part of the reason could be lack of data on "agricultural populations"—that is, rural immigrants dwelling in cities who have not properly registered the status of their residence with the municipalities. More accurate estimates for 1999 are believed to be close to 200 liters per capita per day.

Source: World Bank 2001a.

investments in potable water supplies even more difficult and expensive, to the point of affecting future economic development in cities with severe water shortages.

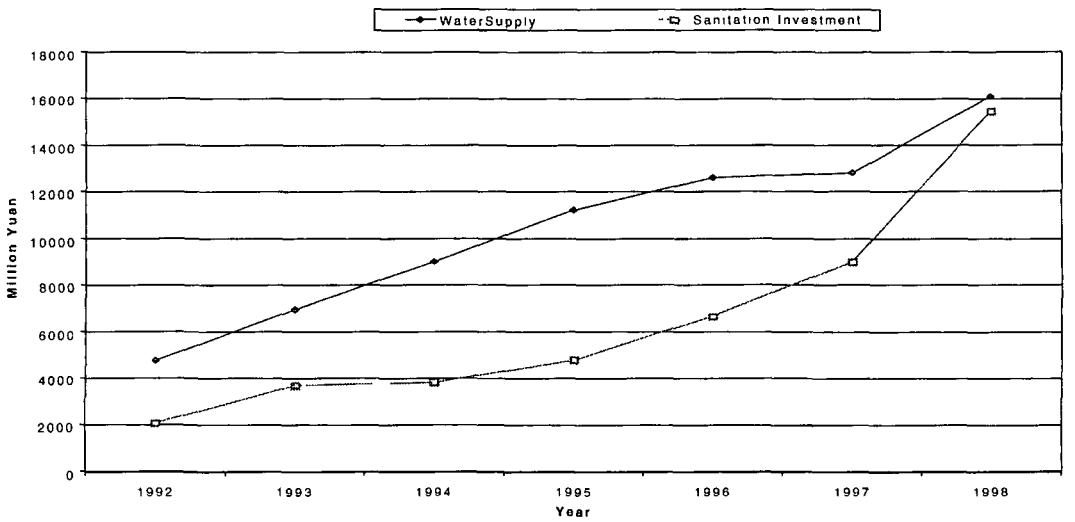
Capacity Planning and Development

In response to the growing demand, the government has declared the development of water and wastewater infrastructure a national priority. Over 1990–98 about $9.5 billion was invested in water supply infrastructure and $6 billion was invested in sanitation infrastructure (Figure 5-1). As a result the capacity of water production plants and distribution networks increased by almost 50 percent. Around the same period, municipal wastewater treatment capacity grew 17 percent a year in terms of volume and 10 percent a year in terms of sewer network length (Table 5-1).

Still, the continuity of service and the quality of tap water remain major concerns for urban populations. In addition, more than 30 percent of water networks have been in use for more than 20 years. These aging networks appear to be operating at excess capacity and deteriorating. Official data for physical unaccounted-for water, though suspected to be understated, increased from 9 percent in 1990 to 13 percent in 1998.

Although enormous effort has been made to develop urban sanitation infrastructure, the double-digit growth in capacity has not been enough to stop the growing contamination of water resources. The sewer network covers only half the population connected to the potable water network, which contributes to the contamination of underground water resources. With only 30 percent

FIGURE 5-1: INVESTMENTS IN WATER SUPPLY AND SANITATION IN CHINA, 1992–98



Source SOGREAH data

of wastewater flow being treated before discharged, pollution loads discharged from urban areas to receiving waters have actually increased.

The government's investment targets for the urban water sector, as expressed in the Tenth Five-Year-Plan, are unprecedented: over the 2001–2005 period, more than $11 billion—equivalent to the capital costs of 103 Chengdu BOT water supply projects—will need to be invested in water supply and $15 billion will be needed for sanitation infrastructure (including raising wastewater treatment coverage to 40 percent of total sewer flow).

Institutional and Tariff Framework

Being such a huge country, China understandably has a *complex institutional structure* for the water sector, with strong interdependencies across departments and agencies. At the state level the main agencies are the Ministry of Water Resources, Ministry of Construction, State Environmental Protection Administration, and State Development Planning Commission. At lower government levels there are commissions and bureaus responsible for planning, construction, finance, industry, and environmental protection, all of which could relate to water supply and sanitation. These commissions and bureaus report to both their local government bodies and to their state-level counterparts.

Municipal governments are primarily responsible for providing water and wastewater treatment services, owing and managing more than 60 percent of water capacity Unlike water service providers, which have been corporatized (albeit government-owned, under the supervision of municipal public utility bureaus), wastewater companies have only recently been established in a minority of municipalities. Most *wastewater systems continue to be managed separately from water systems* by municipal management bureaus.

Various studies have shown that *water tariffs are very low* in China, even lower than water production costs (not including the cost of distribution and commercial management) This reversed relationship between production costs and retail tariffs was evident in several water BOT projects, where the bulk tariff the project company charged the local water company was higher than the retail

water tariff for end consumers. Tariffs are also low relative to those in both developing countries in the region (Figure 5-2) and in many countries in other parts of the world (Figure 5-3).

More and more municipalities are starting to understand the importance of recovering costs and have steadily increased water tariffs. Between 1986 and 1998 the average tariff in China increased 18 percent a year (Table 5-2). Still, tariffs are not high enough to ensure the financial viability of water companies. Annual losses in the sector were estimated at $600 millions in 1998, requiring increased public subsidies for the sector.

There are also significant discrepancies between water tariffs in different cities, even in the same provinces. For example, in 1998 water tariffs in Zhejiang Province varied from 6 U.S. cents per cubic meter in the city of Jinhua to 25 cents in the city of Zhoushan (Figure 5-4).

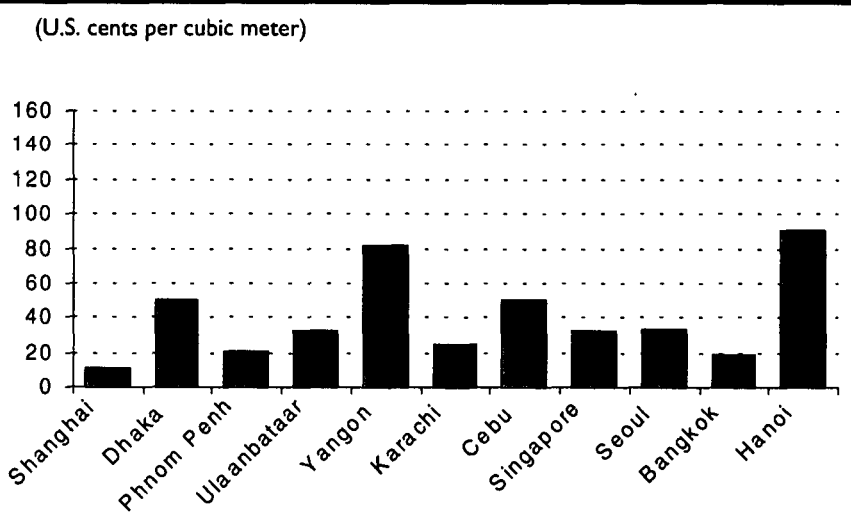
The "Regulation on Management of Pricing of Urban Water Supply" was promulgated in 1998 (see below). It offered the first national guidelines on water tariffs and established the principle of full cost recovery through tariffs. In 2000 the average residential tariff for Chinese cities was increased to 1.09 yuan (about $0.14) per cubic meter, 40 percent higher than the 1998 level. Because the wastewater tariff is even more problematic than the water tariff—few municipalities applied sufficient wastewater tariffs to cover even operational costs—in 1999 the "Circular on Strengthening the Collection of Wastewater Treatment Tariffs" came into effect. While these tariff regulations provided a legal basis for further tariff reform, they have not yet been effectively enforced nationwide.

Legal and Regulatory Framework

Several laws and regulations specifically govern water and sanitation services. The Water Law was promulgated in 1988, and various water quality and wastewater discharge standards have been issued at the national, provincial, and municipal levels—sometimes contradicting each other.

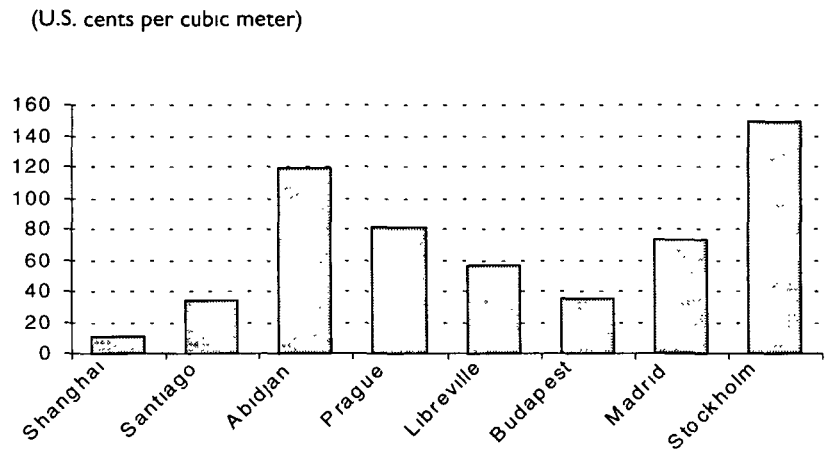
The "Regulation on Management of Pricing of Urban Water Supply," the first national guidelines on water tariffs, states that municipalities should be responsible for approving tariff changes and that water tariffs should cover all operations and maintenance, depreciation, and interest expenses, and allow for a 8–10 percent return on the net value of fixed assets. While the principle of cost recovery is stated correctly in the regulation, an 8–10 percent return on the net value of

FIGURE 5-2: WATER TARIFFS IN SELECTED ASIAN CITIES, 1998



Source: World Bank and United Nations data.

FIGURE 5-3: WATER TARIFFS IN SELECTED CITIES WORLDWIDE, 1998



Source: World Bank and United Nations data.

fixed assets (which is roughly equivalent to return on equity) is too low for investments in China's water sector.

The "Circular on Strengthening the Collection of Wastewater Treatment Tariffs" (1999) established similar economic principles for sanitation services. It established a wastewater treatment fee that requires recovery of operations and maintenance costs and a moderate profit. This fee replaces myriad unregulated and ad hoc fees that were used to finance wastewater investments.

Several decrees and regulations on foreign direct investment also affect the water sector. For example, the "Interim Provisions on Guiding Foreign Investment Direction" and the "Catalogue for the Guidance of Foreign Investment Industries" (1995) *prohibit foreign investment and management in urban networks* of water supply, sewers, and water drainage. The government is considering allowing private investors to build tap water distribution systems, and this initiative has been well received by the private sector. But until the private sector can operate and manage the network, including metering and billing consumption and collecting tariffs from end users, significant improvements in service quality and cost savings are unlikely

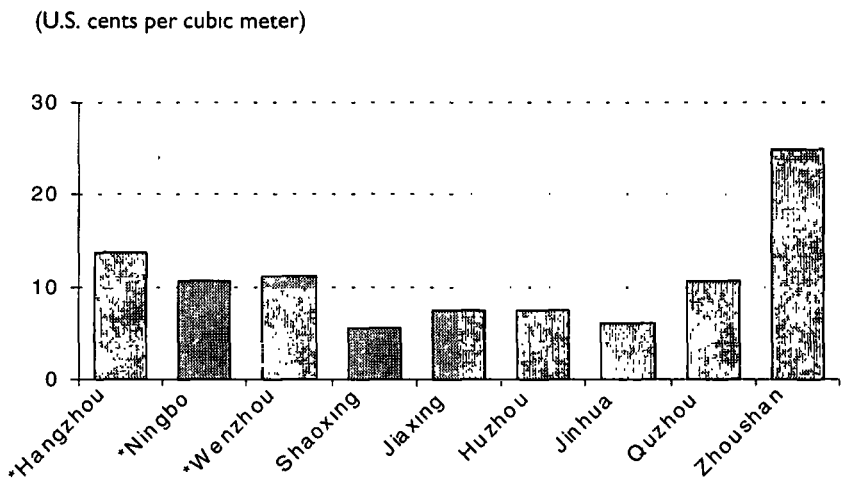
As with the road and power sectors, the effective enforcement of regulations has been constrained by institutional complexity and by the diversity of interpretations of regulations and directives by various agencies and local governments. Some regulations and directives have been released only to local governments and are not readily available to the private sector. Even veteran water developers may face prolonged project lead time, because different regions may have different approving authorities, procedures, and enforcement practices. This ad hoc approach increases development costs and financial risks for private investment in China's water sector.

TABLE 5-2: AVERAGE WATER TARIFF IN CHINA, 1986–98

	1986	1996	1997	1998
Average tariff (industrial and residential, yuan per cubic meter)	0.14	0.63	0.78	0.92
Average annual increase (percent)		16	26	18
Highest annual increase among cities (percent)			136	130

Source. Asian Development Bank.

FIGURE 5-4: WATER TARIFFS IN DIFFERENT CITIES IN ZHEJIANG PROVINCE, 1998



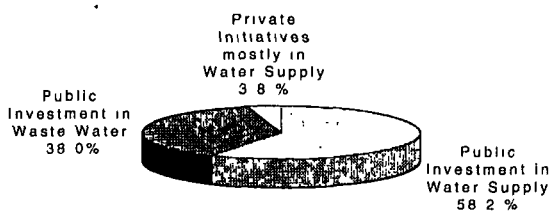
Note: "*" indicates that there are World Bank-financed water supply projects in the city.
Source: World Bank data.

Private Sector Participation

Private investment in water and sanitation has lagged behind that in other infrastructure sectors. During 1990–2000 private investment totaled about $700 million, representing just 4 percent of total investment in water and sanitation infrastructure (Figure 5-5). Moreover, such investment has been *concentrated in water supply* because private investment in urban distribution networks was prohibited and investment in wastewater has been negligible. Even in water supply, private investment has fallen as a share of total (public and private) funding—from 7.5 percent in 1997 to less than 3.0 percent in 2002.

A detailed list of water projects involving foreign direct investment is provided in Annex 2. Only 25 projects had reached closure by 2000, and most were BOT schemes for potable water treatment (Table 5-3). Individual investment rarely exceeds the $30 million threshold at which State Development Planning Commission approval is required. This small number of projects contrasts with the huge need for capital investment in the sector. Major international water companies (mostly French and U.K. utilities) and Hong Kong developers have tried to gain footholds in China's water market.

FIGURE 5-5: INVESTMENTS IN WATER AND SANITATION INFRASTRUCTURE BY SOURCE, 1992–98



Source: SOGREAH data.

TABLE 5-3: PRIVATE WATER PROJECTS IN CHINA CLOSED BY 2000

Foreign Developer	Number of Transactions	Capacity (cubic kilometers a day)	Foreign Investment (millions of U.S. dollars)
Sino-French (a)	9	3,260	111
Cathay International	5	1,890	197
Vivendi Water	3	1,150	141
China Water	4	450	32
Thames Water International	1	400	73
Saur International	1	225	15
Cheung Kong Infrastructure	1	400	9
Giantmost	1	250	8
Total	**25**	**8,025**	**586**

Notes:
a. A joint venture between Suez Lyonnaise des Eaux and the Hong Kong-based New World Infrastructure
Source. SOGREAH data.

But because of the legal, security, and contract issues noted above, these sponsors have managed to obtain bank lending on a limited recourse basis for only a few projects, and have to seek financing for most other projects through their corporate balance sheets—an unsustainable approach that has weakened their interest in financing large-scale water projects in China (see Chapter 2)

Models for Private Participation

As noted, most private ventures in the water sector are BOT schemes for water supply sponsored by international developers. Wholly Chinese-owned ventures are the exception (Shenyang Water Company). But there have been some other experiments, notably with a management contract (combined with an initial public offering), a BOT scheme for wastewater treatment (Xuzhou), and a water concession (Tanzhou, in addition to the concession in Macau awarded under Portuguese tenure)

Management contract. The only known signed management contract is the Shenyang Water Supply Project. This was initially a 30-year BROT (build-rehabilitate-operate-transfer) scheme starting in 1995 through a joint venture between Sino-French and the Shenyang General Water Company. In late 1999 the Shenyang Public Utility Holding Company was listed on the Hong Kong stock exchange. It purchased the shares in the water plant from Sino-French and signed a management contract with Sino-French.

BOT contracts Most of the 25 private water projects listed in Annex 2 and Table 5-3 are BOT schemes for the construction of water supply facilities (treatment plants plus sometimes intakes and transmission lines) [1] Most fall under the $30 million threshold for State Development Planning Commission approval, with the exceptions of Shanghai Dachang ($73 million), Chengdu ($107 million), and Jinan ($90 million)

These projects can be broadly divided into three categories First are *negotiated cooperative joint venture BOT schemes,* which do not involve competitive bidding. They are carried out by cooperative joint ventures controlled by provincial or municipal authorities, with limited support from the central government. Most water supply BOT schemes in China fall into this category

1 Several projects are actually ROT(rehabilitation-operation-transfer) schemes. In this variant of a BOT scheme, most investments are in rehabilitating existing assets instead of building new ones.

(Box 5-1). Most of these joint ventures provide the private partner with either a guaranteed return (which was prohibited by the 1995 BOT Circular) or priority access to dividends (Table 5-4). Although this approach might have been justified for earlier projects due to the poor creditworthiness of off-takers and regulatory uncertainty, these projects have not been able to tap international financial markets and so cannot be promoted as a sustainable model.

The second category is *negotiated wholly privately owned BOT schemes.* Here the local government acts as granting authority and regulator but does not take equity stake in the project company, to avoid creating a conflict of interest by acting as both owner and regulator. There is only one such BOT scheme, Shanghai Dachang (Box 5-2), which was successful in accessing international financial markets on a limited recourse basis.

The third category is official or *tender BOT schemes.* They involved competitive bidding, substantial central government involvement (such as a state guarantee on currency convertibility and transfer), and off-taker credit support provided by provincial or municipal governments. Only two projects have been awarded: Chengdu Water Supply (Box 5-3), the pilot BOT project and Beijing Water #10. Whether this latter project fell under the scope of the BOT Circular is unclear. Together Shanghai Dachang and Chengdu Water secured almost 30 percent of the private investment in China's water sector to date.

Concession contract. Concession contracts were permitted prior to the issue of the 1995 Foreign Investment Catalogue (see Chapter 2), which prohibited foreign companies from investing in or managing water distribution networks. Today there is only one concession contract in mainland China, as well as one in Macau granted during Portuguese tenure (Box 5-4).

Recommendations

Water and sanitation services have some unique features that have traditionally called for higher government involvement than in other infrastructure sectors. First, the services have features of a natural monopoly, which limits the scope for competition, especially given the high cost of transportation and distribution (about half the cost of potable water). Second, water and sanitation services have considerable health and environmental externalities and are an essential public service that often raises serious social issues. Finally, water and sanitation are usually the responsibility of local governments, which tends to increase their political visibility and exposure to interference in service provision. With proper regulations and project structures, however, governments in most industrial and many developing countries have attracted private investment to this sector, thereby sharing with the private sector the responsibility for providing such "public services."

BOX 5-1: CHINA'S EXPERIENCE WITH COOPERATIVE JOINT VENTURE BOT SCHEMES

The 30-year **Harbin** water supply BOT contract was negotiated and signed between SAUR International and the Harbin Municipal Water Company in 1992 without a competitive tender, under a joint venture arrangement. The total project investment was 165 million renminbi ($30 million), financed with an equity injection from the sponsor and an in-kind contribution (land use rights) from the local government.

Several lessons can be drawn from this project, one of China's first water BOT schemes. First, the profit-sharing mechanism was extremely unbalanced in favor of the private partner. Second, the project was financed entirely through an equity injection by the sponsor and was not able to secure any debt financing on limited recourse basis. Third, the introduction of operational best practices cut operating costs while maintaining a high standard of treated water. These improvements permitted the plants to operate continuously, while city-run plants using the same resource suffered from intermittent shutdowns. Although the city of Harbin benefited from the project in term of access to private funding and foreign technology, the cooperative joint venture model adopted in this early deal appears unbalanced and did not allow full access to international private markets.

Source: Project team.

TABLE 5-4: THE PROFIT SHARING SCHEME IN A NEGOTIATED COOPERATIVE JOINT VENTURE BOT SCHEME IN HARBIN

Period	Profit Sharing
Years 3–10	10 million renminbi a year for Saur International; the balance for Harbin Water Company
Years 11–20	10 million renminbi a year for Harbin Water Company; the balance for Saur
Years 21–30	Saur and Harbin Water Company split the profits evenly

Source: Project team.

The development of water and sanitation infrastructure has been declared a national priority by the Chinese government, and the enormous investment needs require broadening the sources of funding to include private foreign and domestic investors. To make the sector financially self-sustainable, the efficiency of existing infrastructure needs to be improved through modern management practices and technology transfers. Thus a broader range of private participation models should be tested, including privatizing small local water utilities to domestic firms, operations and maintenance contracts, BOT schemes modeled after the Chengdu project, and full concessions.

Despite the enormous size of China's potential market, private participation in water and sanitation faces four major challenges:

BOX 5-2: CHINA'S EXPERIENCE WITH A NEGOTIATED WHOLLY PRIVATELY OWNED BOT SCHEME

The **Shanghai Dachang** Water Treatment Project is a 20-year BOT scheme that treats 400,000 cubic meters a day in Bao Shan District, Shanghai. It was negotiated and signed in 1996. Cosponsored by Bovis Limited and Thames Water Overseas, the project was the first wholly foreign-owned water project in China, avoiding the common joint venture model between sponsors and local governments. It was also the *first water project in China to be financed on a limited recourse basis.* Total investment was $73 million, with 70 percent in debt raised from international financial institutions without export credit agency support.

Through a concession contract, the Shanghai municipality provided the investors with timely access to sufficient foreign exchange for debt service and repatriation of profits, authorized the use of concession rights as security to lenders, and gave an irrevocable off-taker payment guarantee backed by a wholly owned investment arm of the municipality. This project broke new grounds in a number of aspects:

- It was the first water project in China to attract offshore limited recourse financing, and this was done without political risk coverage from multilateral or bilateral agencies.
- Despite the fact that the project was not approved at the central government level, and revenue was denominated entirely in local currency, lenders took comfort in the economic profile of Shanghai and the substantial support provided by the municipal government—underscoring the importance of the off-taker's creditworthiness for such projects.
- The project showed that a well-structured, wholly privately owned project with a strong international sponsor could be an alternative to joint ventures for investment in the water sector.

On the other hand, the project was structured with a guaranteed fixed return to the equity investment, limiting the potential downside to the sponsor and the incentive to achieve operating efficiencies. Given the project's size, the lack of competitive bidding probably resulted in higher than necessary costs (especially for the turnkey construction contract). The bulk tariff that the project company charged the local water company was higher than the retail water tariff for end consumers

Source: Project team.

BOX 5-3: CHINA'S EXPERIENCE WITH A TENDER BOT SCHEME

The **Chengdu** Water Supply Project is a greenfield 18-year BOT scheme for the construction and operation of a water treatment plant (400,000 cubic meters a day), two water intakes and a raw water transmission line, and a 27-kilometer transmission pipeline from the plant to the Chengdu distribution network. Cosponsored by Vivendi Utilities and the Japanese group Marubeni, it was the first water BOT project in China developed according to the guidelines of the BOT Circular.

Total investment was $106.5 million, making it the biggest private investment ever in China's water sector, funded with 70 percent debt and 30 percent equity. The $74.5 million in debt was raised through limited recourse financing on international markets with the help of the Asian Development Bank (which provided a direct loan for $26.5 million). The project was structured around a concession contract that was signed in 1999. Construction is under way.

Among the key aspects of the project:

- It was the first water project in China awarded through international competitive bidding. Considerable competition took place among top-notch international investors during the tender.
- According to the BOT Circular, the central government will guarantee currency convertibility and transferability. Nevertheless, since the city of Chengdu has no authority to commit the country's foreign exchange reserves and the BOT Circular was never formally ratified, the legal enforceability of this guarantee is unclear.
- Project revenues were backed by a 400,000 cubic meter a day take-or-pay guarantee from the municipal water company. The bulk water tariff paid to the project by the Chengdu water company will be 0.98 yuan per cubic meter (subject to foreign exchange rate adjustments)—higher than the water tariff charged to residential users, which is 0.65 yuan per cubic meter.
- The Chengdu municipal government provided backup support to the municipal water company's obligations under the offtake agreement, and assumed direct obligations under the concession agreement, including for termination payment. In addition, two specialized funds dedicated to the water sector were funded from consumer bills.

Despite the uncertainty about the project's guarantee framework and the lack of information about the creditworthiness of the off-taker, the deal generated considerable interest during the tender process from both investors and lenders. The project's success showed that international capital markets can take a greater interest in China's water sector if some key international best practices are followed, especially conducting transparent international bidding and clearly separating operational and regulatory functions by avoiding the joint venture model, which created conflicts of interest for local governments.

Source. Project team.

- A tradition of low tariffs, below cost recovery levels, which affects the sector's financial sustainability and impede government goals of protecting the environment and conserving water resources.
- A complex institutional framework, which prevents private developers, lenders, and users from assessing the performance and financial viability of water and sanitation systems.
- A lack of proper regulation that clearly separates service provision and regulation.
- A prohibition on private participation in the urban network, including full water and sanitation concessions, which limits the benefits from private participation for the government and the public.

Since 1995, China has made considerable efforts to facilitate private participation in the water sector, modernizing its complex legal framework and promoting reform of water tariffs. Given the extensive involvement of local governments and the complex social issues involved, promoting private participation in water is not easy, and it is understandable that progress has been gradual.

BOX 5-4: CHINA'S EXPERIENCE WITH A CONCESSION OF A WATER DISTRIBUTION NETWORK

The **Tanzhou** (Guangdong) concession was signed in 1992 through a joint venture with Sino-French. The project company is responsible for operating, maintaining, rehabilitating, and upgrading the distribution system, including billing customers and constructing a new water treatment plant (60,000 cubic meters a day).

The **Macau** concession was signed in 1985 under Portuguese tenure. The water system had previously been operated under private local management since 1936, without proper regulation by the government, and the service provided to the population was bad, with poor water quality and frequent disruptions The concession contract, signed with a consortium of Sino-French and the former private owner, was modeled on Western infrastructure concession contracts, with clear allocation of responsibilities between parties, strong performance obligations for the private operator, and a solid regulatory framework with the creation of a water regulator and the inclusion in the contract of key clauses for tariff adjustments, investment plan reviews, early termination, and dispute resolution.

Public information suggests that the Macau concession achieved significant financial and operational results. The quality of drinking water was raised to EU standards and water soon became available on a 24-hour basis for all consumers. The sponsor was able to finance significant rehabilitation of the distribution network (70 percent of pipes have been replaced), and unaccounted-for water has fallen from 40 percent to 17 percent. More efficient operations helped reduce the need to invest in new production capacity despite the fact that demand has tripled since the contract was signed. The water company is now profitable, generating significant financial receipts to the Macau government in term of taxes and concession fees.

Overall, the Macau experience demonstrates the benefits that can be gained by delegating to an experienced international operator, with a well-designed regulatory framework, the responsibility for financing and managing a complete water system

Source. Project team.

Although countries like Argentina, Chile, and the Philippines have had much more success attracting private investors to the water sector, China's situation is not uncommon. Several other big countries (such as Brazil and Mexico) with similarly complex institutional frameworks and traditions of low water tariffs have also seen limited private participation in the water sector.

Our recommendations fall into two groups:

- At the level of the *municipal government:* accelerate reforms, including implementing tariff adjustments, corporatizing water and sewerage services, and promoting private participation to separate regulation from service provision.
- At the level of the *central government:* clarify the roles and functions of the Ministry of Construction and Ministry of Water Resources on water and sanitation activities; help local governments restructure water and sewerage services, including establishing systems for sharing information and benchmarking various water and sanitation companies; and implement pilot concessions of complete urban water and sanitation systems

Accelerate the Reform of Public Water Companies

The central government has taken the right steps in introducing legislation for water tariffs. Despite the obvious need throughout China to raise water tariffs to full cost recovery levels, doing so is no easy task given the poor quality of water provided by most municipal water companies and the fact that tariffs are enforced by local governments International experience has shown that consumers are usually reluctant to pay higher tariffs when service is of poor quality and there is little trust in the management capacity of the public water utility Thus the question is not whether to increase tariffs, but how to do so in a way that receives sufficient support from the public.

Thus the main recommendation for public water companies is to *pursue higher water tariffs in combination with true corporatization of water companies.* This approach would ensure that tariff increases are supported by a more business-like approach to the provision of water services, with:

- Better investment planning committed to specific improvements in service performance.
- Independent management and professionally audited financial statements (including sufficient and accurate data on fixed assets and depreciation).
- Accountable quality performance and easy monitoring of the performance data by the public.
- More transparent and targeted subsidies, if needed, directed at the poorest part of the population.

Through the corporatization process, small systems in different municipalities can be consolidated and less efficient players can be taken over by others. Small projects such as the Harbin water project can also be put into portfolios, with debt financing being introduced at the holding company level. On the other hand, large systems can be split for competition—as in Shanghai, where the Shanghai Water Company was split into four companies.

The fact that local governments are responsible for providing water and sanitation services reduces the central government's ability to accelerate sector reform. This largely explains why, although the state has initiated some major changes in legislation (as with water and sanitation tariffs), local enforcement has sometimes not been as desired. Local governments need clearer policy guidance and technical support from the central government on what is and how to develop the "right" model for private participation in water.

To strengthen local capacity, a technical support center at the state level could help municipalities develop a database of best practices from water privatizations worldwide. The center should also help municipalities develop a benchmarking system to report and compare utility costs and performance. These can then be published to allow consumers to compare services and tariffs. This approach, used successfully in the United Kingdom and Victoria Australia, and being tested in Manila (the Philippines), could make utilities (public or private) much more responsive to consumer needs. The government could also consider developing a utility rating system, as is being tested in Indonesia.

Develop Pilot Concessions of Complete Water and Sanitation Systems

There appear to be significant opportunities for optimizing the operations and maintenance of the sanitation system (sewer network and wastewater treatment plant), including improving compliance by wastewater plants with discharge standards, reducing leakages from deteriorated sewer networks, and promoting pre-treatment of industrial wastewater by small industries.

In the water sector the most significant savings usually result from the efficient management and maintenance of the distribution network, not water production or treatment plants. This is because efficient management of the distribution network can sharply reduce the level of nonrevenue water and so can delay the need to expand water production capacity, and because commercial management practices (billing and collection) usually increase revenues, generating additional resources for infrastructure investment. In addition, proper management of the sewerage network by experienced private operators can facilitate the operations of receiving wastewater treatment plants, increasing compliance with environmental discharge standards.

In China most private investment has been through BOT schemes for water treatment plants. Such schemes can solve production shortfalls but are ill suited to the poor creditworthiness and limited financial transparency of China's municipalities. Moreover, BOT schemes do not address fundamental operational deficiencies in a water utility—such as inadequate capacity of pipelines, high unaccounted-for water, and institutional or labor problems—and so are not capable of transforming financially weak utilities into sound ones. Without careful planning, a BOT contract may actually delay much-needed systemwide improvements.

The announcement that the government is considering allowing private investors to build water distribution system (*South China Morning Post,* 23 August 2001) is welcome news. However, until the private sector can operate and manage the network, including metering and billing consumption and collecting tariffs from users, significant benefits are unlikely.

Concessions of integrated water production and distribution systems are a successful model for private participation in infrastructure, one widely used in other countries (Box 5-5). Given the enormous need for private investment in the sector, developing water and sanitation concessions for major cities should be a top priority. For example, the water and sanitation concession implemented in Buenos Aires, Argentina, allowed the country to tap more than $1 billion over the first five years of the contract and dramatically improve service quality—while passing over all financial, operational, and commercial risks to the private sector. Implementing similar arrangements for China's biggest cities would make a major contribution to the objectives of the Tenth Five-Year Plan (which foresees $26 billion in investment in water and sanitation infrastructure).

Despite the potential benefits, concessioning the full operations of an urban water and sanitation system is a process full of pitfalls.

- The government's legitimate concern for continuous control over service provision, because of its social and environmental implications, requires a careful structuring of the concession's regulatory and contractual framework (with performance targets, tariff revisions, investment plan approval, and subsidy schemes).

BOX 5-5: INTERNATIONAL EXPERIENCES WITH CONCESSIONS OF WATER AND SANITATION SYSTEMS

In many countries where concessions have been granted for complete water and sanitation systems (production and distribution networks, sewerage network, wastewater treatment), private participation has resulted in considerable benefits for the government and the public—especially when contracts were awarded competitively, with clear performance targets and enough flexibility to the private operator to raise financing and adopt innovative technical solutions.

In **Buenos Aires, Argentina,** in the early 1990s, water service was suffering from deteriorated infrastructure and low operational efficiency. In 1993 a concession was awarded to a consortium of international water companies and local investors. The winning consortium, Aguas Argentina (headed by Lyonnaise), offered the largest tariff reduction—26.9 percent. The concession led to major gains for the government and the public, resulting in.

- Unprecedented private funding, with more than $1 billion invested over the first five years. (The International Finance Corporation arranged limited recourse financing for $392 million.)
- Significant new connections, with service coverage rising from 70 percent to 83 percent of the population.
- Efficiency improvements, with unaccounted-for water dropping from 44 percent to 34 percent in the first five years.
- Overall improvements in service quality and user satisfaction.

In **Manila, the Philippines,** two concessions were awarded in 1997 (for the two halves of the city) to two consortiums of international water companies and local investors. The International Finance Corporation was the lead financial adviser to the government for this transaction, and proposed the division of the city into two concessions to address concerns about excessive monopoly power if only one consortium were to operate the entire system. Competitive bidding resulted in a 43 drop in the water tariff in the western zone and a 74 percent drop in the eastern zone During the first year of operations, unaccounted-for water was cut from 60 percent to 36 percent, while more than 200,000 additional connections were added to the network. Over the 25-year contract period $7 billion in private investment is expected.

Source: International Finance Corporation; MottMacDonald, Economie et Humanisme (2001).

- The monopolistic nature of the service tends to limit competition, making competition for the market—that is, awarding the concession through competitive bidding—essential if acceptable financial conditions are to be obtained for the government and the public.
- There are relatively few international private players in the water sector, so the transparency and credibility of the tender process are essential to ensure proper competition for the market.

If well done, the development of a water and sanitation concession for a major city could easily take 18–24 months until the contract is awarded. Thus it is recommended that, given the government's decision to explore private participation in the urban network, a *pilot water and sanitation concession be undertaken in a major Chinese city.* This project would provide an opportunity to analyze all the issues of concern to the government and the public (tariff levels, regulation and control, social issues), allowing the design of innovative Chinese solutions adapted to government objectives, the socialist market economy, and social and institutional realities. The success of such a pilot project would have a strong demonstration effect for local governments throughout China, and its contractual and regulatory design could be used as a blueprint for other concessions.

Promote a Broad Range of Private Participation Models in Water

In addition to concession schemes, other models for private participation could be investigated in China to improve operational efficiency, including management contracts and leasing contracts. Although these models tend to rely heavily on public funding to finance infrastructure investments, they might be of interest for smaller systems with minimal capital investment needs, or in cases where political resistance to private participation prevents implementation of a concession scheme in the short term.

Each of these models has *benefits and drawbacks* that must be kept in mind in the context of the water sector:

- *Management contract*—because these contracts entail a limited transfer of risks to the private sector, they often bring limited benefits. It is difficult to structure a contract in which private investors have strong incentives to increase efficiency when they do not have significant money at risk. In addition, monitoring the performance of a private operator can be tricky when there is a lack of reliable historical data.
- *Leasing contracts*—under this model the private sector is supposed to assume all operational and commercial risks, but assigning responsibility for service performance can be difficult in practice. For instance, it can be difficult to hold private operators liable for poor services if they have no control over investment decisions. Leasing contracts also tend to create incentives for private operators to favor rehabilitation of assets (to be financed by the public counterpart) instead of maintenance (for which the operator is liable), which can be economically inefficient.

Another possible way to promote private participation in water would be to foster the development of *private domestic operators.* Recent international experience shows that it is possible to promote the creation of domestic water operators, avoiding the sometimes politically costly process of transferring the operations of urban water services to foreign companies:

- In Italy the public water company in Rome was corporatized and gradually floated on the stock market. It is now privately owned, with no foreign control, and the municipality maintains only a minority shareholding. The new private company, ACEA, is even pursuing international expansion.
- In several Latin American countries (Argentina, Colombia) domestic water operators have been created to operate leasing and concession contracts in medium-size cities.

6

Power Generation Issues and Recommendations

China is reforming its power sector with a view toward developing a competitive market. Reforms will occur in three phases. The first entails separating generation from transmission and distribution, and splitting generation assets into a number of market players (with limited or no cross-ownership to minimize or eliminate market power). During this phase generators will bid for dispatch into a mandatory energy pool, from which a single buyer—which is also the monopoly provider of transmission and distribution services in the market—purchases electricity. A common market-clearing price will be based on the bid from the last generator dispatched. In the second phase competition will be introduced in wholesale markets (by allowing direct contracts with distributors and large customers), and in the third phase in retail markets.

Reforms are at an early stage, with a number of pilot schemes being tested The World Bank recently issued a report titled *Fostering Competition in China's Power Markets* and is actively advising the government on the policy framework. Given these ongoing efforts, this report comments only on the power generation subsector. It does not cover the general framework for sector liberalization, including detailed designs for the market structure, privatization of the distribution network, and the like.

The Situation

China's power sector has achieved impressive size and growth, but it has problems similar to those in the road and water sectors—particularly the complex and inefficient institutional structure and lack of long-term commitment to tariff adjustments.

Capacity Planning and Development

China's power generation capacity exceeds 300 gigawatts, making it the world's second largest system. Over the past two decades electricity demand grew by nearly 9 percent a year (except in 1997 and 1998, when annual growth slipped below 5 percent due to the East Asian financial crisis) The Tenth Five-Year Plan estimates that demand will grow by at least 5 percent a year

through 2005. Assuming annual growth of 5–9 percent, China can expect to add more than 20 gigawatts of generation capacity each year through 2010 (Figure 6-1).

At a capital cost of $800 a kilowatt (for a typical coal-fired power station), the projected growth implies that investment in power generation will be at least $16 billion a year through 2010. The government hopes that foreign and domestic private investors will provide 25–30 percent of this funding, or about $50 billion.

Institutional Structure

China's power sector has been undergoing institutional and organizational reforms for several years. To separate policy and regulation from ownership and management, in 1998 the Ministry of Electric Power was disbanded and its functions were distributed among the State Power Corporation, State Development Planning Commission, and State Economic and Trade Commission The State Development Planning Commission is primarily responsible for policy issues, investment planning, and pricing approvals. Both the State Development Planning Commission and State Economic and Trade Commission have subordinate departments at the provincial level.

Management of the sector was reorganized into national, regional, and provincial levels. The State Power Corporation owns the national transmission and distribution systems as well as nearly half of generation capacity (which generates nearly 70 percent of the country's power). Seven regional power groups operate interlinked regional transmission systems and some generation, but do not operate any distribution networks. Finally, 32 provincial power companies manage provincial transmission and distribution systems on behalf of the State Power Corporation, as well as significant generation assets.

At the county level, China used to have thousands of decentralized power companies with small coal or micro-hydropower generation plants.[1] Many of these decentralized plants are connected to the centralized grid. To increase energy efficiency, develop new technologies and indigenous manufacturing capacity, and protect the environment, the Tenth Five-Year Plan promotes the renovation and construction of large coal mines (300–600 megawatts) using clean coal technology and the development of hydroelectric power and some nuclear power, with an view to phasing out these old, small, inefficient power plants.[2]

The State Power Corporation will ultimately divest its ownership in generation assets according to a plan recently announced by the government that encompass the creation of five competing power groups while the State Power Company would also surrender its grid assets in provinces in southwest China. Initially the grid company will likely control transmission and distribution assets. Eventually, however, transmission and distribution assets will need to be separated, with the State Power Corporation and the other grid company retaining ownership of transmission.

Pilot programs for separating generation from transmission are being carried out in Zhejiang, Shanghai, Shandong, Heilongjiang, Liaoning, and Jilin. Zhejiang also leads the way in a pilot wholesale generation market program.

The Private Sector's Role

China permits private investment in power generation but not in transmission and distribution, though major investment is needed to expand the transmission and distribution networks. Private participation in generation rose in the 1990s until 1998, when it collapsed due to the drying up of financing and slowdown in demand growth in the wake of the East Asian financial crisis (Figure 6-2).

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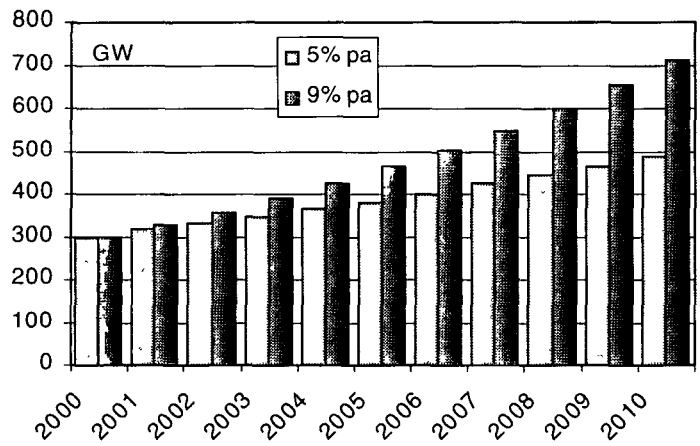
1. The county is the fourth administrative level in China, below the state, region, and province. There are about 2,000 counties Each province has its own rural electricity bureau, which plans and manages rural electrification. At the county level there is usually a county electric power bureau, which is a branch of the provincial body.

2. At the same time, other countries have learned that retrofitting old power stations with new technology is an attractive way of improving their efficiency and stimulating competition, because it directly counters the market power introduced by large power plants

FIGURE 6-1: PROJECTED POWER GENERATION CAPACITY UNDER TWO SCENARIOS FOR DEMAND GROWTH, 2000–10

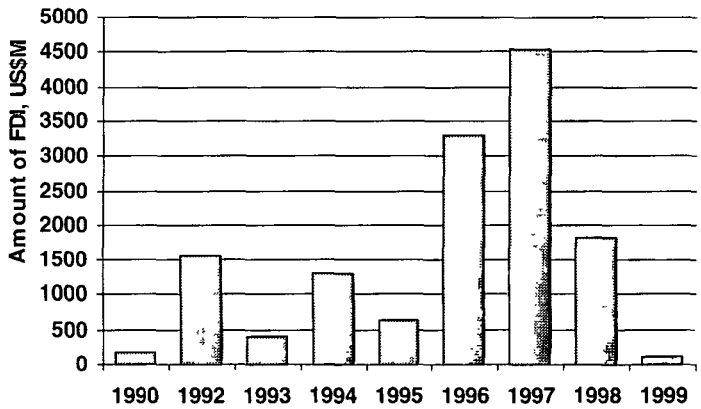


Source: Economic Consulting Associates data.

Until 2000, 95 generation projects had involved private participation and foreign direct investment (see Annex 3). Forty-five of these projects involve plants generating more than 100 megawatts, with total capacity of about 36,000 megawatts—accounting for 12 percent of China's installed generation capacity. Although together the 95 projects provide capacity of more than 40,000 megawatts, most (with about 35,000 megawatts, or 68 percent of total capacity of the 95 projects) are concentrated in a small number of provinces, including Guangdong (19 percent), Shandong (13 percent), Zhejiang (11 percent), Fujian (6 percent), Anhui (4 percent), Jiangsu (4 percent), Henan (4 percent), Hubei (3 percent), Shannxi (3 percent), and Gansu (1 percent).

FIGURE 6-2: FOREIGN DIRECT INVESTMENT IN GENERATION, 1990–99

(millions of U.S. dollars)



Source: Economic Consulting Associates data.

The decentralized power companies also have significant private involvement. Up to 200 of these small plants may feature private investment, or about 3 percent of total installed generation capacity.[3] The decentralized plants enable the competitive retailer to hedge against prices in the wholesale market and so play an important role in market reform. When the market is operating in all three phases of reform, the wholesale price will become the main driver to stimulate reform of the decentralized power companies.

Foreign direct investment in a plant with foreign investment typically averages 51 percent Although 39 foreign investors have been identified in the 95 projects, nearly 40 percent of foreign investment came from Hong Kong-based sponsors, followed by 26 percent from the United States, 19 percent from Europe, and 15 percent from other Asian sources. Most debt financing came from commercial banks and export credit agencies.

Models for Private Participation

Most of China's power projects involving private participation have been "nonconcessional" (see Chapter 1) and carried out through joint ventures between foreign investors and power companies owned by local governments. Recently, some of the largest projects have been implemented using the BOT model, with the project company being either a joint venture or wholly foreign-owned enterprise. A few state-owned power projects have also been partially privatized through initial public offerings (IPOs), divestitures, and TOTs [transfer, operate, transfer] (Figure 6-3).

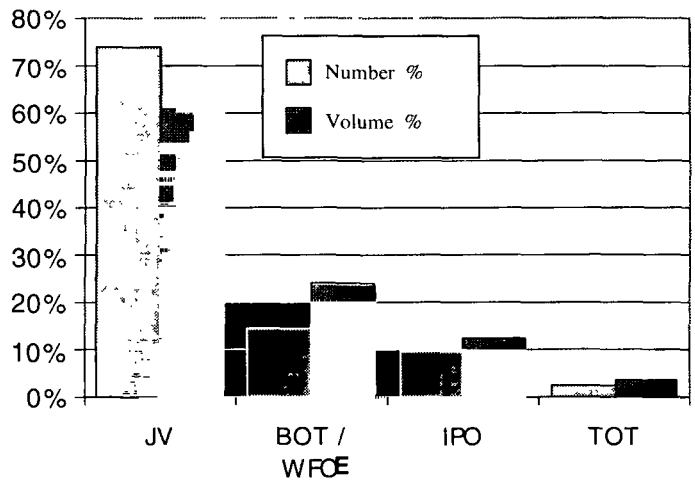
Joint ventures have accounted for about 61 percent of the amount of private investments in power and about 75 percent of the number. Joint ventures allow Chinese sponsors to select foreign partners while enabling the government to retain significant control over the project. Joint ventures are also popular among foreign investors because of China's uncertain legal and regulatory framework. Investors expect their partners to help build consensus on projects among local and state organizations, reducing legal and regulatory risks. The local partner is often seen as a safeguard against unfavorable price reviews, dispatch risk, or both. For example, although most plants are contracted with a minimum dispatch, when the total system load is lower than expected (as has been occurring recently), local power companies tend to dispatch their plants first or at a higher rate. Thus when an investor selects a local partner, significant consideration is given to whether the candidate is a power company or other local authority.

BOT schemes, including those implemented through joint ventures or wholly foreign enterprises, have accounted for 24 percent of private power investments by value but only 14 percent by number. There are several reasons for the limited number of projects in this category:

- The development of a comprehensive legal framework for BOT projects has been substantially delayed, and different procedures have been used in the few BOT projects that have been approved, resulting in mixed outcomes.
- BOT regulations are primarily seen as complementing existing laws rather than superseding them. As a result the approval process for BOT projects is not necessarily perceived as contributing to lower risk relative to other forms of private participation.
- The BOT tendering process has not resulted in cheaper projects because the cost of capital is higher without government guarantees and the shorter duration of contracts has resulted in higher front-end costs. Because the BOT Circular precludes renminbi financing, foreign exchange risk has not been sufficiently mitigated.
- BOT projects, with the exception of the successful Laibin B, are not expected to receive significant attention and government support at all levels. Negotiated joint venture independent power projects are still preferred for the reasons noted above.

3 Small projects are those under 100 megawatts that do not require central government approval. They are mostly implemented by local organizations. Statistical data on private participation in these projects are not as reliable as for larger projects.

FIGURE 6-3: PRIVATE POWER PROJECTS BY MODEL USED



Source Economic Consulting Associates data.

- BOT projects require sufficient pre-bid preparation and competitive tendering, which are not yet widely accepted by Chinese parties, who are used to preparing projects with assistance from their joint venture partners, then finalizing contracts based on negotiations.

Major aspects of three power projects with private participation are summarized in Table 6-1. The three projects involve issues common to power projects in China, including:

- Requirements for support letters from various levels of government due to the lack of a comprehensive legal framework for private participation in infrastructure.
- Heavy reliance on international debt financing, which increases the projects' foreign exchange risks and financing costs.
- State Administration of Foreign Exchange restrictions on the frequency of allocations to debt service accounts, which add to project risks and the time required for project negotiations.
- High levels of debt gearing (above 70 percent), particularly as China moves toward competitive dispatch.

In addition, like most power projects in China, as traditional joint ventures the Shandong Zhonghua and Hebei Hanfeng project companies faced potential conflicts of interests—an issue raised in many chapters of this report (see, for example, Chapter 1), This issue is a particular problem in China because contract enforcement remains weak and subject to political interference. In addition, these projects suffer from weak lender security over reinsurance proceeds, government predeterminations on the sourcing of equipment, engineering, and construction (that is, the balance between foreign and local suppliers); and the relatively poor financial disclosure of the electricity purchaser

On the other hand, the Laibin B project, China's first wholly foreign-owned and -financed major power plant, differs from other traditional power projects and has several positive features that could be used as the framework is developed for private participation in infrastructure. First, it involved a transparent, open tender. Second, its project documents and contract provisions can be used to develop national guidelines on key issues such as dispute resolution, termination, and force

TABLE 6-1: SELECTED POWER PROJECTS USING DIFFERENT MODELS FOR PRIVATE PARTICIPATION

	Shangdong Zhonghua	Hebei Hanfeng	Laibin B
Private Participation Model	Joint venture	Joint venture/"BOT"	Foreign-owned enterprise/BOT
Ownership	Shandong Electric: 36.6% EdF: 19.6% China Light & Power Hld. China Energy Investment Co.: 29.4% Shandong ITIC: 14.4%	North China Power: 30% Hebei Construction and Investment: 20% Hebei Elec. Power: 10% Siemens Huaneng[a]: 40%	EdF International: 60% Alstom: 40%
Planned Capacity	5×600 megawatts for four plants	2×660 megawatts	2×360 megawatts
Capital Cost	$2.2 billion	$1 billion	$616 million
Share of Debt Financing	70%	75%	84%
Procurement	Negotiation	Negotiation	Competitive tender
Tariff Structure	One-part cost-plus (including basic tariff[b], operation fee, fuel costs, and taxes, funds, and adjustments).	Cost-plus	Bid on tariff (structure closer to a two-part tariff)

Note:

a. Siemens Power Development Hanfeng GmbH, a subsidiary of Siemens. In 1998 it sold a 16 percent stake in the project to Hamburgische Electricitaets-Werke (HEW), leaving itself with a 24 percent stake.

b. The basic tariff is essentially a capacity charge and compromises the most vital components to investors. The basic tariff is derived from depreciation costs, principal repayments, financing fees and interest, expected target profit, company overhead costs, and amortization of the company's development costs.

Source: Project team.

majeure. Third, the use of preissued support letters as part of the tender documents addressed certain concerns of lenders and sponsors (the letters could serve as a stop-gap measure until formal legislation provides more certainty on the impending industry restructuring). Fourth, the limited role of the provincial utility and government in the ownership and operation of the power plant (only through minority stakes in the operations and maintenance contractor) provides Laibin B with fewer conflicts of interest. This type of structure will support China's long-term goal of developing competitive power markets. Fifth, the contract discarded the cost-plus tariff structure in favor of a two-part tariff (with some distinctly Chinese characteristics). As will be discussed below, a two-part tariff will be useful as China moves its power markets toward merit-based dispatch. Sixth, the project showed that private investment and financing can be achieved (with some external support, in this case from the State Development Planning Commission) for projects in economically less developed regions. Finally, the project provided lender security over reinsurance proceeds.

Securitizations through initial public offerings (IPOs) have accounted for 12 percent of private power investments by value. Most of the proceeds of IPOs have been invested in existing rather than new plants, given investors' lower capacity for managing new project developments and lower appetite for construction risks. Since the first international IPO in 1994 of Huaneng on the New York Stock Exchange, three power companies—including the famous Beijing Datang—investing in and operating portfolios of generation plants have listed on both Chinese and foreign

exchanges. Considerably more have listed solely on the Shanghai and Shenzen exchanges. Like IPOs in the road sector, opportunities for new IPOs in the power sector are influenced by the performance of companies already listed in the sector and by general stock market conditions. Dramatic falls in share prices in 1998 and to a lesser extent in 1999 highlighted the risks of this approach.

Divestitures of existing plants through trade sales and TOTs have accounted for 3 percent of private investments in power by value. Local power companies sell some or all of their holdings in existing companies, mainly to Hong Kong-registered subsidiaries of mainland companies, to finance their equity shares in new joint ventures

Recommendations

International experience with competitive wholesale power markets has been mixed While some markets have seen supplies drop and prices skyrocket (as in the U S state of California), others have managed to attract higher private investment after the market reform, including Australia (Box 6-1).

Throughout the reform process, it is crucial for the government to *publish the overall policy* on power market reform, and where possible the timetable and scope of each step in the process so that investors can assess risks before committing investment In addition, existing investors will seek reassurance from the government that their investments will be protected during the transition period.

A number of Chinese provinces are moving toward the first phase of power reform The strong development of generating capacity in the 1990s, coupled with the slower pace of economic growth since 1998, has provided time for developments in these pilot reform markets to be observed

BOX 6-1: INTERNATIONAL EXPERIENCES WITH COMPETITIVE WHOLESALE POWER MARKETS

In **Australia** private investors have actively responded to every government tender for the sale or lease of a government-owned power plant. Several features of power market reform explain this interest:

- Support for the main principles of the "gross" market design when they came under attack after the fallout from California's poorly enacted market reforms. Australia's market differs from California's in several ways. Off-takers have full rights to hedge any risks associated with their power purchases from the wholesale market. The wholesale market price cap ($5,000, planned to gradually increase to $20,000) provides strong signals to private investors in power plants. The single price, single settlement, single dispatch mechanism removes the opportunity for gaming by power plants. Full information disclosure is provided so that regulators have full, and the public some, access to market data on the day after the trading day. Regulators monitor the market weekly and make their reports public. Finally, Australia's environmental licensing requirements do not appear to be as stringent as those in California.
- Active involvement in building and operating interconnector transmission lines that auction rights to interconnector capacity on a regular basis These transmission lines have been built in parallel with regulated transmission lines and are successful where interconnector congestion occurs often.
- In addition, the following areas of market design are receiving both short- and long-term attention:
  - —Interconnector planning.
  - —Streamlining multiple regulations.
  - —Increasing civil penalties for generator abuse of market rebidding rules
  - —Providing competitive markets for ancillary services.
  - —Expanding the scope of existing laws on open access to infrastructure.
  - —Developing the financial market to close the loop between it and the physical market.
  - —Streamlining changes to the market code.
  - —Developing firm access arrangements for transmission.
  - —Reviewing the value of lost load to determine the effect of the price cap on investment in peaking plants.
  - —Improving the relationship between the dispatch price and the settlement price.

Source: PhaceLift (2001)

Economic disparities among regions and the need to ensure adequate training of commercial, technical, and regulatory staff suggest that the reform should be adopted in phases and accommodate many different entry points. Moreover, because the reforms are likely to involve some challenges and strain the appetite of private capital markets for Chinese electricity assets, moving in phases may limit problems and enable lessons from early reformers to be applied to later reformers.

Thus it is possible that many of China's electricity markets will not enter the first phase of power reform until adjustments are made to existing practices—such as improvements in market structure, adaptations of power purchase agreements, restructuring of generation plants, changes in financial management practices, and so on. As electricity supply and demand converge across many of China's electricity markets, implementation of these adjustments during the transition period will take on some urgency.

Strengthen the Market Structure

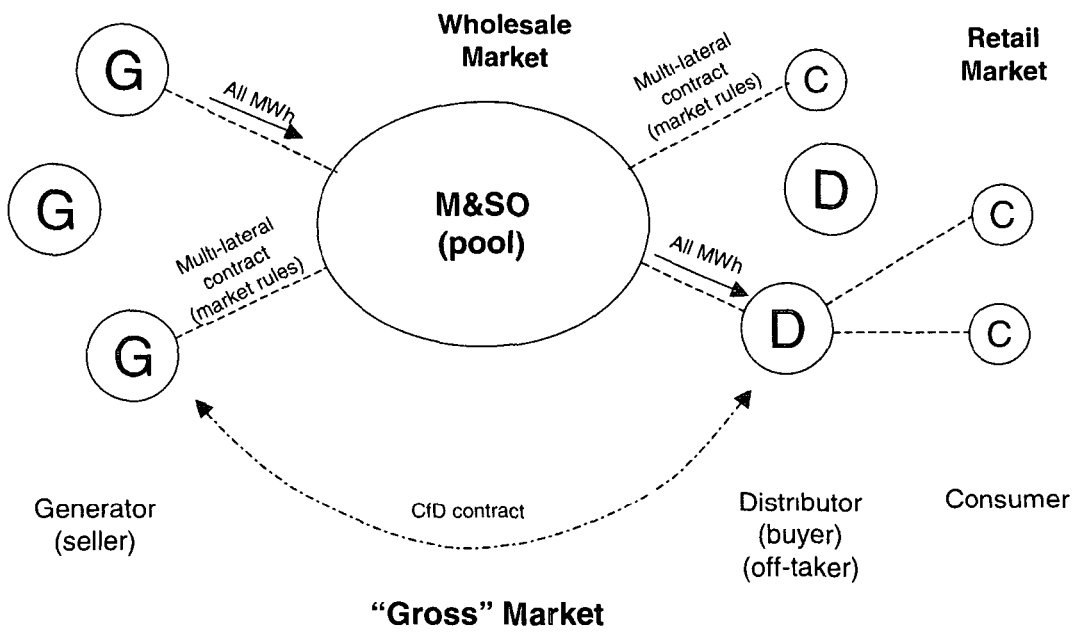
There are two broad trading models for a competitive power market. One is based on the "gross" exchange principle, where all energy is physically traded and settled through a common process (a pool market) and there is usually one common multilateral contract (the market rules) for all generators. The other model is based on the "net" exchange principle, where physical settlement can be established between a power plant and a consumer as a private arrangement, with any of the plant's leftover (net) energy being settled on the spot market. In the net model, however, all energy is physically exchanged through a common process, as in the gross model (Figure 6-4). The pilot pool market introduced in Zhejiang is modeled on the gross market structure, which requires all existing and new power purchase agreements to follow market rules (with terms and conditions substantially different from those of the power purchase agreements) and all generating units to be dispatched on price merit.

Zhejiang's electricity market is in the first phase of reform and is moving toward the second. Although its trial operations only began in January 2000, a recent World Bank (2001b) review found that impressive achievements have already been made. Sound trading mechanisms, operating rules, and risk management have been established; information systems to operate a competitive energy pool have been well conceived, developed, and put in operation, the reform has been widely accepted and supported by government authorities; improvements have been made by generators in cost control, internal performance management, and contract trading analysis and risk management; and, most important, average generation availability (92 percent in 2000) continued to improve as a result of competition.

There are, however, problems that have prevented the market from advancing further. Legal and regulatory changes are needed to integrate "off market" capacity (as high as 32 percent) with the pool market. Regulatory changes are also needed to integrate provincial markets with the regional market, so that generation plants in Jiangsu, for example, will be required to bid into the pool market as well. In addition, information on the market settlement price, which is critical for investors to make long-term capacity planning and investment decisions, has been kept secret and is not available to investors. Long-term commitment has not been given to protect existing power purchase agreements, and vesting contracts for differences have not been long term or legally recognized (see below) [4]

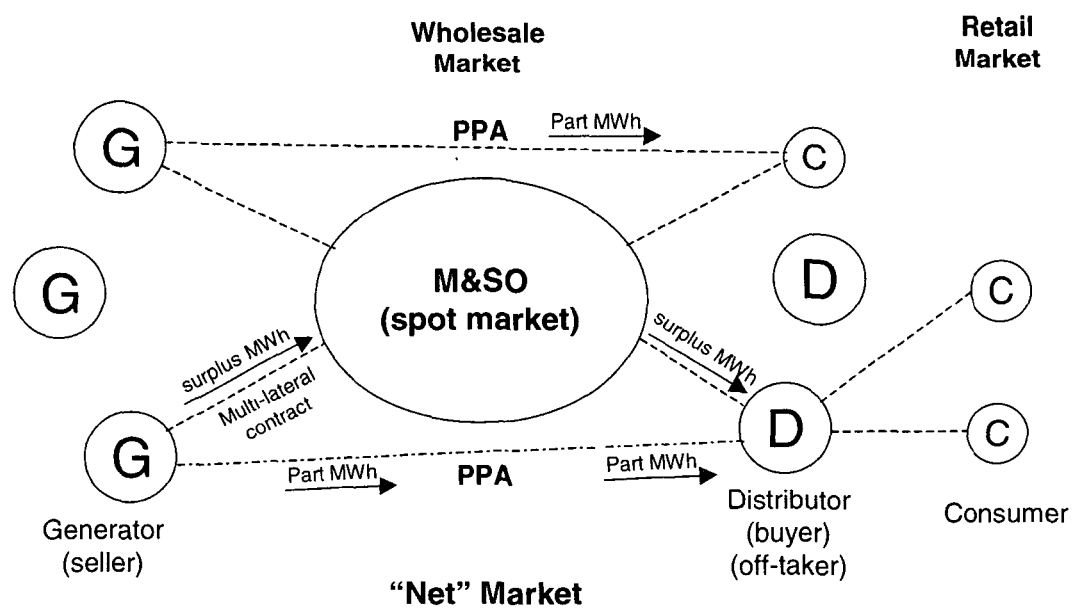
4 Contracts for differences commonly feature a contractually agreed strike price (renminbi per megawatt-hour) and volume of dispatch (megawatts-hours per period of market operation) The strike price represents the price at which the purchaser would like to purchase and the seller would like to sell electricity over the term of the contract. If the market price is higher than the strike price, the generator will pay an amount to the purchaser equal to the market price less the strike price, multiplied by the volume of electricity under the contract. Similarly, if the market price is lower than the strike price, the purchaser will pay to the generator an amount equal to the strike price less the market price, multiplied by the volume of electricity under the contract.

FIGURE 6-4: TRADING MODELS FOR A POOL MARKET



"Gross" Market

Observation The "gross" market removes all use of the traditional PPA by replacing it with a multi-lateral contract and a CfD contract



"Net" Market

Observation: The "net" market makes use of.
- the traditional PPA to interface with the buyer; and
- a multi-lateral contract to sell surplus energy to the spot market

Source: PhaceLift.

A desired outcome of power sector reform in China—achieving a competitive market while retaining investors' interest (both existing and future investors)—can be achieved only if:

- A consistent *legal and regulatory framework* is established based on the principles of efficiency through competition. This entails realigning the *Electricity Law and supporting regulations,* and developing comprehensive *market rules* that provide for enforceable multilateral contracts, specifying the functions and responsibilities of the market operator and system operator.
- A *market governance structure* is established, including an *independent regulator,* to ensure economic merit order dispatch, open access to power infrastructure by all parties (government and private companies), and a transparent, nondiscriminatory approach to transmission pricing.
- *Access to information* is enhanced. Private investment in a competitive market cannot be maintained without adequate transparency. Market rules and other legal instruments have to be publicly disclosed so that private investors can assess their role in each phase of the power reform process. Provincial power companies should regularly update and publish their short- and long-term power plans. Results of pilot market operations, including (at the least) the market price and system demand, should be published daily.
- *Existing power purchase agreements are protected* (see below).
- The financial securities market is adapted to the competitive electricity market so that *hedging techniques* (such as a secondary trading market for contracts for differences) can be used to manage the risk of movements in market prices.
- The *creditworthiness of market participants is improved* by first requiring provincial power companies (in their temporary role as single buyers in the first phase) to increase disclosure of their financial information (preferably independently audited). Ultimately, appropriate requirements will need to be imposed on all market participants to ensure acceptable credit quality.
- A divestiture program is implemented for *generation assets* (see below).
- *Fuel markets* are deregulated to ensure that there is no dislocation between a deregulated power market and a regulated, inefficient fuel supply market.[5]

Since the transitional regulatory issues have been discussed on various occasions between the World Bank and the Chinese government, this paper will not elaborate on more detailed recommendations in this regard.

Adapt Power Purchase Agreements for the Transition Period

Given the long-term nature of capital investments in power generation, most of the world's competitive markets have a large portion of energy delivery hedged through long-term contracts—such as long-term power purchase agreements, forward contracts, or contracts for differences (Table 6-2).

Long-term contracts provide more certainty to power producers than do unhedged competitive multilateral contracts or spot market contracts. For China it is almost impossible, at least in the near term, that new financing for independent power projects will be available solely on the basis of a competitive pool market without a significant part of power sales being hedged by long-term contracts. To the extent that the market for long-term forward contracts and contracts for differences is nonexistent or illiquid, the government will need to provide a central default role—as a counterpart to long-term power purchase agreements and vesting contracts for differences (see below)—until the power market and financial market become more efficient.

5 For example, provincial power companies have often acted as intermediaries between fuel suppliers and independent power projects. If this structure were to continue in a deregulated power market, it would undermine the benefits of such deregulation and impart undue market power to the provincial power companies.

TABLE 6-2: SHARES OF LONG-TERM CONTRACTS AND SPOT MARKETS IN VARIOUS MARKETS (PERCENT)

Market	Share of Energy Hedged through Long-term Contracts	Share of Unhedged Energy	Market Model
Argentina	80–85	15–20	Gross
Australia	90[a]	10	Gross
California (United States)	40–50	50–60	Net
New England (United States)	80	20	Gross
Pennsylvania (United States)	85–90	10–15	Gross
United Kingdom (England and Wales)	85–90	10–15	Net (was gross)

Note:
a. Estimate of negotiated long-term contracts for differences established between market participants.
Source. World Bank data.

In the net market a generator can establish power purchase agreements with end users (bilateral contracts) that have most of the terms and conditions of previous purchase agreements. But in the gross market it is more challenging for the government to protect investors' interests in existing power purchase agreements and at the same time integrate the power produced under those agreements into the pool market. Most independent generators have sought project financing based on such agreements signed with governments for a guaranteed level of dispatch and tariff. Stable cash flow is required for debt service; otherwise the generator will have to refinance its debt to reflect the different revenue structure in a competitive market, probably at higher rates.

It is important that China maintain the sanctity of these power purchase agreements to avoid sending a negative message to capital markets and weaken investors' confidence in the government's willingness to abide by contract obligations. Investors should be offered three options: replacing power purchase agreements with spot contracts and proper compensation, replacing power purchase agreements with vesting contracts for differences, or partitioning power purchase agreements from the competitive power market.

Option 1: Replacing power purchase agreements with spot contracts. Under this option existing power purchase agreements would be renegotiated into spot contracts so that independent generators would participate in the pool market. But under this option the government would have to spend a lot of time and effort renegotiating every power purchase agreement (most likely with multiple parties, including banks) to reach an agreement on the level of compensation. Moreover, existing power purchase agreements in China contain protection for investors against unilateral alteration of the contract terms without agreement from the investor. In addition, the financial market, which is required to support hedging contracts for differences (explained below), is not strong enough to enable private investors to manage their exposure to volatile pool prices.

Option 2: Replacing power purchase agreements with vesting contracts for differences An alternative approach would be to replace existing power purchase agreements with vesting contracts for differences in which the price and notional volume of the contract match the tariff and guaranteed dispatch under the purchase agreement. If accepted by the investor, the purchase agreement would be replaced by a registration with the market operator (and in so doing be provided with a multilateral contract covering the operation of the pool market) and a vesting contract for differences.

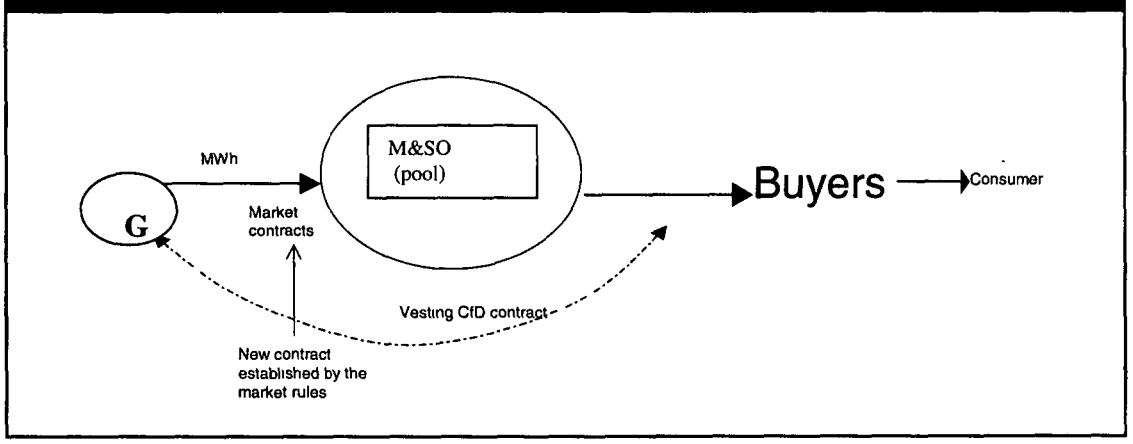
For power producers in the Zhejiang market, market risks for 85 percent of sales are managed by vesting contracts for differences. There were 23 such contracts established at the start of the market, with each designed for a specific generation unit belonging to the eight power plants registered as market participants. The single buyer was the counterparty to one side of each contract. Although the fixed price of each contract for differences was designed to provide a financial return comparable to historical levels, the duration was set only for 2001—much shorter than a typical power purchase agreement, and so still creating considerable uncertainty for suppliers. Moreover, the contracts for differences in the Zhejiang market have not been fully recognized as legal contracts and are still subject to monthly alterations for maintenance, transmission constraints, or other special events.

While a properly enforced vesting contract for differences is an improvement over option 1, power plant owners still take full responsibility for trading in the market. The vesting contract would only restore owners' financial position to the position enjoyed under the power purchase agreement. Given that owners are likely to take more risk under contracts for differences than under power purchase agreements, they would ask for additional compensation (though substantially less than under option 1). If the market design provides new opportunities (and removes old grievances), power plant owners should find this option attractive. But it will be a considerable challenge for the government to develop a market reform policy that convinces power plant owners to willingly trade their power purchase agreements for contracts for differences.

Replacing power purchase agreements with vesting contracts for differences could also involve multiple parties, including banks. In addition, it would require a party (as buyer) to be nominated to execute the contract with the independent generator. If the payment stream is expected to be one-way over the life of the contract (for example, if the tariff set in the power purchase agreement was far above the expected pool market price), a mechanism would need to be established to compensate such a party.

If not managed properly, contracts for differences and other such electricity derivatives can generate substantial financial risks. The advantage of a vesting contract for differences is that it can be designed and imposed by the government in parallel with the establishment of the financial market. In most markets contracting has started with generators and large purchasers with considerable financial resources, then gradually extended to medium-size and small purchasers. In China contracts for differences could initially be signed by generators with the provincial power company (the single buyer; Figure 6-5), then with multiple buyers as reform progresses, until other intermediaries develop the skills and capacity needed to trade negotiated contracts for differences.

FIGURE 6-5: A VESTING CONTRACT FOR DIFFERENCES WITH SINGLE BUYERS



G: Generators M&SO: Market and System Operator

Source: PhaceLift.

Option 3: Partitioning power purchase agreements from the competitive power market. Another way to integrate existing and new power purchase agreements with a mandatory pool market—in a way that will not seriously undermine the competitive market—is to move the power purchase agreements upstream of the mandatory pool market, through an intermediary. This option is based on experience from the liberalization of Australia's power sector (Box 6-2).

Under this option power purchase agreements are executed between the generator and an intermediary, the market trader, and so are isolated from the market pool. The market trader provides an interface between the agreement and the competitive market. The market trader is a temporary organization owned by the government. It acts as a buyer to existing power purchase agreements but registers as a seller in the pool market and operates solely for the purpose of trading the agreements in the competitive wholesale market. The private investor is required only to manage power plant assets in accordance with the power purchase agreement

The government may allocate a vesting contract for differences (without any compensation) to the market trader to help manage its cash flow. During the first phase of reform the single buyer would be the counterparty to the vesting contract. In subsequent phases the vesting contract would be distributed to multiple buyers in accordance with government policy. In addition, the market trader can decide whether to enter into negotiated contracts for differences if and when such other parties exist. This structure is shown in Figure 6-6

A review of several power purchase agreements in China reveals that no terms or conditions would prevent their reassignment to a government-owned market trader Attention should be paid to certain areas if the market trader is to enter into new purchase agreements; these include the separate provision of ancillary services, the use of a two-part tariff structure, penalties for unavailability, unit dispatch instructions, and communication of relevant performance and status information to and from the power plants.

Establish a Multipart Tariff in Temporary Power Purchase Agreements

While private projects in China have achieved lower capital costs and tariffs than those in other countries in the region (Indonesia, the Philippines, Thailand), government authorities remain concerned that private investors are not bearing enough risks for the returns they are getting. Investors, meanwhile, are concerned about the uncertainty involved in initial and subsequent tariff approvals.

The "new plant new price" approach, issued by the Chinese government in 1985, was well received by private investors and led to a surge in investment in the 1990s. But the authorities feel

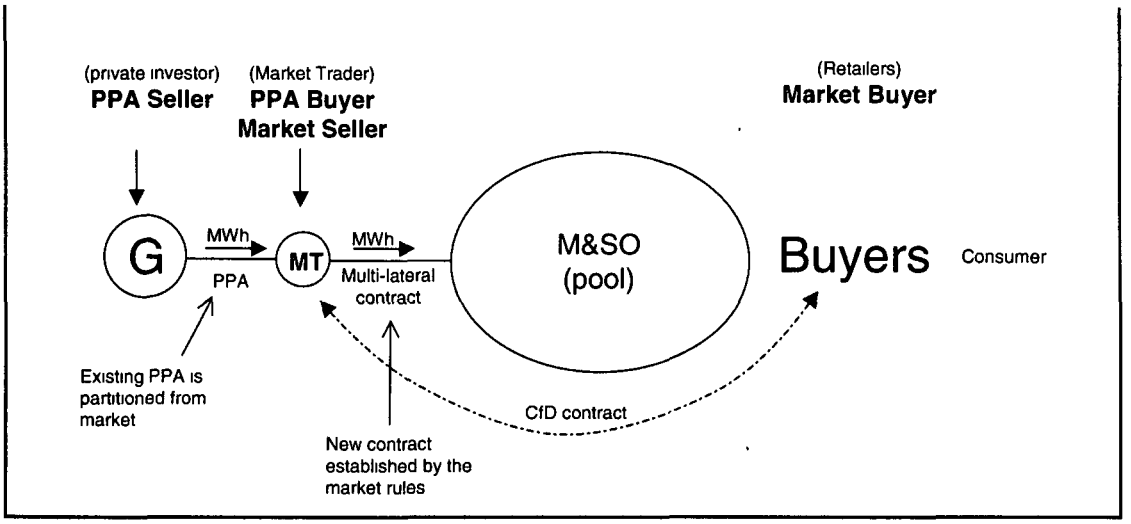
BOX 6-2: INTERNATIONAL EXPERIENCES WITH PARTITIONING EXISTING POWER PURCHASE AGREEMENTS

In **Australia** all existing power purchase agreements have been accommodated through the market trader principle (option 3 in the main text). This approach has proven to be commercially and politically manageable for the government and the only option acceptable to the private investor. In one jurisdiction six power purchase agreements (representing about 2,400 megawatts, or 25 percent of the market) were managed this way. The six agreements included baseload coal-fired power plants, midrange coal-fired power plants, and gas turbine peaking plants.

All the purchase agreements were bundled into one portfolio and managed by the market trader. The market trader was structured as a corporation under company law, including a Board of Management and executive managers. This greenfield corporation was able to introduce innovative risk management techniques that substantially improved the cash position of the portfolio. In effect, the market trader was a way of partitioning the power purchase agreements from the market reform process. In this way the government could continue to offer protection for the private investor while benefiting from the early stages of the reform.

Source. PhaceLift.

FIGURE 6-6: PARTITIONING A POWER PURCHASE AGREEMENT FROM THE COMPETITIVE POWER MARKET



G: Generators, M&SO: Market and System Operator, MT: Market Trader

Source: PhaceLift.

that this approach allows capital costs to be recovered too quickly (8–10 years in some cases), which results in front-loading of power prices. The cost plus approach also takes into account the project's actual financing cost, giving further assurances to investors but not providing enough incentives for efficiency.

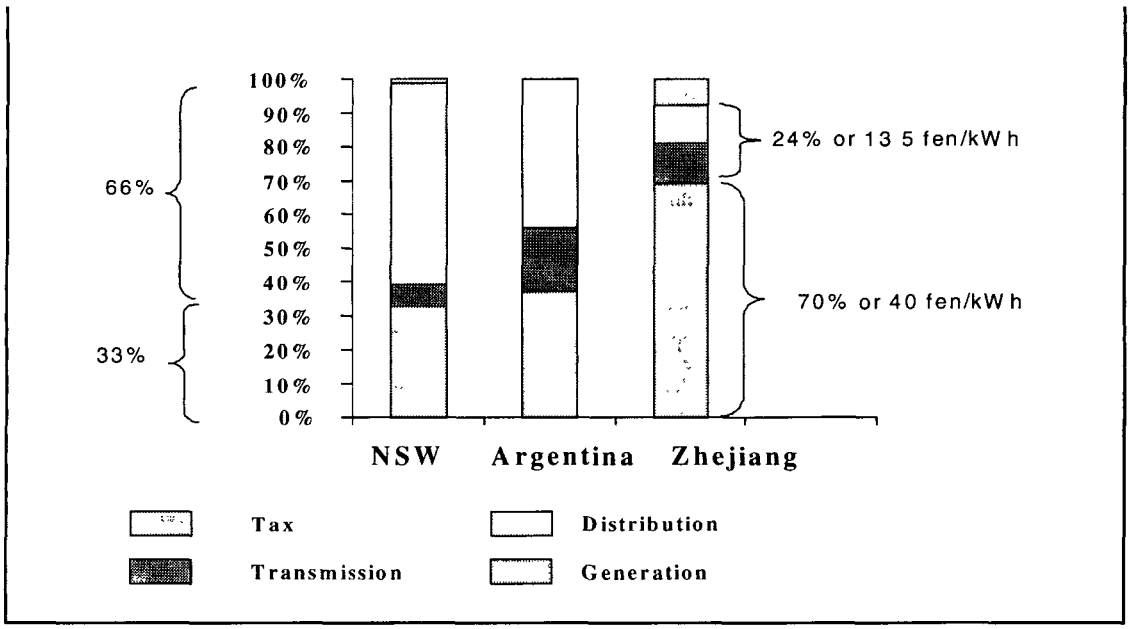
Figure 6-7 compares historical tariff structures in Zhejiang Province, New South Wales (Australia), and Argentina. The tariff for transmission and dispatch seems to be low in China, leaving the government with inadequate resources to expand transmission and distribution. But generation costs and taxes are higher in Zhejiang. The higher generation costs could be the result of higher fuel costs and higher capital costs. The government should determine the exact reason for these price discrepancies and remove potential impediments so that China can achieve world-class efficiency from its power sector.

Many existing projects were given a one-part tariff and guaranteed minimum dispatch level. A one-part tariff provides a purchase price only for units of energy produced or the guaranteed minimum level, whichever is lower. The intention was to ensure that investors would have a minimum revenue stream, mainly to facilitate project financing. But this structure puts pressure on off-takers, and with the recent slowdown in demand local off-takers have started to dispatch below the minimum level and to renegotiate the contracts.

During the transition period all new power purchase agreements should provide for a two-part tariff, with a capacity component and an energy component. The capacity payment will usually be designed to recover fixed costs, including the cost of financing, and the energy payment will be designed to cover variable costs with a small safety margin. Both components would be determined through competitive bidding to form the basis of medium- to long-term power purchase agreements.

The capacity charge would be paid regardless of the actual dispatch for the billing period, while the energy payment would be subject to the level of production for the billing period. This structure will increase flexibility for dispatchers and provide economic certainty for investors. If a market trader was given responsibility for trading such power purchase agreements in the mandatory pool market, the trader would price production (regardless of its purchase obligations under

FIGURE 6-7: TARIFF STRUCTURES IN NEW SOUTH WALES (AUSTRALIA), ARGENTINA, AND ZHEJIANG PROVINCE



Source PhaceLift (2001) and Mercados Energéticos internal presentation to the World Bank.

the agreements) to recover both the capacity charge and the energy charge from the market's pool clearing price.

Restructure Generation Assets

Investors are less concerned about a transparent and competitive market than about the conflicts of interest created when governments and state power companies play multiple roles in owning generation assets. The establishment of a competitive market is a step in the right direction to remove such conflicts of interest. But a lot more remains to be done.

International experience shows that many countries engaged in power sector liberalization have actually seen demand grow faster than envisaged while supply lagged behind. During power reforms the government needs to continue to tender directly for power plant investment, to ensure that the supply and demand balance is appropriately managed from year to year. The traditional project funding techniques of BOT and securitization can continue to be used with the market trader as the government's vehicle. But there should be a reduction in traditional joint venture projects, because cross-ownership of generation assets, transmission assets, and the system operator role distorts the market.

The government also needs to expedite the removal of its cross-ownership in existing power assets (particular generation and network assets). Removing such cross-ownership will give private investors confidence that competitive neutrality exists in China's power sector. One way to remove cross-ownership is to divest government's interest in generation plants. These generation assets can be packaged to access a broader source of financing, in addition to traditional project-based financing. For example, companies investing in a portfolio of power plants at various stages of implementation (brownfield, greenfield, and so on) can seek financing from domestic and international security markets, in addition to strategic and institutional investors.

Annex I

List of PPI Projects in the Road Sector in China

Date	Project Name	Cost (US$ m.)	Km Lng.	Project Type	JV (Yrs.)	Dev. Str.	Private Own.	FDI Equity/ Debt (US$ m.)	Private Sponsor	Tariff and Toll Rates (per vehicle)	Comments
	Anhui										
1997	National Highway 206	51	90	O&M	25	C J-V	60%	30.8 (E)	RKI	Rmb 5/ton	
1997	Provincial Highway 307 Bengbu Huaihe Bridge Highway	42	21	O&M	32	C J-V	60%	16.78 (E)	RKI		
1997	Provincial Highway 307 Bengbu Huaiyuan-Mengcheng Highway	120	59	O&M	32	C J-V	60%	12.30 (E)	RKI		
1999	Bengbu Chaoyanglu Huaihe Highway Bridge	44	1.8	O&M	30	C J-V	60%	13.3 (E)	RKI		
2000	Hefei-Yeji Highway	260	130	O&M	25	C J-V	50%	66.39 (E)	RKI		
	Total	517	302					140			
	Guangdong										
1990	Guangzhou City Northern Ring Road	173	22	O&M	33	C J-V	60%	68.25 (E)/22 (D)	NWI	Rmb 10.21 (Avg.)	Syndicated loan $97.5 mm
1991	Guangzhou-Shenzhen Superhighway	1922.	123	O&M	30	BTO	48%	922	Hopewell		Syndicated loan $800 mm w/ GITIC gtn.
1992	Beijing-Zhuhai Express-way (Guangzhou-Zhuhai section)	472	62.2	O&M	37	C J-V	25%	17.46 (E)/100.54 (D)	NWI	Rmb 5.9 (Avg.)	Guaranteed Repay-ment Period
1992	Shenzhen-Huizhou Expressway (Huizhou section)	61	58	O&M	30	C J-V	68.1%	2.41 (E)/21.31 (D)	NWI	Rmb 23.95 (Avg.)	Exchange Loss Protection
1993	Foshan Guangzhou-Sanshui Expressway	109	52	Greenfield	25	C J-V	35%	38 (E)	RKI	Rmb 0.25/km–Rmb 2.375/km	
1993	Roadway No. 324 (Gaoyao section)	27	24	O&M	22	C J-V	52%	9.8 (E/D)	NWI	Rmb 8.76 (Avg.)	Guaranteed Repayment Period
1993	Shantou Bay Bridge	86	11	Greenfield	35	C J-V	30%	26 (E)	CKI		
1993	Shen-Shan Highway (Eastern section)	326	140	O&M	35	C J-V	33.5%	112.44 (E)	CKI		
1993	Shunde Road System	415	102.4	O&M	30	BROT	50%	18 (E)/51.9 (D)	Hopewell		

1994	Boca Tigris Bridge	413	15.76	Greenfield	30	BOT	10%	3.2 (E)/28.3 (D)	Hopewell	Rmb 5–Rmb 180	
1994	Jieyang Highway Network	124	110 7	O&M	30	C J-V	50%	62.1 (E)	RKI	Rmb 2–Rmb 30	
1994	Luoding-Chonghua Highway	36	35	O&M	20	C J-V	61%	22 (E)	RKI		
1994	Provincial Highway 268	14	26 5	O&M	20	C J-V	75%	13 (E)	RKI	Rmb 2–Rmb 23	
1994	Qinglian Highway	360	215	Greenfield	33	BOT	51%	184 (E)	Pinetree	15% year increase	
1994	Roadway No. 1964 (Zhaojiang section)	23	32	O&M	25	C J-V	74%	7.7 (E)/9.8 (D)	NWI	Rmb 7 09 (Avg.)	Guaranteed Repayment Period
1994	Roadway No. 321 (Fengkai section)	31	42	O&M	25	C J-V	60%	6.8 (E)/12 5 (D)	NWI	Rmb 25 (Avg.)	Guaranteed Repayment Period
1994	Roadway No.321 (Deqing section)	59	79	O&M	25	C J-V	55%	33 (E/D)	NWI	Rmb 32.56 (Avg.)	Guaranteed Repayment Period
1995	Roadway No. 1960 (Sihui section)	44	47	O&M	25	C J-V	50%	21 88 (E/D)	NWI	Rmb 19.06 (Avg.)	Guaranteed Repayment Period
1995	Roadway No. 1960 (Guangning section)	35	60	O&M	25	C J-V	55%	19.5 (E/D)	NWI	Rmb 19.12 (Avg.)	
1996	Deqing Xijiang Bridge	16	1.4	Greenfield	25	C J-V	65%	4.41 (E)/6.19 (D)	NWI	Rmb 6.98 (Avg.)	Guaranteed Repayment Period
1996	Gaoming Bridge	18	1 1	O&M	25	C J-V	51%	3.69 (E)/5 53 (D)	NWI	Rmb 5.39 (Avg.)	Guaranteed Repayment Period
1996	Guangzhou Three Bridges	377	4.26	Greenfield	33	C J-V	70%	181.88 (E)/26.35 (D)	NWI	Rmb 3.33–5.69 (Avg.)	Exchange Loss Protection
1996	Hui-Ao Roadway (Hui-Dan and Hui-Ao Section)	97	86	O7M	33	C J-V	50%	4.52 (E)/44 (D)	NWI	Rmb 5 94 (Avg.)	
1996	Jiangmen Road Network	99	43	O&M	30–32	C J-V	50%	49.52 (E)	CKI		
1996	Nanhai Road Network	330	140	O&M	24–28	C J-V	49–64%	179 (E)	CKI		
1996	Roadway No. 1962 (Guangning section)	8	19.5	O&M	26	C J-V	55%	1.55 (E)/3.11 (D)	NWI	Rmb 4.20 (Avg.)	Guaranteed Repayment Period
1996	Roadway No. 1969 (Gaoyao section)	11	27	O&M	28	C J-V	58%	3.23 (E)/4.84 (D)	NWI	Rmb 5.73 (Avg.)	Guaranteed Repayment Period

(*continued*)

Date	Project Name	Cost (US$ m.)	Km Lng.	Project Type	JV (Yrs.)	Dev. Str.	Private Own.	FDI Equity/ Debt (US$ m.)	Private Sponsor	Tariff and Toll Rates (per vehicle)	Comments
1996	Shenzhen Airport-Heao Expressway, Eastern section	157	23.3	O&M	30	C J-V	45%	70.6 (E)	RKI	HK$0.6/km–$3.6/km	
1997	Guangzhou Ring Road	542	39	Greenfield	35	BOT	75%	482 (E)	CKI/ Hopewell		
1997	Laolong Bridge			O&M	22	BTO			Bridgecon		Toll collection started 12/97
1997	National Roadway No.105 (Lianping Co. north section)	30	33	O&M	25	C J-V	51%	3.21 (E)/11.47 (D)	NWI	Rmb 19.21 (Avg)	Guaranteed Return
1997	Roadway No. 1906 (Qingcheng section)	22	26.8	O&M	30	C J-V	80%	17.6 (E/D)	NWI	Rmb 7 (Avg.)	Guaranteed Return/ 2000 operational
1997	Roadway No. 1959 (Qingxin section)	24	26.6	Greenfield	30	C J-V	79%	19.5 (E)/4.9 (D)	NWI	Rmb 4.49 (Avg.)	Guaranteed Repay-ment Period
1997	Roadway No. 1967 (Xinxing section)	12	25	O&M	25	C J-V	60%	7.2 (E/D)	NWI	Rmb 8.98 (Avg.)	Guaranteed Repay-ment Period
1997	Shenzhen-Huizhou Roadway (Huizhou section)			O&M	26	C J-V	50%	7.23 (E/D)	NWI	Rmb 7.4 (Avg.)	Exchange Loss Protection
1997	Shuangjian Roadway (Gaoyao section)		34		26		61%		NWI	Rmb. 3.94 (Avg.)	Guaranteed Repay-ment Period
1997	Zengcheng Lixin Road	26	30	O&M	23	C J-V	51%	13 (E)	CKI		
1998	Roadway No 321 (Gaoyao section)		23.8		25		61%		NWI	Rmb. 9.86 (Avg.)	Guaranteed Repay-ment Period
1998	Roadway No 1962 (Gaoyao section)		32.4		30		60%		NWI	Rmb. 6.68 (Avg.)	Guaranteed Repay-ment Period
1999	Roadway No. 1958 (Deqing Section)		30		25		65%		NWI	Rmb 8.06 (Avg)	Exchange Loss Protection
2000	Panyu Beidou Bridge	22.5	3	O&M	25	C J-V	40%	7.95 (E)	CKI		
	Total	6522	1907					2996			

	Guangxi										
1996	Guilin City—Liang Jiang Airport Toll Road	26	11.44	O&M	30	BTO	100%	26 (E)	Guilin Eng.		Toll collection started 11/96
1996	Yulin City Ring Roads and Yulin-Gongguan Highway	55	66	O&M	25	C J-V	70%	38.3 (E)	RKI	Rmb 1–Rmb 20	
1997	Beiliu City Roadways	29	40	O&M	25	C J-V	60%	18 (E/D)	NWI	Rmb 6.25 (Avg.)	Guaranteed Return
1997	Cangwu County Roadway	20	10.12	O&M	25	C J-V	70%	13 (E/D)	NWI	Rmb 7 18 (Avg.)	Guaranteed Return
1997	Roadway No. 321 (Wuzhou section)	22	13	O&M	25	C J-V	60%	13 (E/D)	NWI	Rmb 17.09 (Avg.)	Guaranteed Repay-ment Period
1997	Rongxian Roadways	25	27	O&M	25	C J-V	70%	17.4 (E/D)	NWI	Rmb 6.75 (Avg.)	Guaranteed Return
1997	Yulin to Shinan Roadways	52	86.5	O&M	25	C J-V	60%	31 (E/D)	NWI	Rmb 8.10–11 26 (Avg.)	Guaranteed Return
1997	Yulin Shinan-Dajiangkou Roadway	19	38.7	O&M	25	C J-V	60%	4.61 (E)/6.96 (D)	NWI	Rmb 8.08 (Avg.)	
2001	Yulin Shinan to Guigang Roadway	16	20	O&M	25	C J-V	60%	9 (E/D)	NWI	Operational in 1/01	Guaranteed Return
	Total	264	313					177			
	Hebei										
1997	National Highway 307	40	40	O&M	20	C J-V	60%	24 (E)	RKI	Rmb 10–Rmb 60	
1997	National Highway 309	48	79	O&M	18	C J-V	70%	33.8 (E)	RKI	Rmb10–Rmb 60	
1997	Tangshan-Tangle Road	24	100	O&M	25	C J-V	51%	12 (E)	CKI		
	Total	112	219					70			
	Henan										
1997	National Highway 107 (Zhumadian sections)	49	114	O&M	27	C J-V	66%	39 (E)	CKI		
1997	National Highway 311 and Provincial Highway 01	50	80	O&M	23	C J-V	50%	24.8 (E)	RKI	Rmb 5–Rmb 25	
	Total	99	194					64			

(continued)

Date	Project Name	Cost (US$ m.)	Km Lng.	Project Type	JV (Yrs.)	Dev. Str.	Private Own.	FDI Equity/ Debt (US$ m.)	Private Sponsor	Tariff and Toll Rates (per vehicle)	Comments
	Hubei										
1993	Wuhan Airport Expressway	89	18	Greenfield	30	C J-V	67%	3 (E)/60 (D)	NWI	Rmb 11.21 (Avg.)	Guaranteed Return
1994	Wuhan Bridge Development	205	4	O&M	30	JSC	49%	101.2 (E/D)	NWI	Rmb 6.28 (Avg.)	Tax Incentive
	Total	294	22					164.2			
	Hunan										
1997	Changsha Wujialing and Wuyilu Bridges	60	5	O&M	25	C J-V	44%	27 (E)	CKI		
1997	Changsha-Yiyang Expressway	168	75.6	O&M	27	C J-V	43%	74.5 (E)	RKI		
	Total	228	81					101.5			
	Jiangsu										
1994	Suzhou-Shanghai Airport Highway	27	52.8	O&M	23	C J-V	50%	23.4 (E)	RKI	Rmb 3–Rmb 60	
1996	Provincial Highway 211	30	26.1	Greenfield	20	C J-V	60%	18 (E)	RKI	Rmb 4–Rmb 60	
1996	Yangzhong—Changjiang Bridge	3	1.17	O&M	25	ROT	51%		IJM		
	Total	60	80					41			
	Liaoning										
1996	Shenyang Changqing and Shenyang Gongnong Bridges	51	4	O&M	32	C J-V	54.2%	27.4 (E)	CKI		
1996	Shenyang Shensu Expressway	51	12	O&M	32	C J-V	54.2%	28 (E)	CKI		
1997	Shenyang Da Ba Road	195	23	O&M	30	C J-V	52%	100.64 (E)	CKI		
	Total	297	39					156			

	Shanghai Municipality										
1996	Shanghai Inner Ring Road/N-S Elevated Expressway	1.7 b	56.11	Asset Sec.		BOT	35%	600 (E)	SIHL		Co. receives 80% of revenues
	Total	1700	56					600			
	Shanxi										
1996	National Highway 108	19	38	O&M	20	C J-V	65%	19 (E)	RKI		
1997	National Highway 108—Taiyuan-Yuci Highway & Bypass	29	33.60	O&M	23	C J-V	65%	29.4 (E)	RKI	Rmb 5–Rmb 50 Rmb 5–Rmb 20	
1997	Provincial Highway 104	27	41.50	O&M	23	C J-V	60%	16.4 (E)	RKI		
1998	Jincheng—Jiaozuo Expressway	174	32	Greenfield	30	C J-V	60%	104 4 (E/D)	NWI	Rmb 5–Rmb 50 Rmb 1.45	Exchange Loss Protection/Op. 10/00
1999	Roadway No. 309 (Changzhi section)		22.2	O&M	25	C J-V	60%		NWI	(Avg.) est. Rmb 12 (Avg.) est.	Exchange Loss Protection/Op. 12/99
1999	Taiyuan to Changzhi Roadway (Changzhi section)		18.3	O&M	25	C J-V	60%		NWI	Rmb 12 (Avg.) est.	Exchange Loss Protection/Op. 12/99
1999	Xiaodian Fenhe Bridge	7.87	5.5		20	C J-V	25%	1 96(E)	RKI		
2000	Shanxi Taiyuan-Gujiao Roadway (Taiyuan Section)	22	23.18	O&M	27	C J-V	60%	5.21 (E)/7.83 (D)	NWI	Rmb 9.36 (Avg.)	
	Total	279	214					184			
	Sichuan										
1994	Chengdu-Mianyang Expressway	170	90	Greenfield	30	BOT	60%	99.6 (E)	New China		Exchange Loss Protection
	Total	170	90					100			
	Tianjin Municipality										
1997	Tangjin Expressway (Tianjin North section)	398	60	O&M	30	C J-V	60%	239 (E/D)	NWI	Rmb 25.25 (Avg.)	Bank of China 8-year loan Rmb 1 bn.
1998	Tianjin Yonghe Bridge		0.5		25		90%		NWI		Tax Incentive
	Total	398	61					239		Rmb 5 85 (Avg.)	

(continued)

Date	Project Name	Cost (US$ m.)	Km Lng.	Project Type	JV (Yrs.)	Dev. Str.	Private Own.	FDI Equity/ Debt (US$ m.)	Private Sponsor	Tariff and Toll Rates (per vehicle)	Comments
	Zhejiang										
1995	Fuyang—Luzhu Toll Road	47		O&M	30	BROT	55%	26 (E)	Bridgecon		
1996	Tonglu—Zhaiqi Toll Road	19	18	O&M		BROT	55%	10.6 (E)	FACB		Toll collection started 3/97
	Total	66	18					37			
1	Asset Securitizations										
1996	Anhui Expressway Company Limited	113	164	Asset Sec.		IPO	35%	113 (E)	Anhui	HK$0.30–HK$1.50	
1996	Guangdong Provincial Expressway Development Co., Limited	223	130	Asset Sec.		Share listing	20%	223 (E)	GPED		
1997	Jiangsu Expressway Company Limited	564	545	Asset Sec		Share listing	25%	564 (E)	Jiangsu		NWI has 3.12% equity share
1997	Shenzhen Expressway Company Limited	150	60	Asset Sec.		IPO	34%	150 (E)	Shenzhen		
1997	Sichuan Expressway Company Limited	178	226	Asset Sec.		IPO	10%	178 (E)	Sichuan		NWI has 10% equity share
1997	Zhejiang Expressway Company Limited	425	400	Asset Sec.		IPO		425 (E)	Zhejiang		
1998	Hainan Expressway Company Limited	55		Asset Sec.		IPO		55 (E)			
1999	Hunan Expressway Company Limited	101		Asset Sec.		IPO		101 (E)			
	Total	1647	1140					1309			
2	144 A Projects										
1998	Cathay International										$350 mm note financing
	Guangqing Highway (existing)	101.3	22.6	O&M	30		60%	56.8 (E)/4.0 (D)			16.5% min. return
	Guangqing Expressway (proposed)	98	22.3	O&M	30	BOT	60%	58.8 (E/D)			16.5% min. return/ completed in 2000

	Zhaoqing Highway (existing)	53.5	50.3	O&M	30		60%	32.1 (E/D)	16.5% min return
	Zhaoqing Expressway (proposed)	78	46.8	Greenfield	30	BOT	60%	129.4 (E/D)	16 5% min. return
1996	Guangzhou Bridge and Tunnel Project	205		O&M	20		60%	123 (E/D)	17.5% min return
	Total	536	142					404	
3	**Mainland Private Toll Road Company Shanghai-Midway Infrastructure, Ltd.**								
	National Highway 320, Jiande section	85	80			BOT	32%	26.8 (E)	
	National Highway 320, Longyou-Hangbu section								
	National Highway 330, Yongkang section/ext	55	35.5	O&M		BOT	16%	8.6 (E)	
	Zhenda Highway, Jiangsu	25	21	O&M		BOT	92%	23 (E)	
	Provincial Highway 61, Jiangbei section	6	19.36	O&M			100%		
	National Highway 104—Rui'an section	25	14 4	O&M			50%		
	Total	196	170					58	
	Grand Total (USD)	13,547	5,433					7,341	1,975 mm commercial notes and loans
	Grand Total (RMB)	112,440						60,930	16,393 mm

Annex 2

List of PPI Projects in Water Treatment and Waste Water in China

This list has been compiled from a number of sources, including the World Bank PPI database, and interviews with the various developers In compiling this list, two difficulties should be noted:

- The value of the transactions is perhaps rather small compared to other sectors; therefore, there is not necessarily a register of such transactions at the central government level (i.e. with SDPC). To obtain information concerning these transactions requires investigations at the Provincial/Municipal level or of the various developers. Due to the sensitive nature of much of this information, many parties have been rather loathe to provide detailed information.
- Although the history of PPI in China is rather short in water sector (the first ventures were signed in 1992), changes have been occurring in these ventures involving in some cases the degree of private sector participation and in one known case the nature of the participation That such latter changes should occur is not surprising given the experience of such ventures in developed countries. The rapidity by which this change has occurred is perhaps surprising. Supposing a liberalization of the market in the PRC in forthcoming years, one might expect such trends to continue.

Date (signature)	Name	Plant Capacity (m^3/day)	Type	Cost (US$ mil)	% private	Duration of contract (years)	Raw Water Tariff RMB/m^3	Bulk water tariff RMB/m^3	Domestic water tariff RMB/m^3	Developer
1992	Tanzhou Water Supply	50000	Concession	$13	58	35	na	na	1.3	Sino-French
1994	Harbin Water Supply	225000	JV (BOT)	$30	50	30		0.62	1	SAUR International
1995	Nanchang Water Plant	50000	JV (ROT)	$11	50	30	na	1.05	0.8	Sino-French
1995	Shenyang Water Supply	1800000	Initially BROT now O&M Contract	$32	0	30	na	1.09	1.3	Sino-French
1996	Shanghai Da Chang Water Treatment	400000	BOT	$73	100	22.5	—	—	0.7	Thames Water/BOVIS
1996	Nanhai Water Supply	250000	JV (BOT)	$16	50	20	—	—	—	Giantmost Ltd.
1997	Tianjin Water Supply	500000	JV (ROT)	$30	65	30	1.2	—	—	Vivendi
1997	Lianjiang Water Supply	100000	JV (BOT)	$15	60	30	na	1.25	1.13	Sino-French
1998	Zhongshan Water Supply	500000	JV (ROT)	$27	66	22	na	0.77	c. 1.2	Sino-French
1998	Zongshang Water Supply	200000	JV (ROT)	$30	66	22	na	—	—	Sino-French
1999	Chengdu Water Supply	400000	BOT	$106.5	100	20	—	0.98	0 65	Vivendi/Marubeni Waterworks Company Ltd.
1999	Changtu, Liaoning	0	JV (BOT)	$13	70	30	—	1.1	—	Sino-French

2000	Baoding, Hebei	260000	JV (BOT)	$26	90	30	not applicable	0.61		Sino-French
2000	Zhengzhou, Henan	300000	JV (ROT)	$38	50	30	not applicable	0 84	1	Sino-French
—	Shenyang	100000	—	—	50	—	—	—	—	China Water
—	Xiaoqing, Zhejiang	100000	—	—	50	—	—	—	—	China Water
1997	Jinan Water (Dongjiao, Nanjiao, Xijiao plants)	900000	JV	$90*	80	25				Cathay International
1997	Jianan Water, Dayang Plant	400000	JV (BOT)	$30*	60	25	—	—	—	Cathay International
	Binzhou Dongiao	40000	JV (ROT)	$9.9*	60	20				Cathay International
	Binzhou Cathay Water Plant Ltd.	50000	JV (ROT)	$6 6*	80	20				Cathay International
	Jiangmen Water	500000	JV (ROT)	$60*	80	—	—	—	—	Cathay International
	Xuzhou Wastewater Treatment Plant									Cathay International
1997	Xian Water Supply	250000	JV (BOT)	$30	50					Berliner Wasser
1998	Yueyang Water Supply	400000	JV (ROT)	HK$140	49	18				Cheung King Infrastructure
1998	Zhongcao WTP, Guiyang, Guizhou	150000	JV (ROT)	$24	50					China Water
1998	Beijiao WTP, Guiyang, Guizhou	100000	JV (BOT)	$24	50					China Water
1995	Chongqing Water Supply	—	ROT	$25						Sino-French

(continued)

Date (signature)	Name	Plant Capacity (m^3/day)	Type	Cost (US$ mil)	% private	Duration of contract (years)	Raw Water Tariff RMB/m^3	Bulk water tariff RMB/m^3	Domestic water tariff RMB/m^3	Developer
1996	Jiangsu Province	1000000	Partial divestiture	$162	49	—	—	—	—	CITIC Pacific
1997	Xiejiang Water Supply	240000	JV (ROT)	$25	49	18	—	—	—	Cheung Kong
1997	Fushun City Water Supply	360000	JV (ROT)	$24	69	18	—	—	—	Cheung Kong
1997	Shenyang Shifosi Water Plant	400000	JV (ROT)	$24	50	20	—	—	—	Cheung Kong
1999	Wanzhou, Chongqing	100000	JV (BOT)	$15	50	30	—		1	Sino-French

Annex 3

List of PPI Projects in the Power Sector in China

Category	Definition	Comment
BOT1	Build-operate-transfer Competitively tendered 100% or majority foreign owned Large coal (mainly), new plant with long term PPA	Strictly by Chinese pilot BOT regulations this is the only type of BOT
BOT2	Build-operate-transfer Negotiated (possibly includes some risk sharing through JV co-operation agreement) Other features as BOT1	BOT category is applied to projects which are 100% private equity without a Government authority involved (ie no state-owned power company or government authority is involved in the equity partnership), but not all BOTs to date have been competitively tendered. Also referred to as wholly foreign owned (WFO)
TOT	Transfer-operate-transfer	The (partial) sale of existing power plants, usually in order to raise equity for new plants.
JV1	Large coal projects, new plant Majority foreign financing Minority foreign equity	Previously debt share needed to be similar to equity share, but more recent projects can have minority foreign equity
JV2	Large coal (or oil—category JV2-O), new plant Minority foreign financing	Does share of foreign financing influence the approval time or perceived risk of project for financing?
JV3	Large coal projects, new plant Majority foreign financing Majority foreign equity	Maybe no need to distinguish between JV1 and JV3; pre-'95 Central Government approval was not given for foreign share >50%
JV4	Medium coal projects	
IPO1	Listed on International and Chinese exchanges	Portfolios of plant investments, mostly existing plants. Generally have a regional or provincial geographical focus
IPO2	Listed only on Chinese exchanges	As IPO1
SC1	Small coal, mainly new plant Majority foreign	Small defined to be <100MW
Su	Small unidentified	Insufficient data to determine project characteristics
Lu	Large unidentified	Insufficient data to determine project characteristics
O1	Large oil, mainly new plant Majority foreign owned	Large is >100MW
O2	Small oil plant Wholly or majority privately owned Various types, Diesel, ST, GT	Mostly carried out for Municipal or City power companies (where approval process is simpler), some for Provincial
H	Hydro, all types	Politically sensitive due to social and environmental impacts Wholly foreign ownership not permitted >250MW
N	Dayawan is only Nuclear plant	Special case (1982–86)

Project Name	Location	Fuel type	Size MW	PPI Category	Construction started	Operation started	Sponsors	Sponsor location (market listing)	FDI US$M	Private equity %	D/E ratio	Foreign debt	Total investment US$ M	Debt sources	PPA length yrs	Contract type, tariff review	Tariff level
Shaojiao B	Guangdong	C	700	BOT2	1984	y	Hopewell	HK	373	100			373				
Dayawan	Guangdong	N	1800	N1	1986	y	CLP	HK	3600	25	90/10		4000	ECAs			
Macuhan	Hainan	C	250	JV1	1988	y		HK	42	50			90				
Zhengzhou	Henan	C	600	JV1	1990	Y		HK	70	25			280				
Zhujiang I	Guangdong	C	600	JV1	1990	Y	New World Infrastructure	HK	96	50	84/16	70	325	Consortium	25		
Shajiao C	Guangdong	C	1980	JV1	1992	Y		HK	1300	40		552	1870				
Zhangping	Fujian	C	200	JV1	1992	Y		HK	14	25		8	56				
Yangpu Power project	Hainan	O	320	O1	1992	Y		Japan	240	100			282				
Xinchang	Zhejiang	C	24	SC1	1992	Y	Lilinova Generation		6	54			11				
Songyu	Fujian	C	600	JV1	1993	Y		HK	84	25			421				
Pengcheng Power Station	Jiangsu	C	600	JV2	1993	Y	China Resource Group	HK	125	35			517				
Shenhai	Liaoning	C	400	JV3	1993	Y	China Resources	HK	93	55			170				
Chenghai	Shantou, Guangdong	O	75	O2	1993		Cheng Kong Infrastructure	HK	na	41							
Chaoyang	Shantou, Guangdong	O	90	O2	1993		Cheng Kong Infrastructure	HK	na	50							
Topou	Shantou, Guangdong	O	114	O2	1993		Cheng Kong Infrastructure	HK					63				
Jingyuan I	Gansu	C	600	JV1	1993	Y	Community Energy Alternative	US	105	30	70/30	73	360	Sponsor	20	ToP	

(continued)

Project Name	Location	Fuel type	Size MW	PPI Category	Construction started	Operation started	Sponsors	Sponsor location (market listing)	FDI US$M	Private equity %	D/E ratio	Foreign debt	Total investment US$ M	Debt sources	PPA length yrs	Contract type, tariff review	Tariff level
Shunde De Sheng	Guangdong		283		1993								255				
Shandong Huaneng Power Development Co. Ltd.	Shandong		1750	IPO1	1994			(New York Listing)	330				333				
Huaneng Power International Inc.	National		2900	IPO1	1994			(New York Listing)	600				625				
Qinglan Electric Power Plant	Hainan	O	150	BOT2	1994		Enron	US	130	100	70/30	105	150	na	12	ToP	
Xiangci	Hunan	H	26	H1	1994		AES	US		52			na				
Jingyuan 2 Power Co.	Gansu			JV1	1994	Y			148				337				
Houjie Power Plant	Guangdong	O	66	O2	1994		Sithe Energy		73	68			108				
Zhenjiang Combined Energy Companies	Jiangsu	C	27	SC1	1994		Power Fin		12	85			14				
Mengdian Thermal Power Co.	Inner Mongolia		425	SO	1994								na				
Ligang	Jiangsu	C	700	JV3	1995		Huayuan (related HK to CITIC?)	HK	206	56	75/25	154	436	ECAs	20	ToP	
Zhujiang II	Guangdong	C	600		1995		New World Infrastructure	HK	276	35	72/28	106	422	Consortium			
Xinxiang	Henan	C	400	TOT	1995	Y	CITIC	HK	124	90	67/33	83	138		20		
Yangchung Fuyang I & II	Guangdong	O	21	O2	1995		AES	US		60			0				
Wuhu	Anhui	C	250	JV2	1995	Y	AES, China Power Int Hldgs	US/China	29	25	70/30	20	115		na	ToP	
Suzhou Coastal Cogeneration Power Plant	Jiangsu		13	?	1995		Coastal Power						29				

Nanhai Power Plant I Co Ltd.	Guangdong		400	?	1995								228				
Yongqi Power Plant				?	1995								27				
Nanhai Jiangnan Power Co. Ltd.	Guangdong			SO	1995								30				
Wuxi-Carec	Jiangsu	O	40		1995		Coastal Power						26				
Rizhao Power	Shandong	C	700	JV1	1996		Siemens, UDI	Germany, Israel	387	25	75/25	347	640	ECAs (85%), Commercial banks (15%)	20	ToP	
Zhuhai	Guangdong	C	1400	JV1	1996	n?	CK/Hutchison	HK	970	45	70/30	804	1229	ECAs (85%), Commercial Banks (15%)	20	Top	0.424
Chengdu II	Sichuan	C	284	JV3	1996			HK	154	51			300				
Houshi	Fujian	C	1200	BOT2	1996		Taisu America Corp.	Taiwan	1278	100	75/25	959	1278		20		0.39
Zhabei Zhadian Power Plant	Shanghai	O	400	JV2-O	1996	Y	GE Capital, MEPC	US	146	30	75/25	127	250	Commercial Banks	15	ToP	
Tangshan Union Energy Small Coal Fired	Hebei	C	100	JV3	1996		Sithe Energy	US	174	100			174				
Hefei Prosperity Lake Power	Anhui	C	116	O1	1996		Lake Power	US	45	70			64				
Chengdu Kaihu Gas Turbine	Sichuan	G	42	G1	1996		AES	US	6	35			18				
Jiaozuo Wan Fan Power Co. Ltd	Henan	C	250	JV3	1996	Y	AES	US	74	70			106				
Wuxi-AES-Carec	Jiangsu	O	63	O2	1996		AES	US	24	55			44				
Nanjing City Power	Jiangsu	O	72	O2	1996		AES	US	12	40			30				
Fuling Aixi Power Co. Ltd.	Sichuan	C	50	SC1	1996		AES	US	22	70			32				
Wuhu Zhaoda Electric Power Development Company	Anhui			?	1996								115				
Henan Power Plant	Henan	C		?	1996												

(continued)

Project Name	Location	Fuel type	Size MW	PPI Category	Construction started	Operation started	Sponsors	Sponsor location (market listing)	FDI US$M	Private equity %	D/E ratio	Foreign debt	Total investment US$ M	Debt sources	PPA length yrs	Contract type, tariff review	Tariff level
Laibin B Power	Guangxi	C	700	BOT1	1997		EDF, GEC, Alsthom	France/UK	610	100	70/30	438	610	ECAs (67%) Commercial Banks (33%)	15	ToP	
Hanfeng Power Plant	Hebei	C	1320	JV2	1997	N	Siemens, North China Power	Germany	503	40	75/25	397	1065	ECAs (85%), Commercial banks (15%)	20	ToP Yuan 0.36/kwh	0.36
Huaibei	Anhui	C	600	JV1	1997		Dynamic Investment Ltd.	HK	86	25	70/30	55	418	Commercial Banks	19		
Weihe	Shaanxi	C	1200	TOT	1997	Y	Chinese Tourist Co.	HK	330	51	68/32	224	646				
Hanshin Power Plant II	Hubei	C	600	JV2	1997		Zhonglian Power Financial Company	HK	329	25	75/25	314	334.6		21		0.397
Beijing Datang Power Plant	North China region		3150	IPO	1997			HK, London (listing)	450	100		124	450				
Zhejiang Southeast Electric Power	Zhejiang		1660	IPO	1997			Shanghai, London (listing)	208	24.2			966				
Hefei No. 2	Anhui	C	700	JV2	1997	N	Singapore Investment Corp	Singapore	305	49	75/25	236	560	ECAs (58%) Commercial (42%)	20	ToP	0.42
Yichang Yihua Power Plant	Hubei			SO	1997		National Power	UK		70							
Yichang CMI Power Development Company Ltd.	Hubei	C	250	JV1	1997		Consolidated Minerals, Inc.	US	178	75	70/30	124	237				

Yangcheng International Power Company	Shanxi	C	2100	JV2	1997	N	AES	US	897	25		398	1600	ECAs			
Nanyang General Light Electric Co Ltd.	Henan	C	250	JV1 or 3	1997		AEP	US					172				
Luannan Coal-Fired Power Plant	Hebei	C	100	LO	1997		Panda	US					155				
Meizhou Wan Phase I	Fujian	C	700	BOT1?	1997		Intergen (70%), Lippo (25%), ADB (5%)	US/Indonesia	655	100	75/25	466	755	Commercial Banks (42%), ADB (34%), ECAs (15%?)	23	ToP	0.57, 0.464
Tong Zhou Meiya Cogeneration Company Ltd.	Jiangsu	C	30	JV	1997	Y	Meiya Power Co Ltd	US					na				
Zunhua Keppel Power Plant (Zhenhua?)	Tianjin	C	100	JV4	1997		Panda	US					70				
Jiaxing Jin Jiang Power Plant	Zhejiang		59	SO	1997								na				
Jiaxing City Coal-Fired Power Plant	Zhejiang	C	2400	SO	1997								1633				
Fuyang Power Plant	Anhui			SO	1997								na				
Changzhou City Combined-Cycle	Jiangsu			SO	1997								20				
Changhong Thermal Power Plant	Sichan			SO	1997								20				
Sichuan Quinwei Dali Power Plant	Sichuan			SO	1997								30				
SJZ Yong Tai Power plant				SO	1997								11				
Small Scale Western Resources Power Plants				SO	1997								na				
Shandong China Power Company	Shandong	C	3220	JV2	1998		EDF/CLP	France/HK	948	49	72/28	627	1935	ECAs, Commercial Banks	20		0.447

(continued)

Project Name	Location	Fuel type	Size MW	PPI Category	Construction started	Operation started	Sponsors	Sponsor location (market listing)	FDI US$M	Private equity %	D/E ratio	Foreign debt	Total investment US$ M	Debt sources	PPA length yrs	Contract type, tariff review	Tariff level
Jiaozuo Danhe	Henan	C	200	JV3	1998		Xinyuan Industry Co. Ltd.	HK	27	60	67/33	18	44.31				0.24
Huhehaote Thermal Power Plant Extending Project	Inner Mongolia	C	400	JV2	1998?		Chaobao Holding Co. Ltd.	HK	164	35	75/25	145	210.20		20		
Wenzhou	Zhejiang	C	600	JV1	1998		Telluride	US	158	40	75/25	125	415		20		0.494
Yiyang	Henan	C	100	JV3	1998			US	85	85	67/33	59	91.34		20		
Shenhua-shenmu Power Plant II	Shaanxi	C	200	TOT	1998		Enserch	US	NA	49	75/25						
Puqi	Hubei	C	600	BOT	1998		Sithe China (75%), Marubeni (25%)	US/Japan	454	100	70/30	300	454	Commercial Banks	20	ToP	0.419
Small China Light and Power Hydro Power Plants		H			1998								1323.818				
Pingdingshan	Henan	C	100	JV1	1999		Fei Ba Lu Er	Germany	47	60	67/33	31	78.07		20		
Fushi Meiya	Guangxi	H	54	H	1999		Meiya Power Co. Ltd.	US					53				

Zuojiang Meiya	Guangxi	H	72	JV	1999	Y	Meiya Power Co. Ltd	US					62				
Enerch-Meishan Energy Thermal Power Plant	Shanghai	C		JV3	1999?		Enerch	US	55	60	65/35	36	92.08		20		
Weigang Meiya	Shanghai	G	50	JV	1999		Meiya Power Co. Ltd	US					50				
Shandong International Power Development Corp.	Shandong			LO	1999								260				
Nantong Meiya	Jiangsu	C	60	SO	1999		Meiya Power Co Ltd.	US					45				
Zhuiiang	Guangdong			SO	1999		Meiya Power Co. Ltd	US					62				
Henan Peak Pacific Power	Henan			SO	1999								28				
Huaji Power	Guangdong				1999								116				
Lin Zhang Peak Pacific	Lin Zhang				1999								24				
Changsha	Hunan	C		BOTI	n	n	National Power	UK		100							
Heilongjiang Electric Power				IPO													

Annex 4

Summary of Benchmarking Study

Introduction

A review of the power, water and transport sectors along with certain financial, legal and regulatory issues relating to PPI was carried out in eight countries: United Kingdom, Australia, Hungary, Brazil, Philippines, Argentina, Malaysia, and Thailand. Information compiled on the PPI sector in each of the countries, were reviewed across the grid of benchmarking criteria to identify a list of pertinent issues that is presented in this report. This Benchmarking Study is presented in two sections. The first section considers certain issues applicable across PPI in all sectors and the second section considers issues specific to each of the power, water and transport sectors

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1 Cross-sector issues

1.1 LEGAL AND REGULATORY ISSUES

1.1.1 Overall PPI Framework

Private investors are attracted to countries where clear frameworks for private investment exist. This allows informed investment decisions to be made and ensures consistency and clarity in the development of PPI projects.

In Brazil and Malaysia, constitutional amendments were made to help facilitate PPI.

Some countries, such as the Philippines and Hungary, have introduced PPI specific legislation which has helped facilitate investment. However, there is no equivalent in China, where the legal framework and regulatory structures are comparatively weak. This contrasts with the more developed regulatory frameworks in the UK and Argentina.

Of the countries which were reviewed, the United Kingdom and Australia have attracted the most private investment per capita. Both countries have stable legal systems, transparent and stable frameworks for investment and have established competitive bidding procedures. In addition, in the UK in particular, there is an established network of independent regulators in the energy, rail transport and water sectors. Argentina has also created industry specific agencies for major utility sectors and established regulating commissions for each agency.

The PPI sector in some countries has benefited from significant legislative measures introduced by host Governments. For example, in Brazil the constitution was amended to open up certain sectors to private investment on a concession basis Likewise, in Malaysia, the Federal Constitution and the Pensions Act were among the laws and regulations which were amended to allow privatization to take place

A different approach was adopted in Hungary and the Philippines where specific PPI legislation has been introduced, intended to establish a legal basis for and provide a clear framework within which private investment can take place in those countries Both the BOT Law in the Philippines and the Concession Law in Hungary contemplate private sector investment in most sections of the economy. The following table sets out the key provisions of the Filipino and Hungarian legislation:

TABLE A 4-1: COMPARISON OF PHILIPPINE AND HUNGARIAN LEGISLATION (SUMMARY)

	HUNGARIAN CONCESSION LAW 1991	FILIPINO ACT AUTHORIZING THE FINANCING CONSTRUCTION, OPERATION AND MAINTENANCE OF INFRASTRUCTURE PROJECTS BY THE PRIVATE SECTOR ("BOT LAW") 1990 (as amended in 1994)
Range of activities	Wide ranging, including roads, passenger transport, telecommunications, public utilities and postal services. Does not include activities in the power sector.	Non-exhaustive, including highways, water supply, transport systems, IT networks, education and health facilities and power generation, transmission and distribution facilities.
Maximum term of concession	35 years (but can be renewed by up to 17 years)	50 years.
Structures	Either the state/local government granting authority must maintain majority ownership or voting rights in the relevant companies or the state/local government entity can concede the right to pursue the relevant activity under a Concession Agreement.	Several structures provided for and described under the legislation including Build-Operate-Transfer, Build-and-Transfer, Build-Lease-Transfer, Contract-Add-and-Operate and Rehabilitate-Own-and-Operate.
Bidding regime	– Public tendering unless national security interests would be prejudiced, – Local Chamber of Commerce to review proposals before bidding; – Invitations to tender must be published nationally at least 30 days before bid deadline and the period for submitting tenders must be at least 60 days; – Tender notice should include details of the concession, including rights retained by the granting authority, financial provisions and conditions leading to early termination, – Other information can be included in the tender notice as required;	Unsolicited proposals are permitted in some circumstances, e.g. when projects include a new concept in technology, although such projects cannot benefit from Government support; Basic tendering procedure established for solicited proposals: – Invitations to tender must be published nationally for three consecutive weeks; – Criteria set out for determining preferred tenderer, e.g. under a B.O.T. scheme, the winning tenderer shall be the compliant tenderer who has submitted "the lowest bid and most favourable terms";

TABLE A 4-1: COMPARISON OF PHILIPPINE AND HUNGARIAN LEGISLATION (SUMMARY) (*Continued.*)

	– Granting authority must evaluate tenders within 90 days of the deadline for submission; – Winning tender is the one offering "most favorable conditions" (i.e. not purely financial); [NB: In Hungary, European Union procurement law may also be relevant in some circumstances as a result of Hungary's Association Agreement with the EU].	– Direct negotiation can take place when there is only one compliant bidder; – Bidders found to be non-compliant have a right of appeal (in respect of which the relevant agency must respond within 45 working days). – Detailed tendering procedures established in the accompanying implementing rules e.g.: – clearly defined minimum design and performance standards and specifications must be set out in the invitation to tender, along with the draft Contract; – pre-qualification requirements are standardized (e.g. public utility facilities must be operated by entities at least 60% Filipino owned, etc.); – financial considerations are established (e.g. eligible financing sources);— – bid security requirements are set out;— – process and criteria for selecting preferred tenderer is established (mechanics and timetable).
Contractual provisions established by the legislation	– A concession company must be established within 90 days of signature of the contract, or the contract will be terminated; – If a concession company does not obtain all required licenses within 6 months of the signature of the contract, the contract will be terminated; – Parties are free to provide that disputes involving foreign counterparties may be referred to international arbitration; – Concession company cannot assign its rights	– Tolls, fees, rentals and charges must escalate by reference to a formula fixed at the outset and related to official Government price indices; – Government will pay compensation on termination following no fault on the part of the Contractor. However, such amounts must be insured against with an accredited insurer and the Contractor must pay the premium.
Regulations on rate of return	Not provided for in the legislation.	"Reasonable rate of return on investments and operating costs" permitted, to reflect the prevailing cost of capital in the domestic and international markets. Limited to 12% per annum in respect of negotiated contracts for public utility projects that are monopolies.
Other notable provisions	Foreign companies expressly given the same rights as domestic companies.	– Public utility facilities must be Filipino owned or owned by a company which is at least 60% Filipino owed; – If Filipino labor skills are available, they must be used; – Projects over a certain financial threshold are entitled to fiscal incentives; – Provision for priority proposed projects to be publicized.

Whilst the introduction of BOT legislation is generally beneficial and well received by private investors, it is important that such laws are well drafted. For example, the Hungarian Concession Law was not clear enough to prevent a successful challenge to the toll rate calculation method which was clearly fixed in the Concession Agreement for the M1-M15 Motorway project.

1.1.2 The Legal Capacity of Granting Authorities

In order to facilitate private sector investment, it is important that public sector granting authorities have the legal power to enter into contracts with the private sector and perform their obligations under such contracts.

The lack of clarity regarding capacity continues to stall investment in the Brazilian water sector and has previously slowed the development in PPI in some sectors in the UK.

The lack of clarity regarding the capacity of municipalities to enter into contracts has resulted in very little private sector investment in the Brazilian water sector (in contrast to other sectors). The Brazilian Constitution appears to establish the municipalities as the relevant authorities (although there is some ambiguity), but the Brazilian States argue that they are the relevant granting authorities because they have been investing in and maintaining most facilities in the water sector since the 1970s. Legislation is likely to be introduced to clarify the issue.

Issues concerning legal capacity have also stalled the development of the PPI sector in the UK. There was doubt regarding the capacity of local authorities and some health authority entities to enter into certain contracts with the private sector. As a result of this, the UK Government introduced specific legislation to clarify the issue and there was a significant increase in levels of investment in PPI in the two years after the legislation was introduced, in comparison to the preceding two-year period. Whilst the change of law was not the only reason for the increased investment, the increase does reflect the understandable importance which private investors attach to legal capacity issues, even when, as in the UK, the lack of capacity is far from certain.

One way in which capacity can be established is through the overall framework legislation discussed above. For example, in the Philippines, the implementing rules provide that contractual arrangements authorized under the BOT Law may be entered into by, amongst others, provincial, city and/or municipal Government entities which are authorized by law or under their charters to undertake infrastructure and/or development projects within their respective jurisdiction.

1.1.3 Project Procurement

Most countries have introduced legislation that establishes a competitive bidding process when assets are to be transferred, or concessions to be granted, to the private sector. However, such legislation does not exist in China. Where frameworks for competitive bidding do exist, they are not always ideal from the private investors' perspective, e.g. Australia and the UK. The former Treasury Taskforce in the UK and the BOT Center in the Philippines both operated as central co-ordination bodies in the PPI process. Standard form documentation has been introduced in some countries, for example, the UK and Thailand, to help develop consistency.

Framework for Competitive Bidding

When operated effectively, a transparent and competitive bidding process can be beneficial in both attracting additional investment and ensuring better value for money for the public sector.

The Brazilian Constitution requires a public bidding process in respect of any contract offered by the Government, individual states, municipalities, state-owned companies, state agencies or any

other public administration institution at any level. In addition, one of the positive features of the Filipino BOT law and the Hungarian Concession Law are that they both attempt to establish a common approach to the bidding process in respect of projects to which they relate. However, both laws allow flexibility and so, in practice, the approach is not always consistent.

The Hungarian and Filipino legislation also set out what bid documentation should include. In the Philippines, the granting authority must set out minimum design standards. It is arguable that where there is scope for innovation, detailed design proposals should be left for the private sector to develop because of the cost involved and also because of the perception that the private sector is more innovative than the public sector. This is certainly the view in the UK where, in considering whether a proposed project is suitable for PPI, the Government takes into account the scope for innovation in designing the infrastructure and operating procedures.

A common complaint amongst private investors in the UK is that the EU procurement regime allows for a negotiated procedure which can lead to public bodies requiring two bidders to develop and negotiate full project and financing documentation before a preferred bidder is selected. The cost involved is viewed by the private sector as unsustainable in the long-term, unless a system for reimbursing the bidding costs of the unsuccessful bidder is introduced. The situation in the UK contrasts with that provided for under the Filipino BOT law which only allows direct negotiation when there is a single bidder remaining.

In Australia where the Federal Government (i.e. national Government) has a less direct involvement in infrastructure development, the Australian Procurement and Construction Council develops nationally consistent approaches to broader procurement policies, processes and practices, in particular in respect of assessing and meeting public sector infrastructure needs, competitive tendering and improving access to Government contracts for small to medium sized enterprises. However, more detailed procurement regimes are designed at state level and relevant guidelines, policy statements and codes of practice vary from state to state across Australia. There are concerns amongst investors because of certain inconsistencies and disparities created by such cross-jurisdictional variability. This leads to strong calls from the industry for common approaches to project definition, presentation of documentation, handling and processing of bids and criteria for assessment through cooperation between the Federal, state and regional Governments.

Management of the Bidding Process

Notwithstanding the existence of a regime for competitive bidding, it is important that that the criteria are transparent and that granting authorities are able to evaluate and assess bids made by the private sector In order to do this, granting authorities need to know what they are looking to achieve at the outset and have the resources and know-how to manage the bidding process. Even in circumstances where there is no competitive tender, the granting authority should fully define its objectives before procuring private sector investment.

China is not alone in having problems in respect of these issues For example, some observers have suggested that one of the less commendable features of the Filipino BOT law is the provision for the private sector to submit unsolicited bids. In these circumstances, the initiative for a project comes from the private sector and the public sector granting authorities are often ill prepared to evaluate and assess the proposals of the private sector bidder. This can lead to a chaotic implementation process. It is noteworthy that there is ongoing discussion in the Philippines as to whether unsolicited bids should continue to be permitted.

Following its experience with the first round of toll road concessions, the Argentinean Government designed simple, straightforward concession terms and bidding criteria for the Buenos Aires access roads in 1992. This contrasted with the bid documentation relating to earlier concessions which required the provision of a substantial amount of data from prospective concessionaires which the granting authority was ill-prepared to evaluate. However, bidders for the Buenos Aires concessions received a comprehensive concession contract detailing the amount and schedule of required investment, the required service level and the risk-sharing arrangements between the

Government and the concessionaire. The only bidding criterion was the lowest toll offered. By using a single, unambiguous criterion, the awarding process became more transparent, and unnecessary complications resulting from tradeoffs between offers on multiple criteria by competing bids were also avoided.

The problems of over burdening central authorities have been seen elsewhere. In Thailand, investments amounting to more than US$25 million must be approved by central Government with investments of more than US$125 million being subject to Cabinet approval. The requirement that the Thai Government must receive a detailed report and analysis of proposed investments leads to a protracted procurement process which increases the costs for bidders and slows down the implementation of projects.

An additional problem has arisen in Thailand as a result of overlapping responsibilities among the various agencies responsible for toll road planning, implementation and regulation. The Department of Highways, as well as each of the Rapid Transit Authority and the State Railway of Thailand, have established overlapping toll road development plans. This has led to the preparation of separate, sometimes competing, toll road projects. Clearly the procurement process would benefit from the establishment of an overriding Government agency or regulatory body, but it is difficult to persuade existing bodies to relinquish their powers. This is not a problem that is unique to Thailand.

Central Coordinating Bodies

In some countries bodies have been set up to help facilitate consistency and an improved procurement process. No perfect model can be identified and, of course, social and political factors must be taken into account when such bodies are established. Nevertheless, the existence of a centralized co-ordinating body can make the procurement process more efficient from the perspective of both the public and the private sector.

In the UK a body call the Treasury Taskforce was established in 1997, principally to help the public sector become better able to procure, manage and implement transactions in partnership with the private sector. In the Philippines, the Coordinating Council for Private Sector Participation (which embraces the Filipino BOT Center) is tasked with co-ordinating, monitoring, facilitating and promoting infrastructure projects in the Philippines. Its form and function is not quite the same as that of the Treasury Taskforce in the UK, but is has nevertheless played an important role in the procurement process in several projects.

The existence of the Treasury Taskforce as a co-ordinating body for the PPI sector within central Government acted as an effective stimulus for the growth of this sector in the UK. It is important to emphasize that, in the UK, local authorities and individual Government departments generally have sufficient resources to be able to evaluate bids and oversee a competitive bidding process. However, the Treasury Taskforce was established to support Government departments and other state entities involved in PPI, in particular by helping them test the viability of significant projects before the procurement process commenced and, thereafter, by providing advice and resources throughout the procurement process.

The Treasury Taskforce helped central Government departments become more understanding of the requirements and expectations of the private sector. It succeeded in doing so because it is staffed by individuals who have been recruited from the private sector but operates at the heart of the public sector, on the side of the granting authorities. This contrasts with the traditional pool of Civil Service recruits in the UK (and indeed most other countries), i.e. well educated individuals who have no commercial training or experience of working in the private sector.

Such was the success of the Treasury Taskforce in reinvigorating the PPI sector in the UK, that, following a review at the end of its two-year life span, it was decided to establish two bodies (Partnerships UK ("PUK") and the Office for Government Commerce ("OGC")), which have taken over the role of the Treasury Taskforce. The OGC is a distinct organization within the UK Government that is intended to provide Government departments with a central resource of procurement skills. It is hoped that the OGC will provide a greater sense of direction in procurement

and promote best practice within the public sector. One of the first tasks of OGC is to establish a common strategic framework within which all Government departments should conduct their procurement activities.

PUK has been established as a separate company within which the UK Government will eventually own only a 51% share. PUK will work in partnership with the public sector (but will charge fees for its services) and will help the public sector ensure it obtains the best possible deals in privately financed investment programs.

There were criticisms of the Treasury Taskforce. For example, it was not sufficiently resourced to be involved in all significant projects in the UK and so its level of involvement and influence varied from transaction to transaction.

The Filipino BOT Center acts as a central point for information dissemination and training. It forms part of the Coordinating Council for Private Sector Participation, which is tasked to coordinate, monitor, facilitate and promote infrastructure projects implemented under the Philippine Infrastructure Privatization Program or the Private Sector Participation Program. The Council is directly attached to the Office of the President and therefore operates at the heart of Government.

The structure of the Council (and, within it, the BOT Center) has recently been reformed. Nevertheless, the functions of the BOT Center remain as follows.

- Policy Advocacy (reviewing sectoral regulatory and policy guidelines and recommending reforms);
- Project Development (assisting implementing agencies and local Government in formulating privatization programs);
- Institution Building (providing education and training support to implementing agencies and local Government);
- Marketing and Promotion (providing input into information and promotional materials relating to PPI); and
- Monitoring (tracking projects and monitoring approaches to PPI in different sectors).

The Center's staff includes many professionals, most with graduate or post-graduate degrees in economics, accounting and business although, like the Treasury Taskforce (and PUK), they do not have the power to bind those departments and agencies which they advise. Nevertheless representatives from the BOT Center often attend meetings to evaluate prospective projects and, subsequently, may sit in on actual contract negotiations with private sector investors. This helps develop consistency in the procurement process, although the BOT Center has neither the resources nor the power to ensure that it is involved in all PPI projects. Nevertheless, it is estimated that the BOT Center has overseen the successful development of over US$20 billion in private sector investment in the last decade.

Standard Form Documentation

The Treasury Taskforce has played an additional role in the UK PPI sector by assisting public bodies in the negotiation of documentation. It has attempted to develop a common approach to risk sharing across the PPI sector. Last year the Treasury Taskforce published detailed guidance on contractual terms relating to privately financed projects. As well as providing specific recommended terms, the guidance contains detailed explanations of common provisions. A common theme is that risks should be taken by the party best able to manage them. The guidance is very ambitious because it is designed to be applied across different sectors.

In Thailand, the Government used model power purchase agreements as part of an initiative to promote private investment in the power sector. Certain contractual provisions became standard across the sector including in relation to the components of tariffs, force majeure and compensation payments arising out of early termination. The initiative was considered to be a success before it was stalled as a result of the East Asian financial crisis. However, existing private investors in the

Thai power sector can take comfort that their contractual positions are generally no worse than those enjoyed by other investors in the same sector. It is important that investors are seen to be treated equally to encourage additional investment in the market.

It is arguable that one way in which bid costs can be reduced and the procurement process shortened is for the granting authority to establish a standard form contract for prospective bidders to price.

1.1.4 Forms of PPI

There are three principal methods by which PPI takes place in the countries which were reviewed: joint ventures, privatization and BOT/concessions. In some circumstances (e.g. power projects), elements of all three methods can be seen.

Joint Ventures

The water sector has seen the most significant number of joint ventures, with there being many more examples than in either the transport or power sectors (although there are examples of construction work being carried out by joint ventures in both these sectors).

Joint venture partners may be either public sector bodies or state owned entities. Private sector entities may be less comfortable entering into contractual relations with the former because there is a perception that the political make up of the public sector joint venture partner may change every few years, reflecting changes in the political environment which may occur following elections. This has been an issue in Hungary where, since the Water Management Act (1995) sewage services can be performed by joint venture companies provided the local municipalities have a majority ownership. There are several examples of projects that have failed to be completed because the private sector has been frustrated in its attempts to establish and agree strong contractual relationships with municipalities

Nevertheless, in the Hungarian water sector there are several examples of private sector involvement in joint venture companies. For example an operating concession in Szeged. This structure is typical in the Hungarian water sector, with the involvement of private investors being limited to operation and maintenance contracts, rather than outright ownership.

A further significant example of PPI through joint venture arrangements can be found in Manila (Philippines), where concessions have been granted to two joint venture private suppliers. This provides an example of PPI by way of a combination of a joint venture and a concession. Each concession is for 25 years and was awarded to separate foreign/Filipino consortia. Metropolitan Manila Waterworks and Sewage System ("MWSS") retains ownership of the fixed assets, but transfers operating and investment responsibility to the private investors. Standards of service and targets for investment are established in the concession agreements

A regulatory office (which, oddly enough, is administratively under MWSS) has been set up as an independent organ to regulate, monitor and enforce the concession agreements

Privatization

Since the 1995 Privatization Act, the Hungarian privatization program is now principally under the auspices of the State Privatization and Holding Company (called "APV"), which is managed by a Board of Directors whose members are appointed by the Government. APV is authorized to exercise the state's ownership rights respect to assets in its portfolio, including the right to sell particular assets or companies.

The Hungarian Government has substantially restructured and privatized the nation's electricity and gas industries. By virtue of a Government resolution issued at the end of 1994 which sets out certain privatization-related decisions, the legal ownership of companies in the electricity sector

(except the nuclear power plant at Paks) was removed from the state. Pursuant to this Government resolution, interests in all gas and electricity suppliers and generating companies have been offered to strategic investors. This approach contrasts with that in the UK where individuals could acquire shares that the Government offered for sale in gas and electricity suppliers and generating companies.

In Thailand, the State Enterprises Corporation Act came into force in December 1999. This law facilitates the privatization of state-owned enterprises, by prescribing a mechanism for the conversion, either in whole or in part, of the state enterprises into limited companies with a share capital. The Prime Minister has overall charge and control of the execution of this Act.

Under the Act, state enterprises may be corporatized and established as one or more separate companies. Conversion can take place over time or can be done in a single process. The Government will guarantee the financial obligations of companies that are established from state enterprises.

Argentina started its privatization process from 1989 and has since privatized over 170 entities through sale or concession. The most notable example is the electricity sector where generation, transmission and distribution activities were separated vertically and sold off under very long concessions. Essentially, this method of privatization is a hybrid of traditional privatization where state assets are sold off irreversibly, and concessions which are discussed further below. The generation sector was broken up into twenty-five business units and sold separately to private owners.

BOT/Concessions

Concession structures are common in Hungary and the Philippines where the PPI specific legislation discussed above has established a framework pursuant to which state assets are transferred to private sector operators on a temporary basis.

In the UK, the Private Finance Initiative ("PFI") and Public Private Partnerships ("PPPs") programs establish schemes under which the private sector delivers services which would traditionally be delivered by the public sector in return for the payment of fees by the state to the private sector operator. For example, a private sector operator will take over the operation and maintenance of a road or the building services requirements of a school or a hospital and will be paid a fee by the State for doing so.

In some PFI/PPP structures in the UK, the private sector operator will pay the state a concession fee for having the right to operate an asset that was formerly owned by the state/local authority entity. This is the structure of the Luton Airport concession under which the private sector operator has taken over the operation and management of London Luton Airport and was under an obligation to build a new passenger terminal.

In Brazil, "privatization" tends to be carried out through concessions. Under Brazilian law, public services must always remain the subject of a concession in some form and for a determined period. Even if the state sells some or all of its interest in a public service company, the purchaser can only acquire the relevant company on a concession basis, so that ultimately the assets will return to state ownership.

In Malaysia, BOT method is used as one form of privatization. It is often used for greenfield projects, in particular, road and highways projects. Under such structure, the private sector would construct the facility using its own funds, operate and maintain the facility for a period and eventually, transfer the facility to the Government at the end of the period. During the concession period, the private sector is allowed to collect tolls from the users of the facility.

1.1.5 Financial Issues

Tariff Approval Regimes

There is no single method for tariff approval and adjustment that stands out as being appropriate across all sectors

Of the countries reviewed, three principal tariff approval regimes can be identified

- Tariffs set by Government departments, agencies or regulators;
- Tariffs set by market forces;
- Tariffs established according to a contract.

Characteristics and examples of each of the above methods are discussed further below.

Tariffs set by Government departments, agencies or regulators. This process for determining tariffs can be seen in the UK water sector as well as the Brazilian energy sector.

In the UK, the water regulator (which is independent from Government) fixes tariff increases based on a formula which relates to increases in inflation. Ten regional water companies that are effectively monopolies within their local areas dominate the water sector. The water regulator uses his powers to fix prices as a means of creating a regime of "comparative competition." Under this regime, water companies are required to provide information on all aspects of their business from water quality to capital expenditure. Comparisons are made between the water companies and pressure is put on those companies who do not compare well by restricting price increases until improved targets are attained.

In Brazil, the national energy authority ("ANEEL") establishes general criteria pursuant to which, in most circumstances, electricity tariffs must be determined The national oil authority ("ANP") has a similar role to ANEEL within the oil sector Both agencies have the right to approve revisions and adjustments to tariffs and applications must be submitted to them before changes to tariff levels can take effect. In some circumstances the agencies will actually set tariff levels.

Tariffs set by market forces. The most common example of tariffs being set by market forces are "pool" pricing methods established in the electricity sector In an emerging market it is difficult to allow tariff levels to be determined by market forces whilst, at the same time, giving private investors confidence with regard to future returns.

In Argentina, since 1992, there has been open access to the wholesale capacity and energy pool for generating facilities, and least-cost centralized dispatch. Transactions between sellers and large customers are normally based on long-term contracts, and bulk power transactions between generators are normally made at spot prices To fulfil their long-term contractual obligations, generators can use their own energy or purchase energy from other generators at freely negotiated prices, or from the pool at spot prices. Generators receive two types of payment from the pool: a payment for energy dispatched and a payment for capacity offered to the grid. They are paid only the market value of their output, i.e. full cost recovery is not guaranteed.

Prices in the UK electricity sector are currently determined under a "pool" system. There have been difficulties with the UK's "pool" system and a new electricity trading regime is set to be introduced in Autumn 2000 which will, in most circumstances, replace the "pool."

In Hungary, a degree of liberalization of the energy market is being established, pending full liberalization prior to actual EU membership.

Prices established according to a contract. It is common to establish initial tariffs and formulae pursuant to which tariff levels are increased in concession agreements. This is particularly true in the transport sector and the table set out below provides some examples of how tariffs are established in road projects in particular countries. It should be noted that, whilst annual tariff increases may be provided for in concession agreements, it is often the case that a regulator or Government department must approval the initial tariff level and the formula pursuant to which such tariff is increased.

TABLE A 4-2: TARIFF APPROVAL REGIMES IN ROAD PROJECTS IN SELECTED COUNTRIES

Country	Tariff Regime	Comments
Philippines	Established in Concession Contract. Revised annually based upon a formula which takes into account inflation, interest rates, exchange rates and the cost of construction materials. Tolls are collected by the operator and are based on usage.	– the revised tolls must be published before they become effective and interested toll road users can challenge the reasonableness of the revised tolls; – if toll road investors happen to receive a windfall, they keep all the upside.
Indonesia	Initial tariff levels require Presidential approval. Concession company proposes tariff adjustments every 2/3 years based on a formula (which is linked to inflation). Tolls are collected by the operator based on usage.	– there is no guarantee that the tariff adjustments every 2/3 years will be approved; – uncertainty over toll approval and adjusted procedures is not attractive to private investors.
United Kingdom	Under the latest projects, operators receive shadow tolls based on availability of the road and usage. Payments are made by the UK Highways Agency to the operator.	– approximately 75% of the tariff is based on availability, therefore the demand risk is limited (and financing is easier); – tolls are not collected directly from road users, although contracts contain provisions for this to occur at a later date at the option of the U.K. Highways Authority (with mechanics that ensure the operator's overall income is not prejudiced).

In the electricity sector, power purchase agreements usually establish a capacity fee (to cover a generator's fixed costs) and an energy fee which escalate according to a formula set out in the agreement. Invariably, regulators must approve the tariff levels. For example, in Hungary, energy payments are set on the basis of recommendations made by the Hungarian Energy Office which are implemented by Ministerial Resolutions, with the Ministry of Economic Affairs having overall control.

Similarly, in the Philippines, whilst the formulae for both the capacity fee and the energy fee in power purchase agreements include mechanisms for periodic adjustments based on fluctuation based on certain indices relating to, inter alia, the peso/foreign currency exchange rate and the export price indices, the Energy Regulatory Board has overall control of pricing in the electricity sector.

Whatever method is used to select and approve tariff levels, it is important that the method is robust against legal challenges. If this is not the case, prospective private investors will be wary. This situation arose in Hungary when the toll rates established in the M1/M15 motorway project were challenged in the courts for being too high. Under the Hungarian Civil Code, a judge can "adjust" a contract in "exceptional" circumstances in which the price is considered disproportionate to the service provided.

Toll road projects developed by the private sector in Thailand have also been hindered by uncertainty regarding toll rate adjustments, the availability of toll-free alternative routes, and other contractual provisions. It seems apparent that such major provisions of concession agreements need to be fully disclosed and discussed from the outset—before the issue becomes a political crisis.

Regulations on Rates of Return

Countries have adopted a variety of approaches to regulate the rates of return available to private investors.

In order to help stimulate private investment in Hungary, the Government promised initial private investors in the energy sector a minimum annual return of 8%, although subsequent investors were not given the same guarantees. Indeed, in 1996 a Hungarian Government resolution required half the amount of any profits of electricity supply companies that exceeded 12% of shareholder funds to be returned to consumers.

In the Philippines, the BOT law establishes a regime for regulating the rate of return permitted under contracts entered into pursuant to that legislation Investors are permitted a "reasonable rate of return" which, in respect of public utility projects which are operating on a monopoly basis, is restricted to an annual rate of return of 12%. In addition, it is not uncommon for the charters of some of the publicly owned corporations that are formed to develop and operate infrastructure facilities to contain ceilings on their rate of return. For example, the charter of MWSS restricts its rates of return to 12% of the aggregate amount of its assets in operation (revalued from time to time) and two months' operating capital. Accordingly, where Filipino PPI projects are structured as a concession by or a joint venture agreement with such type of publicly owned corporations whereby the sponsors are to receive payments directly from the users, the sponsors' return will be indirectly subject to the same ceiling contained in their grantors' or partners' charters unless there are specific exceptions or top-up arrangements

In some of the early transportation projects in the UK (e.g. the Second Severn Bridge Crossing), the rate of return of private investors was restricted by providing for a flexible concession period. The concession period would terminate once the private investor had repaid all its debts and had provided a pre-agreed return on equity to the project sponsors. This approach has only been used in the few examples of transportation projects in the UK (all tunnels and bridges) where the operator is entitled to collect tolls directly from users. Such an approach is not used in current PPI projects in the UK, although in the road transport sector granting authorities are under a broad obligation to secure "value for money" for the public sector.

The UK's National Audit Office ("NAO") has published criteria against which value for money can be assessed during the feasibility stage of PFI projects, to help granting authorities assess whether a project will secure value for money if responsibility is passed to the private sector

In Brazil, as the concept of public service guarantees citizens basic and affordable services in the community, granting authorities must assure citizens the principle of "value for money." In addition, the law provides for the maintenance of the initial economic and financial equilibrium of the concession agreements, i.e., the economic and financial conditions of the parties upon signing must prevail through any future changes, save where changes result as a consequence of the normal risk of the business assumed by the private sector.

Foreign Exchange Issues

Foreign Exchange considerations are clearly more significant when the private investors are not resident in the country where the investment is taking place. Investors will be keen to ensure that they can receive dividends and make repayments under loan agreements in a straightforward manner. Some countries, such as Hungary, have introduced legislation to provide safeguards for private investors.

Some countries have established favourable regimes with respect to foreign exchange regulations. For example, in Hungary, in addition to a series of bi-lateral investment treaties, the Foreign

Investment Act provides that any entitlement of a foreign investor to after-tax profit, dividends, royalties, fees, proceeds of sale of shares or quotas, proceeds in the net assets of the company upon liquidation after discharging its liabilities, or consideration for the transfer of shares, may be freely transferred abroad by the foreign investor in the currency in which the original investment was made (provided sufficient cash is available to be repatriated). Indeed, Hungarian foreign exchange policy is generally considered to be compliant with standards established by the International Monetary Fund and the Organization for Economic Corporation and Development—there are no onerous foreign exchange requirements and no known instances of delay in repatriation. This creates an attractive regime for foreign investors.

Other countries have more stringent registration and approval requirements. For example, in the Philippines, foreign investments must be properly registered with Bangko Sentral ng Pilipinas ("BSP") to ensure that the investor will be entitled to full and immediate repatriation of capital and remittance of earnings. Once registration with BSP has occurred, foreign currency loans can be serviced by foreign exchange funds available within the Filipino banking system.

The Foreign Exchange regulations in Brazil are more complex (and therefore less attractive to perspective private investors). All foreign capital being introduced into Brazil must be registered with the Banco Central do Brasil ("Bacen") (i.e. the initial procedure is not dissimilar to that in the Philippines). However, in order to repatriate capital, approval must be obtained from Bacen within 30 days of the proposed repatriation. The transaction can only proceed with a certificate of approval provided by Bacen.

1.1.6 Project Implementation: The Period After the Preferred Bidder is Selected

In the Philippines an organization has been establishment to help investors through the implementation process. In some other countries, such as the UK, other approaches have been adopted to make the implementation process ore efficient In Australia, Invest Australia provides assistance to certain qualifying projects and provides for a co-ordinated implementation process.

The approval process in Thailand is particularly tiresome for private investors with a significant amount of approvals required from a variety of bodies who all have their own agendas to satisfy. Often private investors have found that Thai public agencies have overlapping responsibilities.

In Brazil, whilst fewer consents and authorizations tend to be required in comparison with Thailand, the legislation which needs to be complied with by successful bidders is diverse and private investors must spend time ensuring that all relevant statutes and regulations have been complied with. This is in part a consequence of the structure of Brazilian Government which provides significant legislative powers at both national and regional (state) level.

In the Philippines, a body called the One Stop Action Center ("OSAC") has been established to help private investors understand the process of obtaining consents and permits. Under one physical location, the OSAC houses different Government agency representatives tasked to accept and process investment applications. The representatives have the authority to act on all investment matters under their jurisdiction—this is significant in ensuring the effectiveness of the OSAC. Therefore, the OSAC allows the investor to get a clear view of the consent process so that this aspect of the implementation phase of a project can be managed more efficiently.

In Australia, the Federal Government, through Invest Australia, provides a Major Projects Facilitation ("MPF") service to investors with advice and information on requirements for relevant Federal approvals and facilitation of investment projects granted MPF status. A project is eligible to be granted MPF status if it involves a total capital expenditure of over $A50 million, requires Federal Government approval to progress and if the prospective developer can demonstrate the project's commercial viability and readiness to proceed through the approval process.

If MPF status is granted to a project, Invest Australia will identify relevant Federal approvals and prepare a system of comprehensive, cross-jurisdictional approval timelines for the completion of the approval processes at all levels of Government. It will also coordinate Federal and State/Territory Government compliance requirements and processes so they progress simultaneously as far as possible to be consistent with commercial requirements. It will identify Government policies or programs which may benefit a project. Suggestions have been made to the Federal Government to make Invest Australia's MPF services available to all trans-jurisdictional projects irrespective of whether or not it satisfies the "national" criteria.

One way in which the consent and authorization process can be simplified is for all relevant consents to be provided under a single statute. This process is used in some Australian states and was used in some of the early transport projects in the UK, with the Government passing legislation which avoided the private sector having to make separate applications to relevant agencies and local authorities (including in relation to the compulsory purchase of land).

1.1.7 Security Issues

In some countries, such as the UK, a full range of security rights can be granted to fund providers, including floating charges. In other countries, such as Thailand, taking security is a more complex process.

Generally, the Benchmark Countries have security laws in place which are more wide reaching and effective than those in China

The security regime in England and Wales (there is a slightly different regime in Scotland) is perceived to be lender friendly. Registration and enforcement are straightforward and there is a well-established regime incorporating a full range of security instruments, including the floating charge. In addition, lenders are able to acquire step-in rights.

In Hungary, it is possible to take security over most assets and reforms have been introduced in recent years to improve the processes for taking and enforcing security. For example, since 1997, floating charges and mortgages over movable property have been possible and, last year, a new registration system for these mortgages was established. Lenders are also able to take security assignments over project contracts.

Most commentators believe that step-in rights are possible under Hungarian Law and they are generally provided to lenders to PPI projects. However, the effectiveness of such rights has not yet been tested before the Hungarian Courts.

Taking security is a little more cumbersome and problematic in the Philippines and Thailand. For example, in the Philippines, the concept of a security assignment of contractual rights is not recognized under Filipino law. However, structures are possible which can provide some comfort to funders. For example, it is quite common to take an absolute assignment of the income stream to PPI projects (e.g. payments made to an IPP under an energy conversion agreement) and a security assignment (which will have to be governed by the relevant foreign law) of the other contractual rights under the principal Philippine project documents.

In Thailand, state-owned property cannot be secured and the concept of a floating charge is not recognized. In addition, it is extremely time consuming, cumbersome and expensive for a syndicate of banks (which include foreign banks) to take a mortgage in Thailand. Each bank will have to exhibit evidence of its own constitutional documents and its power to take the security.

1.2 FINANCING ISSUES

1.2.1 Investor Base

Our research evidenced that the development of the domestic capital market and the enhancement of the local investor base for PPI are convergent.

The following table summarizes the sources of private equity for infrastructure in some of the Benchmark Countries:

TABLE A 4-3: SOURCES OF PRIVATE EQUITY FOR INFRASTRUCTURE

	Foreign (Volatile)	Local (Stable)
Developers (Stable)	Philippines Australia Argentina Thailand	Malaysia Pre-crisis Thailand
Financial Investors (Volatile)		Malaysia Australia

In the Philippines, Argentina and Australia, foreign developers are predominant in PPI, although it is interesting to remark that in Australia, many domestic institutional investors, either banks or funds such as the Infrastructure Trust of Australia, have also been active. The Philippines paid the price of its reliance on foreign investment through generous foreign exchange guarantees.

In Malaysia, on the contrary, investors are predominantly local and comprise conglomerates (such as United Engineers Malaysia/Renong or YTL), Government-related companies (Tenaga), financial institutions and the Employee Provident Fund (EPF). The EPF was created in 1951 in order to establish a social security and pension system for employed workers. The fund receives its contributions through a compulsory savings scheme, both from the insured person and the employer at defined rates (respectively 11% and 12% of payroll). Its total assets amounted to RM 46 billion in 1990, RM 97 billion in 1995 and RM 164 billion in 1999. When the Government had accumulated a financial surplus, it liberalized restrictions on EPF portfolio, whereby amount of funds to be invested in Malaysia Government Securities used to be 70%. The EPF has then invested approximately 14% of its assets in corporate securities. These investments have included infrastructure projects, such as the Sikap Power project, the Kuala Lumpur International Airport, the Light Rail Transit, the YTL power project, the Lumut power project and the North-South Expressway.

Another noticeable initiative in Malaysia was the introduction in 1996 of a special listing category on the KLSE dedicated to infrastructure. The Infrastructure Project Companies (IPC) meeting a profile including total costs, duration and acceptable rate of return could list their vehicles on the KLSE with exemption from the standard listing requirements on profit track records.

In Thailand, since 1994, a US$ 150 million Infrastructure Fund has been operational. It is funded by the Thai Government; USAID and domestic and foreign financial institutions. In the early 1990s the Government also initiated a program of IPOs of its largest utilities. The move was considerable as it contributed to increasing the size of the stock market by 20%. Interestingly, local sponsors (such as Ch. Karnchang or Tanayong) progressively took the lead in infrastructure projects. The eagerness of the banking sector to lend and the booming capital market played a role of major catalysts in this evolution. This came to a halt when the Asian crisis occurred in 1997. Following this, foreign developers have naturally taken over from the financially distressed local conglomerates as the biggest investors.

In Argentina, the US$ 500 million Capital Market Development Backstop Facility (World Bank Loan) aimed at encouraging longer term lending by commercial banks took off in 1995 and was cancelled in 1997 due to the: (i) risk inherent in rigid and narrowly defined products in a

rapidly moving and volatile developing economy, (ii) risk of inadequate management of facility, (iii) risk of weak government ownership and (iv) risk of perverse signaling effects

In Hungary, foreign developers are predominant in PPI Following a successful tender in 1995, strategic foreign investors acquired majority interests in all five of the regional gas distribution companies and minority interests in the six regional electricity companies. Four of the seven electricity generation companies were also sold to foreign investors during 1995/1996 Investors included RWE Energie of Germany, EDF of France and IVO of Finland.

1.3 DOMESTIC LENDING

Argentina and the Philippines provide examples of countries where the banking system has been deregulated without creating additional funds for infrastructure projects.

Malaysia and Thailand are two examples of how a buoyant domestic loan market can be a healthy source for domestic infrastructure projects

Finally, at the extremity of the spectrum, the mature Australian financial system, where the role of the Central Bank is restricted to ensuring its stability only, has proved to be the strongest source of funding infrastructure development requirements.

For the Benchmark Countries it is more usual to observe a direct link between the degree of development of the domestic capital market and the local financing portion of a project.

TABLE A 4-4: LOCAL FINANCING PORTION

Country	Local debt portion
Australia	100%
Malaysia	94%
Thailand	72%
China[1]	34%
Philippines	1%

[1]Local portion of debt financing for power projects with private participation

Today, in Argentina, the Philippines and Thailand, offshore funds continue to provide the core of PPI debt, in the form of MLA, ECA and foreign bank loans. This signals a lack of local capacity to fund PPI.

However, access to local debt in pre-crisis Thailand was easy, making it one of the most prominent Asian countries where financing was predominantly domestic (for example, the power sector was funded for 72% by domestic loans). This ended with the onset of the Asian crisis in 1997, where both the local capital market and the local investor base vanished

At the other end of the spectrum, in Malaysia and Australia, debt for private projects, either developed by local or foreign sponsors, has traditionally come from the domestic market. In Australia, the highly deregulated banking system has satisfied the totality of demand for loans. As foreign banks have gained access to retail banking in as early as the 1980s, it is not surprising to observe that a significant amount of projects domestic debt is sourced from these foreign banks' Australian branches. Long-term financing is generally provided by syndicated loans from Australian and foreign banks

Domestic lending is becoming increasing common in PPI projects in Hungary, although most of the banks involved in PPI have been privatized and some are foreign owned.

1.4 BOND FINANCING

Countries without prominent institutional investors (such as the EPF in Malaysia) seeking long-term stable revenues and deep local bond markets cannot provide locally the suitable funding instruments to infrastructure projects.

In the Philippines and Argentina, projects that were bond financed have resorted to international bond issues.

In the Philippines, international bonds usually enjoy sovereign ratings due to financial guarantees from the Government. For instance, in the case of the US$ 371.5 million Rule 144a high-yield offering for the CE Casecnan greenfield hydroelectric power project, a Performance Undertaking supports the off-taker's obligations and project revenues are denominated in USD Quezon Power US$ 215 million senior notes enjoy the ratings assigned to the Government as privately held off-taker Manila Electric Company ("Meralco") financials are deemed solid.

Newly privatized Argentine utilities have accessed the US bond market when conditions were favorable. New stakeholders have often refinanced their acquisitions through Rule 144a offering.

In Malaysia, Thailand and Australia, the more advanced stage of development of the local bond markets or the existence of strong institutional investors has allowed an effective channeling of domestic savings to infrastructure projects.

In Malaysia, the bond market has been developed through the establishment of Cagamas in 1986, the role of which is to repackage housing loans to improve banks' liquidity. On the investor side, the EPF (see Investor base above) has provided bond financing to a plethora of infrastructure projects. For instance, it subscribed to the 10-year RM 1,500 million bonds issued by the YTL power project (rated AA3 by RAM), constituting almost half of the debt raised by the project.

TABLE A 4-5: COMPARISON OF FOUR ASIAN DOMESTIC BOND MARKETS

	Issues Outstanding as of 1999		
Country	**Government**	**Corporate**	**Largest investors**
China	110	3.5	Banks and financial institutions
Malaysia	50	8.2	Non-banking institutions (EPF, Social Security, etc.)
Philippines	22	1.3	Government financial institutions (Social Security, etc.)
Thailand	25	4.4	Commercial banks

All amounts in billion USD

In Thailand, financing of the Rayong project involved the local private placement of 12-year secured debenture for B 3.5 billion (US$ 140 million) while another US$ 140 million was raised through a US private placement of bonds with a 15-year door to door maturity.

Bond financing of PPI projects in the UK is well established, in particular in respect of projects financed under the UK Government's Private Finance Initiative such as roads and hospitals. The first PFI project to be financed on the bond market was the A1 (M) Motorway Project. In this transaction, the bonds were offered with the benefit of a guarantee provided by a AAA-rated monoline insurance company.

In the UK, the bond market is increasingly being seen as providing a means for refinancing a project following the completion of the construction phase, once construction risk has been removed.

1.5 TRANSPARENCY OF FINANCIAL INFORMATION

Countries where capital markets have been developed up to international norms have enacted laws aimed at protecting individual investors notably by ensuring listed companies provide sufficient and timely (often quarterly or at least semi-annually) information, the quality of which is set by national accounting standards.

It is clear that the listing on transparent stock markets of utilities such as the Manila Electric Power Co in the Philippines or Tenaga Nasional Berhad in Malaysia provide more comfort to investors and lenders.

The example given above of the Quezon power project in the Philippines demonstrates the extent of comfort a financially strong off-taker such as Meralco can bring to lenders by itself without having to rely on further Government guarantees.

2 Sector-specific Issues

2.1 ROAD SECTOR

2.1.1 Extent of Private Participation

While Argentina and Australia have largely privatized existing roads and railways, Southeast Asian countries have generally relied on PPI to finance the development of their infrastructure.

Argentina and Australia undertook programs of privatization of their mature road networks, railways and airport operations and have seen the development of some greenfield projects. Asian countries generally chose to rely on PPI to build the new transport infrastructure required by their faster growth.

In 1991, the Argentine Government, lacking funds to properly maintain and rehabilitate its road network, simultaneously awarded twelve 12-year concessions of inter-city highways via competitive bidding. Bidding documents required the consortia to achieve prescribed service levels within a contracted timeframe and to assume existing investment proposals. The decisive factor for selection was an up-front fee payable to the Government on award of the concession. After 1992, the Government awarded four 22-year concessions, including some greenfield projects, for access roads to Buenos Aires. This time, the sole criterion was the lowest toll offered under serviceability constraints.

Argentina's railway privatization is noteworthy to the extent it separated the freight services and commuter transportation into different concessions. While the freight concessions were supposed to be profitable, the Buenos Aires suburban lines were subsidized The selection factor was the lowest amount of subsidy required

In Australia, privatization of Qantas (1995) and 17 airports (1997) raised US$ 3.3 billion. Significant financing concessions such as infrastructure bonds were key to private sector involvement. Road concessions also raised some US$ 2.4 billion. The principal methods of transfer to the private sector were by way of public flotation and trade sales.

In Southeast Asia, most toll road concessions are BOT. In Malaysia, a project can be identified by the Government in the Highway Network Development Plan or initiated by the private sector. In either case, the concessionaire is usually selected following competitive bidding.

There are many examples of privately run DBFO ("design build finance operate") roads in the UK and the model for these concessions is being copied in several other companies, such as South Africa and the Republic of Ireland. Private sector operators generally acquire an existing road and are required to carry out certain upgrading work or construct new sections of road and are subsequently permitted to operate the road under concessions which are usually 30 years long. In the UK, road operators are paid on the basis of shadow tolls (based on actual usage and availability) and the Government is comfortable that the revenue it must pay the private sector operator based on the shadow tolls will amount to less than the Government would have to pay

were it to carry out the necessary upgrading work and ongoing maintenance over the 30 year period itself.

2.1.2 Greenfield Projects Versus Brownfield Projects

An alternative to the traditional way out of the Government assuming the construction risks is brownfield projects, as experienced in Malaysia and Argentina and promisingly introduced in the Philippines.

In Thailand, greenfield transport projects such as Bangkok Second Stage Expressway and Bangkok Skytrain that have no Government support have not worked out well, due to delays in land acquisition or disputes about toll collection and toll increases. The BERTS project provides another example of ailing cooperation between the public and private sectors.

In Malaysia, Argentina and the Philippines, the so-called brownfield projects have combined toll collection on existing sections of roads with the construction of new sections.

In Malaysia, the North-South Expressway project has been particularly successful because of its highly strategic location, its de facto monopoly and strong Government support (detailed below). Under the 30-year concession, the winning consortium, PLUS, undertook to build a total 500-km in return of being granted the rights to collect tolls on 350-km existing sections.

In Argentina, concessions of access roads to Buenos Aires combined the operation of existing sections with the construction of extensions.

Similarly, developers in the Philippines are using revenue sharing to build highway extensions. For instance, the Metro Manila Skyway franchise includes the upgrading and operation of a section of the Manila South Superhighway and South Luzon Expressway as well as the construction of a 35-km elevated expressway above the existing roads. The Manila North Tollway has also been contemplating a comparable strategy to collect tolls on the North Luzon Expressway to build an extension.

2.1.3 Toll Adjustment

In most countries, toll increases have often been refused for political motives, even when adjustment formulae were provided. As such issues are likely to arise, their resolution can be clearly encompassed in the terms of the concession (Government loans in the North-South Expressway in Malaysia). An alternative to increased subsidies, which reduce the attractiveness of PPI, is to extend the concession period (e.g. Argentina).

In the first round of Argentine toll road concessions, tolls were initially set by the Government and were consistent across all concessions. Toll adjustment formulae used the values of CPI, wholesale price index and the USD exchange rate. However, several factors including public protest and the voiding of the escalation formulae by the Convertibility law led to a 50% toll increase, the cancellation of the up-front fee payable by concessionaires and the provision of a total subsidy of US$ 57 million. Political pressure has since forced the Government to increase subsidies rather than allow toll hikes and extend the concession periods.

In the Philippines, tariff adjustments are automatic, based on a formula, and guaranteed by the Toll Regulatory Board (the regulator of privately financed toll roads).

In Malaysia, though initial fares are stated in the concession agreement, the actual tolls and toll increases are subject to Government approval. It is generally not permitted to index tolls to inflation.

In the Bangkok Second Stage Expressway in Thailand, the toll rates were supposed to be adjusted according to inflation every 5 years. However 1998 toll increase was rejected (allegedly due to ambiguous wording) and rates capped at 10 THB.

2.1.4 Government Support

Government support takes the form of subsidies in Argentina and Korea, additional Government loans in Malaysia, and guaranteed take-over in the Philippines.

Besides purely financial support such as subsidies and guarantees, Government support to transport projects may include land acquisition and undertaking to restrict competition from toll-free facilities.

Projects that try to capitalize on "peripheral" elements such as real estate gains to compensate for the above-mentioned risks tend to fail.

In the first round of concessions in Argentina, no guaranteed return was offered. However, when tolls were reduced by more than 50%, the Government gave up the up-front fee and replaced it with a total annual subsidy of US$ 57 million. In spite of the notable increase in traffic and toll revenues over the 1990s, annual subsidies tripled between 1991 and 1996. As they still remained unpaid in 1998, a new round of negotiation led to the extension of all concessions until 2006.

In Malaysia, the Government provided soft loans and guaranteed compensation for revenue shortfalls in the form of a Government loan due to lower than expected tolls in the North-South Expressway project. The Government is generally responsible for providing the land, while the project company pays the expropriation costs.

In the case of the Metro Manila Skyway in the Philippines, if the Government fails to approve an automatic toll increase within 12 months of the date for such approval, it will take over the project and compensate the investors in respect of the expected net income

In Korea, the Government has launched a SOC program, which provides for ways of channelling initial subsidies, revenue guarantees or foreign exchange risk sharing to private investors developing a project that has been approved for the program.

In Thailand, for the Bangkok Second Stage Expressway, the Expressway and Rapid Transit Authority (ETA) was responsible and has to pay for land acquisition, while the concessionaire has to pay a leasing fee over the life of the concession.

In the Don Muang Tollway project, two accesses to a toll-free local road were supposed to be removed but were not due to political pressure, causing traffic to be less than forecast and the concession's debt to be unserviceable.

The BERTS rail and road project sponsored by Hopewell failed in 1998 with the cancellation of the concession leading to an unresolved dispute about compensation. The upcoming MRTA project is likely to combine Government funding with PPI, with the Government financing the tunneling and the track work, while the private concessionaire provides the rolling stock, signaling and stations equipment, representing around 20% of costs.

2.2 WATER SECTOR

2.2.1 Extent of Private Participation: From Supply of Bulk Water to Privatized Distribution

Australia has only offered PPI contracts for the supply of bulk water. In Argentina and the Philippines the private sector has access to downstream operation through full concessions. Malaysia fostered PPI for bulk water supply for more than a decade, and now public/private partnership is proceeding for downstream operation. Thailand only recently closed a few BOTs in bulk water supply, and is trying to adopt a specific approach for access to downstream operation aimed at resolving a private project difficulties

Australia: Victoria first privatized power generation, then gas supply and transportation. The next block of assets considered for private participation was water and sewage. However, the Government was tight on schedule to allow the process to go smoothly before the general elections in October 1998. Therefore, in order to show a clear picture, it delayed water and sewage sector privatization until after the election. As the Government in place lost the elections and the new Labor Government was not in favor of the privatization, the water and sewage sector remained under state ownership.

The only exception to date is the privatization of Prospect Water in Sydney. Sydney potable water is delivered by 4 private treatment plants under BOOT, of which Prospect Water is by far the largest, providing water to an area representing 85% of Sydney's population. The water is delivered to Sydney Water Corporation, the water distribution company in Sydney owned by the Government. SWC obligations under the Water Filtration Agreement are guaranteed by the New South Wales State (rated AAA).

Thailand has not privatized production, distribution and sale of water on a large-scale basis. Many small projects were awarded with limited scope, without significant changes in water management issues. The only project with a significant size that has closed is the Pathum Thani BOT project awarded in 1995 The concession length is 25 years and the off-taker is PWA. This project is a bulk water supply BOT, however, following financial difficulties faced by the project, water authorities have allowed it restricted access to downstream operations.

Malaysia: BOTs in the water sector have been awarded since the end of the 80s, most of them being bulk water supply arrangements. However, the Government is now focusing on public-private partnerships for the entire water supply network, including distribution, management, billing and collection in Kuala Lumpur. Syabas has been awarded the concession contract to produce, distribute and sell water to consumers starting year 2000 for 30 years. Syabas is composed of the State Government and several BOT operators of water treatment plants for KL. The award to Syabas follows a directive from the Federal Government that companies which have been given the right to undertake treatment of raw water must also be involved in water distribution.

Argentina: One of the earliest and most notable examples of private sector participation in the water sector in developing countries is the 30-year concession for the operation of the water and sewerage services of Buenos Aires. It was awarded in 1992 to Aguas Argentinas SA, a consortium formed by Lyonnaise des Eaux of France, Sociedad Comercial del Plata of Argentina, Compagnie Generale des Eaux of France, Aguas de Barcelona of Spain and Anglian Water of the UK. Among all the PPI options available, it was determined that the long-term concession was the most appropriate. The large need for investment in the water supply and sewage system barred all the options that excluded the obligation of the concessionaire to invest in the system. The French concession model was adopted, whereby a private or mixed enterprise assumes the responsibility for operating, maintaining and investing in the system during a long period of time (more than twenty years), but the assets remain the property of the public sector.

Philippines: The Metropolitan Waterworks and Sewerage System (MWSS) in Manila was privatized on a concession basis. It has been divided in two independent areas: West and East. The concession agreements are performance based contracts, where service obligations for water, availability and pressure are mandated, as well as targets for water and sewerage coverage. The Government has taken financial risks associated with inflation and foreign exchange fluctuations. The concessionaires have assumed risks associated with supply of bulk water (after the tenth anniversary of the concession), is such as water losses, and performance standards on water and wastewater quality. Concessionaires also take risks associated with collection of tariffs and inadequate rates of return in the first ten years of the concession. It would appear that in the long-term the private sector is guaranteed to make a reasonable profit.

From the benchmark we can observe that all five countries discussed above provided PPI contracts in the bulk water supply sector. Additionally most of them have given access to downstream operations to some private investors, with the objective of securing the benefit of private sector

experience in efficient network management. Some countries (Argentina and the Philippines) implemented it through BOT, whereas Malaysia has adopted a step-by-step approach from bulk water supply to public/private partnership in downstream operations. In the case of Thailand, it is the overall environment and the flexibility of water authorities that allowed the Pathum Thani project to have access to distribution.

2.2.2 Wastewater/Sewerage Services

Argentina, the Philippines and Malaysia have experienced PPI in wastewater/sewerage services.

Argentina. The concession awarded to Aguas Argentinas in Buenos Aires includes the improvement of the primary and secondary networks for sewerage and the expansion and rehabilitation of wastewater treatment plants.

Philippines: The MWSS concession in Manila includes sewerage services.

Malaysia: The responsibility of 144 local authorities in wastewater management was privatized in 1993 when it was acquired by Indah Water. The process took place through a national management contract for the wastewater facilities for the area covered by the 144 local authorities. The transfer of any new contracts remains at the discretion of the Federal Government.

In Hungary there has been some private participation through joint ventures providing sewage services. However, Hungarian law provides that such JVs must be majority owned by the local municipalities and so it is common to see the minority private sector investor generating income from its investment through an operating and maintenance contract with the majority-municipality owned JV company.

2.2.3 Off-taker Creditworthiness

In Australia, the Sydney water off-taker has a strong creditworthiness deemed acceptable by the private sector. In Thailand, the poor off-taker creditworthiness on a BOT project was solved by giving limited access to downstream operations.

Australia: To a certain extent, Australia has adopted the same PPI approach as China. However the off-taker, Sydney Water Corporation in contrast to Chinese water utilities operates on a commercial basis, with economically sound retail tariffs. The New South Wales Government, rated AAA, guarantees its contractual obligations under the BOTs. Each of these factors played a significant role in the success of the Prospect Water BOT. China does not offer the same level of comfort

Thailand: Pathum Thani BOT encountered difficulties due to the poor creditworthiness of PWA. In order to make the concession economically viable, the concessionaire was permitted restricted access to distribution. This flexibility from the water authority to offer downstream revenues to the Pathum Thani project eased the credit issue, but demonstrated the limitation of the BOT concept as implemented so far in Thailand.

2.2.4 Efficiency of Privatized Networks (tariff, non-revenue water rate, . . .)

Vertically privatized networks, in Manila and Buenos Aires experienced a sharp efficiency increase through tariff reductions and non-revenue water lowering. The contracts are performance based and include coverage ratio objectives and facilities improvement programs.

Philippines: Before privatization, MWSS in Manila had faced several operational deficiencies. Non-revenue water was as high as 60%. About 80% of these losses were estimated to be the result of

leakage. Following the award of the concessions, the retail tariff has been cut by 50% to 75% and non-revenue water is expected to be cut by similar amounts. The most recent Medium Term Development Plan aims to increase the percentage of the Filipino population with potable water from 78% to 90% by 2004.

Argentina: The retail tariff was cut by 27% following the privatization which involved a competitive bidding and non-revenue water is expected to gradually decrease from 45% to 25% over the concession period.

2.2.5 Size of Projects

Successful BOTs with foreign investors are based on large projects as:

- Manila Water and Maynilad Water in the Philippines,
- Aguas Argentinas in Argentina,
- Pathum Thani in Thailand,
- Prospect Water in Australia,
- and Kuala Lumpur in Malaysia where the network is to be privatized.

2.3 POWER SECTOR

2.3.1 Offtaker Creditworthiness

In Thailand and Malaysia, investors sign PPAs with the national utility.

- Electricity Generating Authority of Thailand ("EGAT"): Rated A-/Negative for local currency and BBB- Stable for foreign currency by Standard and Poor's.

  In Thailand EGAT is the state generating and transmission company, and currently generates or purchases nearly 100% of the power consumed in the country. It is the largest generator in Thailand owning 15,357 MW of capacity.
- Tenaga Nasional Berhad ("Tenaga"): rated BBB/Stable for local currency and BBB-/Stable for foreign currency, listed on the Kuala Lumpur Stock Exchange.

  In Malaysia, Tenaga is the largest electric utility in peninsular Malaysia; accounts for 65% of electricity generating capacity, and provides almost 100% of electric transmission and distribution service. Tenaga was privatized in May 1992 and now it has the third largest market capitalization of companies listed in the Malaysian Stock Exchange. The Government holds 78% of its share capital entitling it to appoint 6 of the 12 directors on Tenaga's board.

In dealing with both EGAT and Tenaga, investors are able to form their views based on open and available financial information. Their investment grade ratings have won them confidence with the investors.

In the Philippines, Manila Electric Company ("Meralco") is also rated by investors as an open and commercially successful counterparty. However National Power Corporation ("Napocor"), which is not perceived as a commercial entity is less widely accepted. Investors have always demanded that their PPAs were backstopped by a Republic of Philippines' guarantee. This adds an excessive burden onto the Government.

2.3.2 Power Purchase Agreement Tariff Formula

The two-part tariff formula used in Thailand, Malaysia and the Philippines provides dispatch flexibility.

In Thailand, The tariff consists of two parts with the base tariff augmented by an automatic adjustment charge. Tariff rates are essentially set by the Government with final authority resting with the National Energy Policy Council and its operating arm, National Energy Policy Office. The base tariff is structured to reflect EGAT's marginal cost of supply, financial requirements, customer load patterns and social and political factors. This base tariff-also called availability payment (capacity portion)- will cover all fixed obligations of the project as well as capital cost recovery, a certain return on equity as well as fixed maintenance and operating costs. The adjustment charge-energy payments-will be made when EGAT dispatches and that will give the return to investors as well as compensate the developer for uncontrollable costs, including fuel expenses and variable operating and maintenance costs.

In the Philippines, the tariff structure in the Energy Conversion Agreements also consists of two parts of capacity and energy payments including a mechanism for periodic adjustments based on movements in foreign exchange and consumer price indices.

In Malaysia, the tariff regime is also very transparent with the Government allowing Tenaga to effectively pass through all costs; including power purchase cost, to consumers. This is currently under review but any revision to the existing regime is not expected to damage Tenaga's position as a publicly listed and for that matter commercially driven utility company.

In Hungary, wholesale energy tariffs are based on capacity charges and energy fees and allow for annual increases to reflect fuel costs and inflation.

2.3.3 Market Risks Allocation

In Argentina and Australia (State of Victoria) a complete unbundling of the power sector has resulted in fair competition among investors as everybody now "plays" in a market economy. The Government plays the regulatory role.

In Argentina the privatization program was inspired after Chile's program, which opened access to a wholesale market and cost-based dispatch with some improvements. The Argentine Electricity Act of 1992 split the electricity industry into generation, transmission and distribution sectors, which are coordinated by a dispatch system, the Sistema Interconectado Nacional.

Between April 1992 and June 1995, over 25 state-operated power companies were privatized, essentially becoming independent power producers. 30-year concessions were awarded for hydroelectric plants, while thermal plants were sold off. Access to the wholesale electricity market is guaranteed by law to promote competition between independent power producers. Regulated monopolistic transmission companies (one high-tension transporter (Transener) and six regional lower-tension transporters) must provide access to power generators against a toll fee and are precluded from selling or generating power.

Distribution companies, most of which have been privatized, are regional monopolies within concession areas and buy electricity from the national grid or contracted producers.

With the vertical deregulation, there is no PPA related obligation on the Government's part as investors operate in a freely competitive (power pool) environment, bearing the full market risk. The factors that have contributed to foster foreign investment into the privatization of the Argentine electricity industry comprise its stable political climate, the Government commitment to its economic reforms and the large growth forecasts for power consumption. Another reason resided in the expectation of similar opportunities in other markets to be deregulated.

In a similar fashion, the State of Victoria, Australia, has created the leading private power market in Australia. The privatization process went vertically from dedicated mines to generators, the transmission grid and retailing businesses in both ownership and operation.

Reports by the Victorian Office of the Regulator General have concluded that following the privatization of the Victorian electricity industry its performance had improved significantly from the consumer point of view. The private electricity market in Victoria is now amongst the most intensely competitive in the world.

2.3.4 Extent of Private Participation

The power sector is 100% held by private investors in Argentina and State of Victoria, Australia. In Malaysia, Thailand and the Philippines, unbundling of this sector is a common objective by all the Governments with some progress already made e.g. sale of EGCO.

In Australia: through the 1990s, there has been a marked increase in global privatizations.

In Argentina, which is not OECD, a complete vertical privatization of the electricity industry in the last decade has met with just as much success as the approach of the Government was professional and the investors were bullish about the growth in the power market.

In Malaysia, there has been an ongoing discussion of industry deregulation. In anticipation of this Tenaga has since last year begun to unbundle its vertically integrated operations into generation, transmission and distribution segments This is expected to help determine a value for its separate divisions and maximize the proceeds of future asset sales. The deregulation process may take up to several more years and Tenaga's role would possibly evolve into a major participant in generation (owning less than the current 65%), a monopoly in transmission and a dominant player in distribution.

In Thailand, privatization efforts have been underway for almost a decade. The first step was the creation of EGCO as a wholly owned generating subsidiary of EGAT in 1992. Privatization has proceeded slowly due to labour objections.

The power sector (distribution, generation and transmission) is 100% held by private investors in the UK. In Hungary, distribution and non-nuclear generation is predominately privately owned, but the state/state owned companies continue to own the distribution network and the nuclear power station at Paks which accounts for more than 40% of electricity produced in Hung

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Infrastructure has played a major role in China's rapid development. Over the past decade the road network expanded by more than 40 percent, water production grew by more than 50 percent, and China has become the world's second largest energy producer. However, foreign direct investment in infrastructure accounts for a small share of foreign direct investment flows and for only about 10 percent of total investment in infrastructure.

Meeting the demand for cheaper, more reliable, and more efficient infrastructure services will require more than $75 billion a year in infrastructure investment over the next decade. Increasing the participation of the private sector—domestic and foreign—is an obvious policy option. Well-designed public-private partnerships can reduce the fiscal burden on public agencies and improve the targeting of subsidies to poor people, students, the elderly, and other disadvantaged groups.

This report seeks to improve China's approach to private participation in infrastructure. It also compares China's experiences with those of other countries, providing legal, regulatory, and financial framework recommendations as well as sector-specific suggestions.

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