

PROCUREMENT PROTOCOLS FOR PUBLIC-PRIVATE PARTNERED PROJECTS

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ABSTRACT: Infrastructure megaprojects have often failed to meet original stakeholder expectations in both “pure” free markets and totally central-planned economies. Such failures provide the rationale for public-private partnerships (PPPs) that synergize both public and private strengths. Build-operate-transfer (BOT) type schemes are a popular type of PPP. They improve project procurement environments by changing traditionally adversarial scenarios to partnerships that integrate finance, design, construction, and operation. Many countries are still inexperienced in the complexities and implications of PPPs. The growing body of multi-country experiences in this domain needs to be tapped through comparison and benchmarking. Various kinds of BOT-type infrastructure developments in both developed and developing countries are compared in this paper to identify strengths from successful approaches and to draw lessons from less successful or abortive projects. Particular examples include toll roads in the United States, the Private Finance Initiative in the United Kingdom, and BOT and its variants in China. The experiences derived and lessons drawn are expected to improve the procurement protocols of public clients in future partnered infrastructure projects.

INTRODUCTION AND BACKGROUND

There is a worldwide trend toward public-private partnerships (PPPs) in public infrastructure development, aiming to generate greater efficiencies and synergies, increased revenues and reduced deficits/debts, quicker market development, faster foreign investments, and increased competition. PPP scenarios are promoted to overcome both market failure and government failure. Market failure—indicated mainly by breakdowns, significant inefficiencies, and inequities in the distribution of market outcomes—necessitates governmental intervention through legal and other regulatory means. On the other hand, government failure—in terms of slow and ineffective decision making, derived externalities, unworkable organizational and institutional frameworks, lack of competition, monopoly, allocative inefficiency, and dysfunction between output and payment—provides a rationale for private involvement (Walsh 1995; Mustafa 1999). Miller (1999) concluded that neither a purely public nor a purely private approach to infrastructure provision has proven to be sustainable in either the developed or the developing world. Miller et al. (2000) proceeded to list particular public and private strengths in this regard. Properly formulated PPPs can provide more efficient outcomes than those provided by either the public or the private sector alone. The private sector, with its wide range of managerial, commercial, and technical skills, spurred on by the profit motive and unencumbered by layers of bureaucracy, can reputedly perform certain tasks more efficiently than the government, thereby offering potentially huge benefits to the public. Therefore, complex public-private relationships and the environment in which they interact should be further examined to synergize both public and private strengths for an overall “win-win” result reflecting divergent objectives.

Many types of PPPs have been adopted, among which “limited term privatization,” or the build-operate-transfer (BOT) type project procurement route, is a popular vehicle. The term BOT has generated a string of related acronyms that reflect

variations: buy-build-operate (BBO), build-lease-transfer (BLT), build-own-operate (BOO), build-own-operate-maintain (BOOM), build-own-operate-transfer (BOOT), build-transfer (BT), build-transfer-operate (BTO), design-build-finance-operate (DBFO), design-build-operate-maintain (DBOM), develop-operate-transfer (DOT), lease-develop-operate (LDO), rehabilitate-own-operate (ROO), rehabilitate-operate-transfer (ROT), and transfer-own-transfer (TOT). Parallel approaches include toll roads under the Intermodal Surface Transportation Efficiency Act (ISTEA) in the United States and the Private Finance Initiative (PFI) in the United Kingdom. Infrastructure procured through such BOT-type protocols in different countries include roads, bridges, ports, airports, and railways in the transportation sector; power, telecommunication, water supply, and waste disposal systems in the utilities sector; and schools, hotels, hospitals, military facilities, and prisons.

However, privatization involves political as well as economic dimensions. Many prerequisites have to be met for successful PPPs. Rapid infrastructure growth has been experienced in Asia since the 1980s, but the progress in implementing non-recourse or limited-recourse financing (particularly through BOT) in this region is rather slow. Even in Turkey, where the term BOT was coined in the 1980s, it took over a decade before the first BOT project actually commenced. Potential pitfalls and traps may retard BOT-type schemes. For example, problems had been encountered in the Second Stage Expressway System and the Don Muang Tollway in Thailand because of political instability (Ogunlana 1997) and in some highway projects in Washington and Arizona because of strong public opposition (Levy 1996).

Evidently, there is a need to summarize multi-country experiences and draw lessons from strengths and weaknesses in various PPPs. “Good” practices in relevant legislative, financial, environmental, technological, organizational, and managerial initiatives should be benchmarked to identify critical factors for overall project success. This paper examines such practices in both developed countries (e.g., the U.S.’s ISTEA and the U.K.’s PFI) and developing countries (e.g., BOT and its variants in China). An overall international literature review was followed by specific examination of project documents of BOT projects in Hong Kong and mainland China. In addition, expert opinions were solicited from both public and private sectors by interviews and correspondence with both researchers and practitioners in different countries. Lessons derived and conclusions drawn from this consolidated study are expected to facilitate better practices in future PPPs in general.

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PFI IN UNITED KINGDOM

Origin and Underlying Conceptualization of PFI

The United Kingdom was a pioneer in the privatization of public works and services (e.g., telecommunications and rail transport projects). Cohosting with France the world's most costly BOT project, the Channel Tunnel, the United Kingdom has forged further forward in innovative PPPs within its PFI program. The PFI was launched in late 1992 as a policy framework to enable the provision of public works and services by the private sector. Since then it has been an option open to the central government to procure facilities and services without undue immediate effects on its borrowing requirements [Construction Industry Council (CIC) 1998]. The PFI essentially uses the concept of BOT in introducing private capital and expertise into the provision of public works and services.

Treasury Task Force

In September 1997, the HM Treasury established a new task force (including a project team and a policy team) to take over the role of the former Private Finance Panel. The project team deploys PFI experts from the private sector to support individual departments and agencies on significant transactions of the PFI to ensure high quality proposals, reduce bidding costs, and maximize the chances of "good deals getting done," the project team will "sign off on" the commercial viability of significant projects before the procurement process commences and then monitor their progress. The government envisaged that, through recruitment, training, on-the-job experience, and dissemination of "best" practices, individual departments and agencies would gradually develop their own skills and competencies in PFI procurement processes in general and commercial transaction skills in particular. As department skills strengthen, the role of the project team will decline until its eventual withdrawal (*Partnership* 1997).

The policy team continues its ongoing responsibility for the rules governing the PFI (i.e., to develop and publish "standardized" models for key procurement stages by drawing together common principles of best practices and helping relevant departments to establish packages of model documentation and ways of doing business based on accumulated experience). In addition to publishing guidelines, the treasury task force also set up a dedicated library containing all keynote PFI documentation, as an initial reference point for all PFI practitioners. Over time, wide dissemination of best practice should significantly reduce both costs and time taken in negotiating transactions. The policy team maintains active liaison with the private sector to ensure that policy is constantly up to date and in line with the experience of PFI practitioners (*Partnership* 1997).

PFI Guidance Documents

The Private Finance Panel and the treasury task force have published a series of guidance documents that provide advice on best practice drawn from practical experience of PFI projects. For example, the following were issued in 1996 and 1997: (1) *Private Finance Initiative: Guidelines for Smoothing the Procurement Process*; (2) *Five Steps to the Appointment of Advisers to PFI Projects*; (3) *Transferability of Equity*; (4) *Writing an Output Specification*; (5) *Basic Contractual Terms*; (6) *Risk and Reward in PFI Contracts*; (7) *Further Contractual Issues*; (8) *A Step-by-Step Guide to the PFI Procurement Process*; (9) *Policy Statement No. 1: PFI and Public Expenditure Allocations*; (10) *PFI Technical Note No. 1: How to Account for PFI Transactions*; (11) *Policy Statement: Public Sector Comparators and Value for Money*; and (12) *Partnership for Prosperity*.

Broad Types of PFI Projects

The PFI transforms government units from being financiers, owners, and operators of facilities into purchasers of services from the private sector. Public clients pay the private sector only on delivery of required services that meet specified quality standards. There are two basic types of transactions. One is through the DBFO scheme for financially freestanding projects, whereby private developers recover their costs completely through direct charges at commercial rates to project users. The second type involves a joint venture (JV), whereby project costs are met partially by charges to end users and partially by governmental subsidies for external social and economic benefits not reflected in project cash flows.

A number of projects have been successfully developed through the PFI. For example, the average cost saving for the first eight DBFO roads was 15%; the Bridgend and Fazakerley prison projects would yield savings of >10%; the replacement for the National Insurance Recording System was estimated to cost 60% less than an equivalent public sector development; and the Home Office's Immigration Casework information technology (IT) project was expected to generate productivity improvements of at least 40% (*Partnership* 1997). Table 1 shows some examples of PFI projects.

Some Observations on PFI

A broad spectrum of PFI projects has been initiated since 1992 with an equally wide range of results. The HM Treasury (*Competition* 1993, 1994) issued a consultation note in September 1993 to seek comments from the construction and financial communities on how to stimulate private sector involvement and innovation, and published the results in March 1994. A number of respondents suggested a two-stage bidding process as one aspect of good practice. The first stage shortlists a maximum of three to four respondents through assessment of their outline proposals. The second stage deals with detailed costs and design specifications. It was maintained that firm governmental commitments are essential for the concessionaire to provide the most competitive proposal.

It was also found that the following has emerged as a good practice in land acquisition for DBFO roads: A developer negotiates directly with the property owner, establishes a lump sum price for the property involved, and then the government consummates the deal. The lump sum acquisition price is converted into an annual rental fee that the developer will pay during the concession period.

Shadow tolls have been used in DBFO roads. In such arrangements, tolls are not collected from individual vehicles as they enter or exit the highway. Instead the government pays tolls based on the actual number of vehicles using the roads, which is counted by a special device. Critics of this system claim that the government would ultimately pay more because users act as though the road were a freeway as they do not pay tolls themselves. Advocates maintain that shadow tolls facilitate traffic and encourage developers to provide desirable highways to attract users and thus increase revenues needed to sustain the projects.

Roberts (1999) observed PFI advantages in encouraging a valuable awareness of the total project life cycle, lateral thinking, partnering working environment, breaking down of traditional barriers, and that the public client does not have to start payment for the assets until they are producing a flow of services that meet the contracted standards. Disadvantages were also identified: the need to check and recheck criteria and even the negotiation process itself can be costly (particularly to bidders) and time consuming. Birnie (1998) confirmed that tender costs for PFI projects are much higher than traditional projects, with tender costs ranging from 0.48 to

TABLE 1. Cross Section of PFI Projects

Project name	Contract cost	Contract/ concession period (years)	Contract award time	Remarks
First eight DBFO roads	£563 (U.S. \$863) million	30	Before 1994	First eight DBFO roads, totaling 362 mi (582 km) in length, are all in operation; average public cost saving was 15%
Docklands—Lewisham Light Railway extension	£200 (U.S. \$313) million	24.5	October 1996	Extending railway by 4.2 km from Island Gardens to Lewisham, creating five new stations and two replacement stations; expected to open in 2000; design-build-finance-maintain scheme was adopted
Employment Services/ Electronic Data Systems IT partnership	£0.5 (U.S. \$0.82) billion over 10 years	BOO process	May 1998	Under BOO partnership, Electronic Data Systems will deliver IT services to Employment Services through network of 1,000 job centers and its 35,000 staff; public saving of 25% was estimated
Colfox school, Dorset	£2.2 (U.S. \$3.61) million/year over 30 years	30	November 1997	This is first PFI school project; project company would provide services over 30-year period, by means of DBFO process, of new 1,060-place school, including catering, cleaning, buildings and grounds maintenance, security, and administrative IT service; 2% public saving was estimated
Bridgend and Fazakerley prisons	Not available	25	December 1995	600-place Category B prison at Fazakerley and 800-place Category B prison at Bridgend were first training prisons procured through design-construct-manage-finance scheme; public saving of 10% was estimated
Lowdham Grange prison services	£130 (U.S. \$203) million over 30 years	30	November 1996	500-place Category B training prison was third design-construct-manage-finance contract of custodial services; a public saving of 14% was estimated
Medium support helicopter aircrew training facility	£275 (U.S. \$451) million over 20 years	40	October 1997	This is first government-owned/contractor-operated facility in defense sector; project provides comprehensive simulator and classroom based aircrew training for support helicopter fleet; partial training service was scheduled to be available in summer of 1999 and full service from mid-2001; public saving of 15–20% was estimated

0.62% of total project costs, as compared to 0.18–0.32% for design/build projects and 0.04–0.15% for traditional projects (Kumaraswamy and Zhang 2001). Although most respondents thought partial reimbursement of tendering costs in certain cases would encourage competition, a number of respondents (particularly from the public sector) held that reimbursement would have a minimal or even a negative impact and some respondents (including a few in the private sector) believed that it could even lead to poor quality bids.

The PFI had experienced slow progress mainly because of procedural and legal complexities. In May 1997, Malcolm Bates, a senior industrialist, was asked to identify the obstacles hindering successful PFI projects and to make specific proposals to streamline the whole process. Twenty-nine specific recommendations were made concerning institutional restructuring, improving the PFI process, learning lessons, and measures to reduce bidding costs (Bates 1997). Although these recommendations relate better to U.K. scenarios, both these and the experiences highlighted in the foregoing sections can be profitably drawn upon in formulating “better” practice in future PPPs.

PPP IN U.S. TRANSPORTATION PROJECTS

ISTEA

Highway infrastructure in the United States has mostly been financed by the Highway Trust Fund, on a system combining 90% federal participation with 10% state participation. However, this fund is far too inadequate for the maintenance, repair, and expansion of already severely neglected infrastructure systems and for new construction. Alternative financing instruments were thus explored. In 1991, the federal government implemented the ISTEA, thereby creating a framework for PPPs in toll roads. The ISTEA allows for various procurement models, including BOT, BOO, BBO, and LDO. In addition, the ISTEA requires individual states to pass their own enabling legislation for better implementation.

Recycling Funds

The ISTEA reflects the federal government’s initiative and support for PPPs. It allows the combination of federal, state, and private-sector funds in highway PPPs and expands project eligibility for such schemes. For example, ISTEA allows states to use federal funds to pay up to 50% of the costs for building or expanding a non-interstate toll facility. The federal fund component need not be returned. After receiving this fund, individual states may provide matching funds to a revolving loan fund agency, which in turn lends the money to a toll project and receives loan repayments to make further loans to new projects. They may also provide these funds as construction grants to act as seed money to encourage private-sector involvement.

Toll Roads under ISTEA

Various states procure toll roads under the ISTEA program. For example, the Dulles Greenway in Virginia; the Santa Ana Viaduct Express (SR-57), Mid-State Tollway (I-80), San Miguel Mountain Parkway (SR-125), and SR-91 Median Improvement (SR-91) in California; and the Conway Bypass, Sea Islands Expressway, and Southern Connector in South Carolina. The evaluation criteria and ratings used in selecting the winning bids for some of these projects are shown in Table 2.

Determination of Reasonable Returns

One important issue in concession projects is the establishment and adjustment of appropriate toll/tariff levels so that returns to the concessionaire are “reasonable” but not “excessive” compared with the quality of the facilities and services provided. To decide rates of return, California considered risk factors of (1) adverse future policy changes; (2) costs and difficulties in obtaining finance; (3) uncertainty of revenue streams; and (4) long period needed to recover investments. The rates of return had been accordingly set up at 17% for

TABLE 2. Evaluation Criteria and Ratings Used in Some Highway Projects in United States [based on Levy (1996)]

Highway projects	Evaluation criteria	Ratings (points)
(a) Four toll roads in California		
Santa Ana Viaduct Express	Transportation service provided	20
	Degree to which proposal encourages economic prosperity	10
Mid-State Tollway	Degree of local support for project	15
San Miguel Mountain Parkway	Relative ease of proposal implementation	15
SR-91 Median Improvement	Experience/expertise of sponsors and support team	15
	Supports for environmental quality and energy conservation	10
	Degree to which nontoll revenues support proposal costs	5
	Degree of technical innovation displayed in proposal	10
	Supports for achieving civil rights objectives	10
	Highest achievable score	110
(b) Projects in South Carolina		
Conway Bypass	Proposer's qualifications and experience	25
	Project cost and financing arrangements	50
	Project completion time	25
	Highest achievable score	100
Sea Islands Expressway	Proposer's qualifications and experience	20
	Cost effectiveness	40
	Impact on development and environment	20
	Financial proposal	20
	Highest achievable score	100
Southern Connector	Proposer's qualifications and experience	30
	Cost and financing	35
	Proposer's ability to meet project goals	35
	Highest achievable score	100

SR-91, 18.5% for SR-125, 20.25% for SR-57, and 21.25% for the Mid-State Tollway. In Virginia, an "improvement fund" was established. A percentage of tolls that exceeds the amount necessary to enable the operator to meet its obligations and earn a reasonable return must be committed to the fund, which is used for transportation improvement. The rate of return for the Dulles Greenway was established to start at 30% and to reduce to 15% once toll revenues exceed debt service. The rate would later be stepped down to 14% and remain at that level until the end of the 42.5-year concession period (Levy 1996).

BTO versus BOT in California

BTO was reportedly (Levy 1996) preferred over BOT in California because of liability issues. The BTO would keep ownership and thus tort liabilities of the project with the state upon construction completion. Otherwise, prohibitive insurance costs would be borne by the concessionaire to cover various tort liabilities (e.g., highway accidents and related property damage). This would result in higher tolls that would eventually be paid by public users.

Unique Selection Process by South Carolina DOT (SCDOT)

The SCDOT recently initiated an unique selection process (Levy 1996): in its request for proposal, the SCDOT clearly indicates its requirements concerning design, finance, con-

struction, operation, maintenance, and project milestones (including the request for proposal advertisement, preproposal meeting, deadline for proposers to submit written questions, deadline for the SCDOT to respond to these questions, submittal of proposals, presentation of proposals, notification of rankings, and beginning of negotiation for the development agreement). To ensure confidentiality, the tenderer's name is replaced by a letter designation to mask its identity upon receipt of each proposal. A shortlist is initially compiled after reviewing all proposals. Proposal evaluation is performed by a voting (proposal review) committee of four SCDOT employees and one South Carolina Treasury Office employee and a nonvoting group of experts from the fields of financial management, environment, and engineering. A value chart would display each of the short-listed tenderers' scope of work, total project costs, right-of-way acquisition process, maintenance, law enforcement provisions, and toll collection policies. Initial and future costs are included in the chart. Another evaluation chart would list each tenderer's source of revenue, funding required from revenue bonds, toll collections, state obligation bonds, and investment earnings. A third chart would compare cash outlays of each proposal. A fourth chart would address financial risks, where components of each proposal's financial plan dependency are rated in one of four categories: high, medium, medium-high, and very high. An overview tabulation would then be prepared, based on which the SCDOT finally identifies, announces the name of, and then begins negotiations with the preferred bidder. The names of unsuccessful proposers would not be revealed.

BOT TUNNEL PROJECTS IN HONG KONG

Hong Kong, now a Special Administrative Region of China, while formerly a British colony, initiated BOT-based infrastructure development in the late 1960s. Five large BOT tunnel projects have been developed since then. They are the Cross Harbor Tunnel (CHT), Eastern Harbor Crossing, Tate's Cairn Tunnel, Western Harbor Crossing, and Route 3 Country Park Section. The first BOT tunnel, the CHT, successfully completed its 30-year concession period and was smoothly transferred to the government on September 1, 1999. Zhang and Kumaraswamy (2001) reported details of these five projects.

General Features

The principal features of the five BOT tunnel projects are summarized as follows, the fifth feature being one that was developed on the latest two projects:

- A special ordinance is passed for each particular BOT project, as there is no general BOT legislation in Hong Kong.
- The government provides no finance/subsidies, no guarantees on minimum traffic flows/returns, and no guarantee against any future competitive routes.
- The watchdog role of the Independent Commission against Corruption (ICAC) means that the ICAC monitors the whole procurement process to ensure transparent, fair, and noncorrupt competition.
- An independent design checker and works checker are required, at the concessionaire's cost, to ensure quality design and construction.
- A toll adjustment mechanism is in place. Having agreed with the government in advance on the maximum and minimum levels of estimated net revenue (ENR) and a defined number and level of anticipated toll increases (ATIs), the concessionaire may implement an ATI on a designated data provided that the actual net revenue (ANR) is below the maximum ENR. The concessionaire

may also advance an ATI should the ANR fall below the minimum ENR. If the ANR exceeds the maximum ENR, excess revenues are siphoned into a "toll stability fund" that the government may use to defer specified ATIs by subsidizing tolls if necessary.

Transfer and Posttransfer Practices in CHT

The CHT ordinance stipulated that assets of the project should vest in the government and no compensation should be made to the concessionaire upon the expiration of the concession, except that the government would pay reduced value for any machinery/equipment/plant that form part of the approved assets purchased by the concessionaire within the 5 years immediately preceding the expiration.

The government began to prepare for transfer issues in late 1997, 2 years before the scheduled transfer date. The following principal issues were identified and addressed to ensure a smooth transfer: (1) legislation for future management of the CHT; (2) preparation of tender documents for a management-operation-maintenance contract for posttransfer running of the CHT; (3) agreement on the list of assets to be transferred by the concessionaire; (4) following up on the outstanding maintenance works with the concessionaire; and (5) smooth transition of the staff of the concessionaire.

The Road Tunnels (Government Amendment) Ordinance was promulgated on July 22, 1999 (effective as of September 1, 1999) to facilitate operations after the transfer. The Road Tunnels Ordinance enables the imposition by the government of fees and charges for use of the CHT as a public tunnel and empowers the Commissioner for Transport to deal with management, operation, and maintenance issues upon transfer.

After a competitive tendering process, the Hong Kong Tunnels and Highways Management Co. was selected from among six tenderers as the new operator of the CHT. The government and the new operator entered into a 2-year management-operation-maintenance contract in July 1999. Although the ownership of the CHT rests with the government, the Hong Kong Tunnels and Highways Management Co. is required to manage, operate, maintain, and collect tolls on behalf of the government and will be paid a fee for its work through deduction of tolls collected. The government established a team to monitor the performance of the operator. The government has established specific requirements for routine inspection, scheduled maintenance, and repair work. Nonscheduled maintenance and repair work will be paid for separately, but only after prior approval and careful checking by the government.

BOT INITIATIVES IN MAINLAND CHINA

Brief BOT History

Mainland China initiated BOT projects in the 1980s based on a sino-foreign JV model. A negotiated tendering system was used by local (province level) authorities to select a foreign partner to the JV project company, which was later established according to the *Sino-Foreign Equity Joint Venture Law* and the *Sino-Foreign Cooperative Joint Venture Law*.

On August 21, 1995, the then State Planning Commission, Ministry of Power, and Ministry of Communications jointly issued a circular entitled "Circular on Several Issues Concerning the Examination Approval and Administration of Experimental Foreign Funded Concession Projects" (BOT Circular). Comprising nine articles, the BOT Circular sets up the scope of projects to be procured through wholly foreign-funded BOT schemes during the experimental period and prescribes a general framework for the selection, approval, and open tendering process, and the establishment of the wholly foreign-funded BOT project company. A national pilot BOT program was initiated based on this BOT Circular.

Critical issues that need to be addressed in attracting foreign investments in mainland China include (1) the need for a comprehensive regulatory framework that is clear, transparent, and predictable; and (2) the need for bidding procedures, documents, and bid evaluation mechanisms that are efficient, effective, and fair to all the parties concerned ("Technical" 1996). To address these issues, the Chinese government has sought the assistance of international financial institutions and consultants to develop standard documents for the pilot BOT projects. These documents are intended to be used in future BOT projects after fine-tuning. These include a basic prequalification document, tender document, and concession agreement. For example, the United Nations Development Program funded a review of China's regulatory environment and BOT initiatives to date, to assist in the formulation of new national guidelines, regulations, and legislation needed for BOT (Bateson 1997). Also, the Asian Development Bank provided technical assistance to two pilot projects: the Changsha power project and Chengdu water supply project ("Technical" 1996; "Technical" 1997a).

JV BOT Model

A number of transport, water treatment, and power projects have been developed through the JV BOT scheme. Based on negotiated bidding, a JV equity/cooperative project company is established by local and foreign parties. Equities are injected by the local party (in the form of land value and cash) and the foreign party (normally in cash) according to agreed share proportions. The JV company is given the right to build and operate the project for a certain period (10–30 years), after which the equity or interest of the foreign party is transferred to the local party. For example, many toll roads, bridges, and tunnels have been developed by Hong Kong based investors and local entities, with the Hong Kong side taking a 30–75% share in each project (Kam et al. 1998), including the U.S. \$217,000,000 Yan'an Donglu tunnels in Shanghai, with a concession period of 30 years (including construction period) and 50–50% share between the local and the Hong Kong based partners (Zhang et al. 1998). The U.S. \$517,000,000 2 × 350 MW Shajiao B power plant is a good JV BOT example in the power sector, with a 10-year concession period (excluding the construction period).

Wholly Foreign-Funded BOT Model—Laibin B

The 2 × 350 MW Laibin B is a representative power project reflecting issues to be addressed in providing BOT-based power facilities in developing countries. The State Planning Commission approved it as the first pilot BOT project on May 10, 1995. Through an international open tendering process, a consortium comprising the Electricite de France and GEC Alsthom was selected from among six tenderers after short-listing and detailed negotiations against legal, financial, and technical criteria. Wang et al. (1998) discussed this procurement process in some detail. The bidding process and tender package were commended by international sponsors and investors (Barale and Thomas 1998). Appropriate risk allocation and governmental support were of paramount importance to foreign investors and to the success of Laibin B. Wang et al. (1999) and Wang and Tiong (2000) described risk management approaches to the project. Table 3 provides some additional information on supports/guarantees provided by the Chinese government.

BOT Consultants

Chinese public clients usually employ a consultant for the procurement of a particular BOT project. For example, the Bridge of Trust Infrastructure Investment Consulting Co. Ltd.

TABLE 3. Chinese Government's Supports/Guarantees for Laibin B Power Station

Support and guarantee	Description
Legislation and regulation	BOT circular and relevant laws, such as company law, sino-foreign JV law, and wholly foreign funded enterprises law
Political risks	Government assumes risks of approval, revocation, expropriation, sequestration, change in law, political <i>force majeure</i> , land acquisition, and property title
Adverse government actions	Government compensates losses due to its actions including concession termination and other government defaults
Certain <i>force majeure</i>	Government allows project company extension of concession period and provides fund for its debt service, or compensation for equity investments if <i>force majeure</i> causes delay/suspension in operation, or termination of project, according to preset formula
Chinese entities' credit	Government guarantees obligations of Guangxi Construction and Fuel Co. and Guangxi Power Industry Bureau, which enter into Fuel Supply and Transportation Agreement and Power Purchase Agreement with project company, respectively
Foreign exchange	Government agrees to pay Renminbi (RMB)-denominated revenues, taking into account the U.S. dollar-RMB exchange rate, and guarantees conversion and remittance of RMB revenues
Tax incentives	Concessionaire enjoys tax reductions and grace period provided for wholly foreign funded companies by Chinese laws and regulations; concessionaire is allowed to transfer any new tax, duty, customs, fee, or charge, or such increases, to electricity tariff
Land acquisition	Government grants site land for free and exclusive use of concessionaire and provides access roads, transmission lines, and other ancillary facilities; concessionaire is allowed to extend construction or concession period if progress is delayed by archaeological or historical issues; protective costs are borne by government
Support letters	Ministry of Power Industry, State Administration of Exchange Control, and State Development Planning Commission have issued letters endorsing project

was an agent for Laibin B. The consultant acts as a link between governmental authorities and foreign developers. It may represent the local government in many issues including initial planning, preliminary feasibility study, prequalification, tendering, evaluation, negotiation, and performance monitoring in the operation period.

CRITICAL ISSUES FOR PPP PROCUREMENT IMPROVEMENTS

The World Bank (“Special” 1996) provides reasons many partnered infrastructure projects have been held up: wide gaps between public and private sector expectations, lack of clear government objectives and commitment, complex decision making, poorly defined sector policies, inadequate legal/regulatory frameworks, poor risk management, low credibility of government policies, inadequate domestic capital markets, lack of mechanisms to attract long-term finance from private sources at affordable rates, poor transparency, and lack of competition. Coordinated strategies and strong efforts are needed to solve these problems.

Suitable Legal Foundation

The willingness of private enterprises to participate in public concession infrastructure projects depends largely on the local legal environment. Suitable legislation provides a sound foundation for PPPs, based on which developers can structure a contractual vehicle that is compatible with that country’s laws. Many countries have a general PPP or BOT law/regulation, or at least an official guideline (e.g., guidelines for PFI in the United Kingdom, ISTEAs and similar state legislation in the United States, BOT laws in the Philippines and Turkey, BOT/BOO guidelines in Sri Lanka, and BOT circular and provisional measures for project financing in mainland China). Some countries may not have a general BOT law but have a specific ordinance (enabling law) for a particular BOT project, such as in Hong Kong, which had a specific ordinance for each of its five BOT tunnels. Such legislation largely eliminates fears of the private sector concerning many risks, especially political risks such as expropriation, nationalization, change in law, corruption, and approval. Such legal/regulatory frameworks need to be updated with experience and lessons learned over time, as most of the recent PPP scenarios have not yet finally matured because of their relatively short history. Good legislative practices in both developing and developed countries should be incorporated with appropriate modifica-

tions in light of individual specific national/regional characteristics by a country/region considering the enactment of a new PPP law or the updating of an existing one.

On the other hand, overregulation can burden and frustrate PPPs and should be avoided. It is reported that, in the past in the United Kingdom, it took 15 years on average to deliver an operational trunk road from the time the government first considered it; whereas, actual construction took only 2 or 3 years. Many investors were “put off” by the wearisome length of the planning and public inquiry processes (Walker and Smith 1995).

The Asian Development Bank (“Technical” 1997b) pointed out that BOT transactions benefit from strong representation of all parties involved. There were some instances where the underlying project documentation had proved inadequate for a proposed infrastructure project and, as a result, had to be renegotiated with the host government, thus causing delays with consequent cost increases. A number of projects had failed to reach financial closure because of the inability to resolve legal issues. Strong and effective legal inputs from host governments at the beginning of the project cycle would have ameliorated these problems and might have saved time, effort, and costs in these transactions.

Workable Procurement Process

BOT-type arrangements are much more complicated than traditional routes. New challenges arise from markedly increased project variables, much longer time horizons, greater vulnerability to multidimensional external risks (political, legal, economic, financial, technical, and environmental), and multiparty involvement with multiattribute success criteria. Public clients should establish a framework (e.g., *A Step-by-Step Guide to PFI Procurement Process* in the United Kingdom) to provide an overview of the procurement process and to make it clear what appraisal needs to be done and what decisions have to be taken at each stage. The tendering process should minimize tendering costs and thus encourage competition. Obtaining various permits (especially environmental permits) is time-consuming and costly. The government should set up a timetable to assist the winning tenderer in obtaining necessary permits. On the other hand, measures should be taken to ensure quality construction and quality service by the concessionaire. For example, the Hong Kong government requires the concessionaire to employ an independent design checker and an independent works checker during the design

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and construction period. The government also sets up a special team to monitor the performance of the concessionaire and the BOT project during the operation period.

A two-stage tendering process (part competitive and part negotiated) is useful for better tender selection. The whole selection process should be transparent to avoid corruption. A watchdog commission is useful (e.g., the ICAC in Hong Kong) to monitor the procurement process and ensure fair competition.

PPP projects are often delayed because financiers are brought into the negotiations at too late a stage, and they often do not start their detailed consideration of a scheme until commercial terms have been agreed upon. At the preferred bidder stage, the eventual provider may initially expect to fund the contract itself but may then subsequently bring in a financier, after which there could be a delay between the commercial agreement with the provider and the final agreement with the financier. It would facilitate the contractual process if financiers were encouraged to be involved at an earlier stage and even required to do so as part of the initial project agreement.

Coordinating and Supportive Authority

A central high-powered authority such as the U.K. Treasury Task Force, Philippine BOT Center, or Bureau for Infrastructure Development in Sri Lanka is necessary to coordinate and oversee PPP programs. In China, the State Development Planning Commission is in charge of BOT projects. The State Development Planning Commission plays a key role in the national pilot BOT program. For an infrastructure project, objectives may diverge between central and local governments, or among different governmental departments. This authority should thus have adequate powers to coordinate, reconcile conflicts, and address issues that the individual participants are not capable of handling in isolation. In addition, an intermediary organization (for example, the Bridge of Trust in China) can facilitate PPPs by acting as a bridge to effectively link foreign investors with local governmental bodies and public needs.

Infrastructure projects require large financial outlays and long gestation periods. Repayment is through the revenue stream over a long concession period during which various risks may occur and affect the revenue stream. To increase the confidence of the private sector, public financial inputs such as the "recycling funds" allowed under ISTEA on U.S. toll roads will be useful to provide seed capital to attract commercial investments and loans from multiple sources. Once a project becomes commercially viable, the public seed capital can be recovered and reinvested in new projects.

Country-specific and project-specific governmental guarantees and support may also be necessary to manage certain risks that can be better handled by the government, such as changes in law, foreign currency convertibility, corruption, delays in approval of various permits, expropriation, and nationalization, and certain *force majeure* risks, as in examples from the Hong Kong tunnels and Laibin B in China.

Marketability and Affordability

Infrastructure PPPs are only practicable where there are promoters who are willing and able to deliver public required facilities/services under certain risks. Marketability needs to be considered through direct discussions with multiple players in these types of projects (e.g., developers, construction companies, facilities operators and service providers, bankers/financiers/insurers, and consultants) or alternatively by advertisement in government gazettes, newspapers, or business magazines. Affordability remains a key test for prospective projects. The scope needs to be kept within public budget con-

straints. If users (and not the government) pay for a service, the level of tolls or tariffs should be established, taking into account the users' affordability. Otherwise, public and political opposition may be encountered, as in the Second Stage Expressway System and the Don Muang Tollway in Thailand.

Selection of Most Suitable Concessionaire

As the principal participant, the concessionaire plays the paramount role; hence, selection of an appropriate concessionaire is critical to project success. Evaluation methodologies must necessarily compare expected performance levels against the main envisaged project success criteria. This draws in added dimensions related to financial packages and projected operational performance, in addition to mere cost considerations in traditional tenders or both cost and quality levels in design-construct tenders.

Suitable evaluation criteria and their relative weights need to be decided upon for each package (legal, financial, technical, and environmental). Next, appropriate indicators must be derived for the objective evaluation of competing proposals against these package criteria. For example, the financial package may be evaluated using indicators that include internal rates of return, net present value, debt/equity ratio, and composition of long-, medium-, and short-term debts.

Current tender evaluation practices have been studied by (1) Birgonul and Dikmen (1996), who proposed a "synthetic index" to accommodate all parameters affecting selection; (2) Tiong and Alum (1997), who presented an overview of current practices and techniques based on net present value methods, scoring systems, and the Kepner-Tregoe decision-making technique; and (3) Merna and Smith (1996), who proposed a BOOT bid evaluation model based on a matrix point system. In addition, the Sri Lanka *Guidelines on Government Tender Procedure Part II* (1998) identifies five main technical and three main financial evaluation criteria.

There are mainly two proposals to be assessed: financial and technical. The former is usually assigned a much higher weight. For example, in recent BOT tunnel projects in Hong Kong, financial proposals were allocated a 65% weight, and in the Laibin B power station in mainland China, financial aspects were given an 84% weight. Therefore, more diligence should be exercised in analyzing financial aspects. Financial evaluation includes assessing financial strengths, financial arrangements, toll stabilization, and adjustment measures. If toll levels and concession periods are not specified at the outset, these may also enter into the evaluation. Sensitivity analysis is a useful technique used in financial evaluation. It can identify those variables that contribute most to overall financial riskiness and points the decision maker to where major efforts should be directed to effectively control risks.

Technical assessment involves the evaluation of designs and the planned facilities in a life-cycle scenario including environmental impacts. Value engineering/management tools can be deployed to improve benefit/cost profiles of potential technical solutions. These tools are particularly useful in the assessment of unsolicited or alternative technical proposals.

Realigning Public "Mind Sets"

The government's perspective needs to shift from a regulatory stance and the somewhat judgmental role in traditional procurement routes to the proactive, more liberal, and dynamic outlook needed for PPP scenarios. Only then can the best strengths of private enterprises be synergized. Infrastructure had traditionally been provided by the government for free public use. The concept of "users pay" takes time to be fully accepted by the public, particularly when the service provided by the private sector usually costs more than that provided by

governmental agencies because of lack of governmental subsidies. Public opposition can lead to failure of PPPs. Levy (1996) documented a number of toll roads that did not proceed as planned or even went awry in different states in the United States because of strong public opposition based, for example, on a “no toll facility in my backyard” syndrome, as in Washington, although these projects were desperately needed for congestion relief and traffic improvement. Appropriate public relations strategies and activities are needed to win public understanding and support.

CONCLUSIONS

Diverse BOT-type arrangements in infrastructure development have been explored and experimented with, by both developed and developing countries, bringing in many additional facilities that are beyond the public “purse.” In such schemes, design, build, financing, and operational functions are integrated, and the skills and expertise of multiple partners are synergized. Performance-based technical specifications encourage innovative design, concurrent engineering of functions, reengineering of processes, lean construction, avoidance of overspecification (“gold plating”), new materials and techniques, more efficient allocation and proactive management of risks, and more intensive exploitation of assets, for example, with additional revenues generated from the shared use of facilities, creative utilization protocols, and sales of redundant assets.

However, failures of BOT-type projects have occurred in different countries. This is not surprising given the many variables and participants involved and the “learning” phase that they are still experiencing. Recent successes and failures should be studied for procurement improvements in future PPP projects. The rapidly growing body of experience in BOT-type projects is unfortunately widely dispersed, inadequately documented, and rarely analyzed or compared. This is well worth consolidating into a “BOT body of knowledge” that in turn merits in-depth analysis. Codifying this knowledge and comparing good practices that have evolved in more experienced countries and sectors would help to identify and develop best practices. This would also help in the establishment of general laws, regulations, guidelines, and workable procurement frameworks. The structured cross-section of issues and examples presented in this paper is intended to provide both a sound basis and some pertinent pointers toward useful areas for such codification of knowledge, benchmarking of best practices, and development of guidelines and frameworks.

A win-win scenario should be pursued by different project participants from both public and private sectors as well as the ultimate general public users. A suitable balance between too much and too little governmental guarantees/support should be achieved—the former making it too easy for the concessionaire to get the contract at the expense of the public whereas the latter may not attract any competent concessionaires.

Critical success factors for PPPs include a well-established legal system, business-friendly environment, fair and transparent project development system that safeguards the interests and rights of both the public and the private sector, clean administration, open markets and competition, stable and supportive public client, and financially strong, technically competent, and managerially outstanding concessionaire consortium.

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