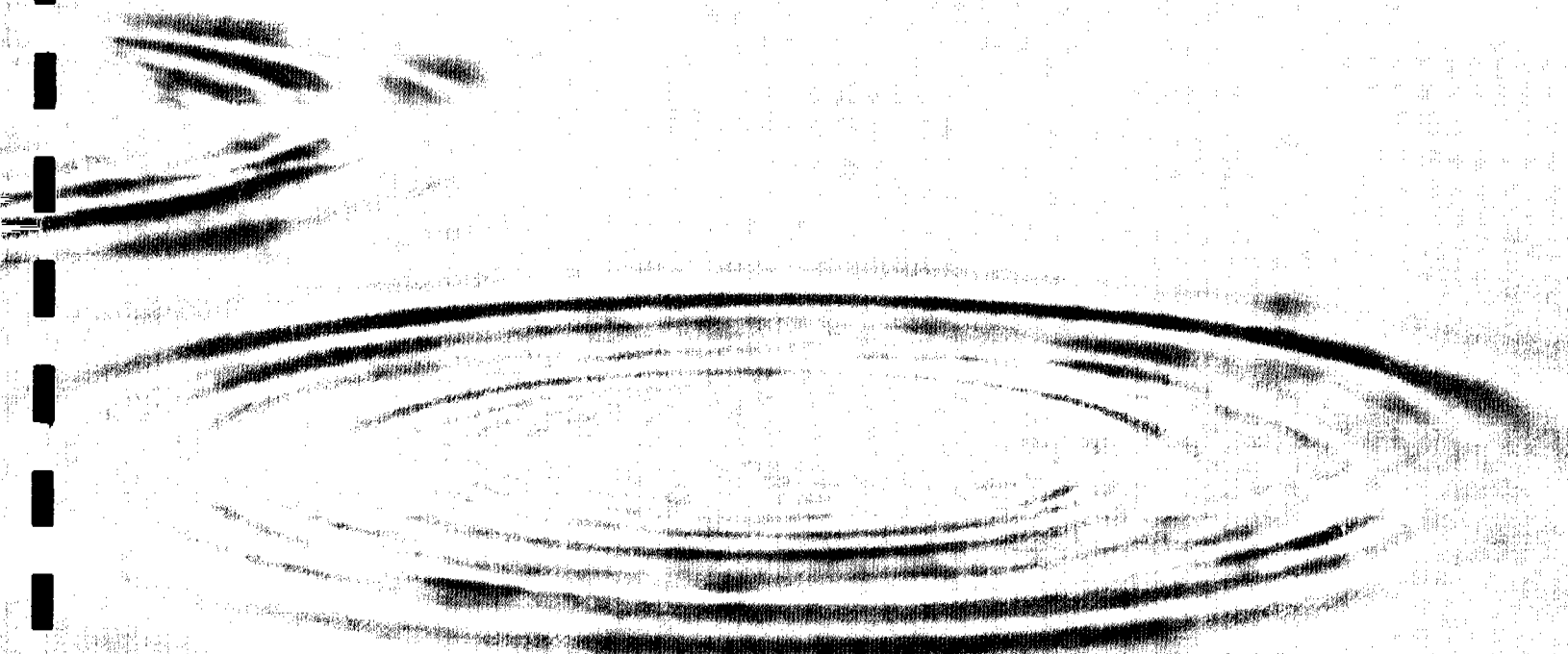


Allocating and Mitigating Risks to Mobilize Financing



1999

WATER
SANITATION

Financing Sustainable

Financing & Risk Allocation: A Public and Private Perspective

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Introductory Notes

Financing water and sanitation projects has a special challenge because of the unique risks: local government control; underground assets that make investment planning difficult and contract re-negotiation arduous; ability to pay is not an important factor for governments due to the critical link of these services with the general health of the population; exposure to significant currency risks since revenues are denominated in domestic currency; and limited scope to introduce competition in provision of these services.

The water and sanitation sector's exposure to risks, that are often difficult and costly to cover, has two important ramifications: (a) fewer projects have been successfully financed with private capital than in other infrastructure sectors, such as power and sanitation; and (b) projects financed with private capital have tended to involve direct financial or credit support from government or third parties such as bilateral, multilateral and export credit agencies.

The first panel will raise and discuss some of the basic questions that will be revisited in more depth during the break-out sessions.

In the past year, private infrastructure projects throughout the world have come under great pressure.

- How have water projects been affected?
- What lessons does the recent experience lead us to?
- Are there lessons being learned?

In the more medium-term, what are the risk factors that water projects face?

- How do these risk factors influence the main financing options available to private water projects?

Finally, there are some key public policy questions:

- What are some useful approaches to the award of concessions? For open competitive bids, is there a useful alternative to the single-envelope, lowest-price-is-the-winner approach?
- What strategies help reduce the likelihood of difficult renegotiations?
- What pricing strategies and regulatory practices can best protect the consumer?

Ashoka Mody
Session Leader

Biographies

MARTIN STEWART-SMITH

Mr. Stewart-Smith specializes in Utilities Law covering public sector restructuring, through privatization to new "greenfield" privately financed infrastructure projects, primarily in the power sector. He has acted for a number of developers of independent power projects as well as advising banks on project agreements for the purposes of limited recourse project financings. He has also advised a number of governments on public sector restructuring, as well as advice on institutional, legal and regulatory reform from the governmental perspective. Although familiar with the UK utility market, he has particular expertise in infrastructure projects and privatization in emerging markets, particularly in the power sector.

WILLIAN M. CHEW

Mr. Chew is a managing director in Infrastructure Finance Ratings. He developed the Standard & Poor's project rating business beginning in 1992, and now acts as Standard & Poor's lead project finance analyst globally. In addition, he is responsible, across both project and infrastructure finance, for analytical criteria, new analytic products and service and business strategy. Mr. Chew has been involved in rating all types of project financing, including independent power, energy and infrastructure projects. Previously he headed Standard & Poor's municipal utilities ratings and helped develop Standard & Poor's rating criteria in several areas, notably independent power, solid waste, and water and wastewater revolving funds.

Mr. Chew is a member of Institutional Investor's Infrastructure Finance Institute, and former editor of *The Journal of Project Finance*, and is a former member of the U.S. Environmental Protection Agency's Financial Advisory Board. He joined Standard & Poor's in 1979 after serving on the fiscal staff of the New Jersey State Legislature. Bill holds a B.A. from Trinity College, Hartford, Connecticut, and an M.A. from the University of Chicago.

EUSEBIO V. TAN

Mr. Tan is a senior partner of the law firm of Angara Abello Concepcion Regala & Cruz, and has been there for more than 20 years. The principal focus of his practice is in the areas of investments; business law; mergers, acquisitions, and divestitures; franchises and franchising; construction law; leases and leasing; banks and banking; and privatization.

He acts as corporate secretary and, in certain cases, also as a member of the board of Directors, of several large construction projects and build-operate-transfer projects. Mr. Tan has led teams that obtained full banking licenses for major foreign banks under the Foreign Banks Liberalization Law of the Philippines.

WILLIAM BULMER

Mr. Bulmer is currently in charge of IFC's global investment program for non-power utilities, and has spent over twenty years working with private sector projects in developing countries. The first six years of his professional career were spent in project management positions in East Asia and the Pacific. During the last sixteen years he has been responsible for a wide variety of project and corporate finance transactions in Africa, Asia and Latin America. He joined IFC in 1986 after working for nine years with the UK's Commonwealth Development Corporation.

Mr. Bulmer has an honors degree from the University of Reading and an MBA from Cranfield University.

**The Manila Experience:
Private Sector Participation
in the Operations of the
Metropolitan Waterworks and Sewerage System
("MWSS")**

I. The State of the Water and Sewerage Services in Metropolitan Manila
Prior to the Privatization Exercise

- A. Antiquated and inefficient infrastructure
- B. Limited water supply service
- C. High percentage of non-revenue water
- D. Very limited sewerage service
- E. Need for vast improvement of services
- F. Etc.

II. Objectives of the Privatization Effort

III. The Privatization Strategy

- A. Divide area of operations into two (2) separate zones
- B. Award two (2) separate concessions (one for each of the two zones) to private sector entities

IV. Legal Bases

- A. Water Crisis Act
- B. MWSS Charter
- C. BOT Law
- D. New Executive Orders
- E. Special Committee review and endorsement to the President
- F. Presidential approval

V. Some Practical Considerations

- A. Timetable
- B. Bureaucratic red tape
- C. Avoidance of monopoly: two separate and distinct zones of operation
- D. Regulatory Office
- E. Prequalification of bidders
- F. Bidders' legal counsel's opinion and waiver of right to seek injunction
- G. Bidding procedure
- H. Award of concessions

VI. Problematic Issues

- A. Case filed to question privatization exercise
- B. Disparity in winning bids
- C. Rate adjustment requests
- D. Service performance by concessionaires
- E. Etc.

VII. Assessment / Lessons Learned

- A. Political will needed
- B. Ensure sound legal bases
- C. Acceptability to the general public of the results of the privatization exercise
- D. Regulatory Office should be competent to regulate concessionaires' performance/operations
- E. Etc.

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Tapping the Private Sector

*Approaches to Managing Risk
in Water and Sanitation*

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Project Finance and Guarantees Department
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February 1998

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Mobilizing Private Capital for the Power Sector: Experience in Asia and Latin America, David Baughman, Matthew Buresch; Joint World Bank-USAID Discussion Paper, 1994.

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World Bank Guarantee Sparks Private Power Investment in Pakistan: The Hub Power Project. 1995.

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Morocco's Jorf Lasfar Power Station. 1997.

PFG BROCHURES

The World Bank Guarantee: Catalyst for Private Capital Flows

World Bank Guarantees Handbook

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Tapping the Private Sector

*Approaches to Managing Risk
in Water and Sanitation*

David Haarmeyer and Ashoka Mody



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Foreword

The economic and environmental importance of the water and sanitation sector is driving governments around the world to seek innovative approaches to harnessing private sector management skills and investment capabilities. This review of recent experience was undertaken to determine the extent and form of private involvement, the successes achieved, and the problems faced both by governments and the private sector.

The study highlights the variety of risks that occur in the provision of water and sanitation services and describes in considerable detail the mechanisms used to allocate and mitigate those risks. Where risks are clearly identified and managed, the prospects of success go up. Clearly, there is no magic bullet here: even the successful projects have faced challenges. However, the experience thus far leads to an optimistic prospect for the future. A variety of experiments are ongoing in all parts of the world. Some projects have faced challenges but typically all parties have demonstrated a willingness to find solutions that improve the basis for success. Looking ahead, the interests of governments and the private sector lie in continued efforts to identify arrangements that provide cost effective and quality service while rewarding risk bearing.

This study on the water and sanitation sector follows earlier reviews undertaken by the World Bank's Project Finance and Guarantees Department on private electric power generation and toll road projects. The Project Finance and Guarantees Department provides technical support in project structuring and is responsible for the World Bank's Guarantee Program. Further information on the Bank's Guarantees—and on the Department's publications—can be obtained by calling 202-473-1650.

Nina Shapiro
Director
Project Finance and Guarantees

Preface

Worldwide, the public sector finances, builds, operates, and owns most of the assets in the water and sanitation sector; facilities are often inefficient, service coverage and quality are inadequate, and cost recovery is poor. To extend coverage and improve the quality of service provided, municipalities around the world are turning to the private sector to rehabilitate and expand existing systems and build and operate new ones.

Based on accumulating experience, this monograph describes strategies to sustain private involvement and investment in the water and sanitation sector. It is addressed both to policymakers and to private operators, investors, and lenders that are engaged—or are likely to participate—in meeting the rapidly growing demand for water and sanitation services. The ability of the public and private sectors to recognize and acknowledge each other's viewpoints and expectations will be key to sustaining the efficient use of private initiative and capital.

Valuable comments and inputs were received from John Briscoe, Laurence Carter, Penelope Brook Cowen, Brad Gentry, Vincent Gouarne, Ellis Juan, Jamal Saghir, Ben Shin, Thelma Triche, Guillermo Yepes, and Katarina Zajc. Dilip Patro prepared an early draft, which helped to get the project started. Without implicating them in any way, we would also like to thank several industry specialists, project sponsors, and lenders who generously responded to our queries with detailed inputs: Alan Booker (Office of Water Services), Brieuc Le Bigre (Bouygues), William Bulmer (International Finance Corporation), Ron Daigle (Global Environment Fund), Eduardo Daniello (Aguas Argentinas), Michael Deane (Air and Water Technologies), Luis F. Diaz Guerrero (Secretaria de Obras y Servicios), Wanchai Ghooprasert (East Water Resources), Richard House (Institutional Investor), Lum Weng Kee (Department of Sewerage Services, Malaysia), Chew Seng Kok (Zaid Ibrahim and Company), Thierry Krieg (Tecnologia y Servicios de Agua), Santiago Lobeira (Secretaria de Medio Ambiente Recursos Naturales y Pesca), Alain Locussol (World Bank), Peter Mansfield (Lend Lease), Jim Martin (International Finance Corporation), Steve Moon (Dresdner, Kleinwort, and Benson), Bosworth Monck (International Finance Corporation), David Naylor (Welsh Water), Louis Petershmitt (Saur International), Alain Poinard (Lyonnaisse Sdn. Bhd.), Gauthier Prate (Lyonnaisse Sdn. Bhd.), Rebecca Rechal (Dresdner, Kleinwort, and Benson), Partho Sanyal (International Finance Corporation), Hugh Sowerby (Agua de Mexico), Hector Vela (Atlatec), and Hakan Ymsen (Anglian Water).

Why are Private Initiative and Capital Important?

Governments worldwide are turning to private initiative and capital to address the significant operational failures and funding gaps in the provision of water and sanitation services. Although private investment in the sector has been much more modest than in telecommunications, power plants, and toll roads, considerable private activity has occurred in recent years. As the nine case studies described in the paper show, private capital has relieved pressures on government budgets and private initiative has increased operational efficiency. Private water and sanitation projects have, however, been concentrated in only a few countries, and they have encountered a variety of challenges. Despite these problems, pressures for moving ahead have resulted in pragmatic approaches to risk reduction and risk sharing in a variety of contexts, and the prognosis for the future is positive.

Developing countries spend about \$30 billion a year on investments in water and sanitation but easily need to spend twice that amount to serve those without essential services and to avert an environmental crisis in the decades ahead. Throughout the world 1 billion people are without safe water, and 2 billion are without safe sanitation. The most severe problems exist in low-income countries, where only about 60 percent of the population have access to safe water and only 40 percent have access to sanitation (table 1). These statistics fail to capture the full extent of the problem, since even those with access to services face low quality and poor reliability. Moreover, as urban populations continue their relentless growth, pressures on scarce water supply and the damage from polluted water threaten to cause irreversible damage to the environment and hence to the quality of life in many countries.

The water and sanitation sector has long been dominated by the public sector, which has left a legacy of serious operational deficiencies (box 1). The tradition and perception of water as a predominantly social service led

TABLE 1
Access to safe water and sanitation in developing countries, 1993

Country	Percentage of population with access to	
	Safe water	Sanitation
<i>Low income</i>		
Côte d'Ivoire	75	43
Ghana	56	27
Guinea-Bissau	25	29
Guinea	60	14
<i>Lower-middle income</i>		
Guatemala	60	71
Indonesia	42	55
Philippines	81	72
Slovak Republic	77	51
Turkey	92	95
<i>Upper-middle income</i>		
Argentina	64	89
Chile	86	83
Malaysia	78	94
Mexico	80	66

Note: Though these data refer to 1993, the coverage ratios are unlikely to have changed much since then. Definitions of coverage vary across countries and are therefore not always strictly comparable. Reported coverages also vary somewhat across the sources cited. The relatively high coverage ratios for sanitation in some countries reflect extremely rudimentary services.

Source: United Nations (1996), World Bank (1995), World Resources Institute (1996).

BOX 1

The legacy of public sector management

Significant opportunities for operating improvements indicate that water enterprises face weak internal (organizational) and external (regulatory) incentives to perform. Unaccounted-for water, which measures the combined effects of physical leakage and unauthorized withdrawal, is a frequently used summary measure of operational efficiency. For efficiently managed water utilities, unaccounted-for water is generally in the range of 10–20 percent. In many developing countries unaccounted-for water rates average between 40 and 60 percent, indicating poor management (Cowen 1995). Public water systems also tend to be overstaffed, with five to seven times as many employees per connection as in other utilities (Serageldin 1995). Water quality standards are also low.

The massive cost of underpricing, inadequate collection, and inefficiency is a key force driving governments toward privatiza-

tion. Revenues collected by municipal utilities cover only about a third of the cost of water; subsidies from the underpricing of water amount to about \$20 billion a year (World Bank 1994). In addition, operational inefficiency costs governments almost \$10 billion a year (World Bank 1994).

Raising prices to cover costs and reducing system losses would thus be almost sufficient to finance the current level of expenditures on water. In the past, concern for the poor has been stressed as a key reason for keeping prices low. However, because large portions of the population did not have access to services, the benefits of the subsidies accrued principally to the wealthy or well connected. Greater access to water supply and explicit subsidy mechanisms will be required to serve the interests of the poor.

BOX 2

How is the water and sanitation sector different from other infrastructure sectors?

The distinctive features of the water and sanitation sector are the source of many risks, and they explain the lower levels of private investment in the water sector relative to the power, telecommunications, and transportation sectors. All of these features underscore the importance of government commitment to mitigate risks in order to attract private participation.

First, capital intensity is high and large sunk costs are involved, thus limiting the scope of direct competition and creating the need for a credible regulatory framework to protect consumers from excessive charges and investors from "creeping expropriation." Water assets often last 30–50 years, with depreciation rates of only 3–5 percent a year. To keep tariff levels low, the payback period for water investments is usually amortized over 15–30 years. Long-term financing is thus needed to finance these investments. The lack of effectively functioning domestic capital markets in most developing countries represents an important obstacle to private investment, and reliance on long-term international lending creates substantial currency risks.

Second, multiple public policy objectives (economic efficiency, environmental enhancement, the protection of health, and the affordability of tariffs, as well as broader fiscal and political goals) accentuate political and regulatory uncertainty. All infrastructure sectors must meet multiple policy objectives, but the problem is particularly acute in water and sanitation because of the serious health and environmental consequences of substandard service provision.

Third, the sector is highly fragmented. Water differs from other network industries in that, relative to its value, the product is expen-

sive to transport and cheap to store. This reduces the scope for long-distance transmission (except to water-stressed areas) and makes water a more local service than other infrastructure services. The local nature of water and sanitation services means that investments tend to be smaller than they are in infrastructure sectors, such as power, in which investment is centralized.

Finally, the water and sanitation sector is characterized by a high degree of uncertainty about the condition of assets and thus the investment requirements. Private investors have only limited information about the state of the physical infrastructure (the pipes) and the customer base (the extent of illegal connections, for example). The condition and value of water and sanitation infrastructure is generally more difficult to determine than assets of other utility sectors because many of these assets are underground. As a result, underinvestment and improper maintenance can go unnoticed for years. Because private companies taking over water and wastewater systems may have difficulty estimating the costs of rehabilitation, tariff setting and adjustment can be subject to considerable uncertainty.

The problem of valuing assets has significant implications for the risks faced by private investors. If more investment is required than was expected in the initial tariff determination and tariff renegotiation is costly, private developers and investors may find that contractually agreed upon returns are insufficient. The difficulty of assessing the value of water and sewerage assets suggests that regulatory provisions for tariff adjustment and contract renegotiation will play a critical role in attracting and securing private capital to the sector.

urban central systems

to neglect of the sector's long-term economic viability and to massive undercapitalization.

The current situation presents both constraints and opportunities. On the one hand, the political nature of some problems (such as overstaffing and tariff setting) may deter private participation. On the other hand, the significant financial and operational problems of the sector provide a rationale for private participation. With governments in many countries unable to address the pressing needs of the sector, the private sector can potentially contribute significant financial resources to extend services. Financial resources alone will not solve the problem of inadequate water quantity and quality, however. If services are to be enhanced and expanded, operational inefficiency (high water losses, poor reliability, inadequate metering and billing)

must also be overcome through harnessing the management and technical skills of experienced service providers.

The shift to private participation can create large benefits, but effective private involvement requires that governments play a new facilitation and regulatory role to create a credible—and hence low-risk—contracting and operating environment (box 2). A recent World Bank study documents that, in a number of projects, private enterprise has been associated with “substantial benefits to consumers in terms of expanded coverage and quality of services as well as significant improvements in productive efficiency” (Rivera 1996, p. 71). But the same study also questions the sustainability of these benefits and improvements without the implementation of complementary water pricing, financing, and regulatory reforms.

Strategies for Attracting Private Initiative and Capital

A variety of approaches have been used to attract private participation in water and sanitation (table 2). Different approaches have been adopted to varying degrees around the world. Even within countries at similar income levels, the nature and extent of private sector participation varies widely. In the United States, for example, less than 20 percent of the population is served by privately managed water utilities, and an even smaller portion of the population is served by assets that are privately owned. In contrast, public-private partnerships are more common in Europe. Activity among middle-income countries, such as Argentina and Malaysia, is growing, and they are likely to experience the greatest growth in private participation in the coming decades. But among middle-income countries, too, experiences vary. Chile, for example, a leader in privatization in

other sectors, has been slow to seek private participation in the water and sanitation sector, primarily because its public water utilities have a reputation for efficiency. Private participation in low-income countries has been even more limited, and the value of the projects has been small. Given the enormous need for investment, however, activity is expected to grow, particularly as governments adopt economic, legal, and regulatory reforms that stimulate growth and attract foreign investment.

Management and Lease Contracts

Tackling the long-term weaknesses in the distribution sector can also be done incrementally (box 3). This approach of gradually increasing private participation through con-

TABLE 2

Allocation of risks and responsibilities in alternative contractual arrangements

Allocation of responsibilities	Management contract	Lease contract	BOO/BOT concession	Full utility concession	Asset sale
Ownership	Government	Government	Government	Government	Private sector
Investment	Government	Government	Private sector	Private sector	Private sector
Operation	Private sector	Private sector	Private sector	Private sector	Private sector
Tariff collection	Government/ private sector	Private sector	Government	Private sector	Private sector
Selected recent cases	<ul style="list-style-type: none"> • Puerto Rico (water and sewerage) • Mexico City (water) • Trinidad and Tobago (water and sewerage) • Antalya, Turkey (water and sewerage) • Gaza City (water and sewerage) • Indianapolis, U.S. (sewerage) 	<ul style="list-style-type: none"> • Guinea (water) • North and South Bohemia, Czech Republic (water and sewerage) • Gdansk, Poland (water) • Szeged, Hungary (water and sewerage) • Cartagena, Colombia (water and sewerage) 	<ul style="list-style-type: none"> • Johor, Malaysia (water) • Sydney, Australia (water) • Izmit, Turkey (water) • Chihuahua, Mexico (wastewater) • Puerto Vallarta, Mexico (wastewater) 	<ul style="list-style-type: none"> • Macao (water) • Buenos Aires, Argentina (water and sewerage) • Malaysia (sewerage) • Limeria, Brazil (water and sewerage) • Côte d'Ivoire (water) • Batam, Indonesia (water) • Manila, Philippines (water and sewerage) • Gabon (water and electricity) 	<ul style="list-style-type: none"> • Ten regional water authorities in England and Wales (water and sewerage)

BOX 3

Successful contract transformation in Côte d'Ivoire

Côte d'Ivoire's water utility is one of the oldest and longest-running privately operated systems in the world. Its operations are financially self-sustaining, its shares trade on the Ivorian stock market, it is operated almost entirely by Ivorians, and it is beginning to export its expertise and management experience to neighboring countries.

In 1959 the government organized an international tender for the right to operate the water supply system in the capital city of Abidjan, a city of about 300,000 at the time, under a lease agreement. The French water company Saur was awarded the 25-year lease contract. Two years later Saur signed agreements to manage five other municipal systems. After Côte d'Ivoire gained independence in 1960, a private Ivorian company, SODECI (the Côte d'Ivoire Water Distribution Company), took control of the lease, leaving Saur as the major shareholder.

Under the lease agreement, SODECI was responsible for the operation and maintenance of the system, tariff billing and collections, and new connections; the government was in charge of major investment, such as network extension. Operations were self-financed and tariffs collected by SODECI were allocated to the lessee as remuneration, to the Development Fund (for low-income connections, renewals, and new works), and to the National Water

Fund (for debt service and sewerage). To ensure that low-income households had access to piped drinking water, SODECI structured a special tariff rate for poor households and offered free connection for pipes 15 millimeters in diameter.

In 1978 the company's shares began trading on the country's stock market. Over time the company took over responsibility for the management of sewerage and drainage systems. In 1987 the government broadened SODECI's responsibilities to include financing investments by granting the company a 20-year concession for the urban water supply. By 1997 SODECI's capital of about \$15 million was held by Saur (47 percent), SODECI Workers' Funds (5 percent), private Ivorians (45 percent), and the Ivorian government (3 percent).

Through the adoption of professional management techniques that have included a heavy emphasis on training and motivating staff, SODECI has transformed the country's water utility into a highly productive stand-alone business that serves more than 345,000 customers in 409 centers (136 towns and 273 villages), up from 40,071 customers in 38 centers in 1973. Staffing efficiency is high (about four per thousand connections), collection from private customers is 97 percent, and unaccounted-for water in Abidjan is only 17 percent.

tracting mechanisms—operations and maintenance (O&M) and lease contracts—has been adopted in many countries because of concerns about raising prices and the need to deal sensitively with the interests of the utilities' staffs. Management contracts give the private sector full responsibility for O&M services for a specific facility (such as a wastewater treatment plant) or an entire system. The private O&M contractor typically accepts performance-based fees, which are generally based on physical parameters, such as volume of water treated and achievement of environmental quality standards; the contractor may also bear the risk of legal liability for failure to meet environmental standards. The O&M contractor does not take on the investment and financing risks. The duration of management contracts is generally less than 10 years.

Because they may not require tariff increases or significant downsizing of staff, short-term management contracts may be politically more acceptable than forms of private participation such as concession contracts, which require cost recovery. Like corporatization, which involves trans-

forming a utility into a financially and institutionally independent entity, management contracts offer a way to improve operational and service performance and thus prepare a utility for fuller privatization options. However, under this approach, the degree of private involvement is fairly limited and hence private initiative and capital are harnessed only to a limited extent. While this "stepping slowly" approach goes some way toward improving operational and financial performance, lines of authority and responsibility remain blurred and reliance on government budgetary resources for funding remains unchanged.

Build-Operate-Own (BOO) and Build-Operate-Transfer (BOT) Projects

The most frequently employed form of private participation has been through special-purpose build-operate-transfer (BOT) projects for water sourcing, transmission, and treatment. In countries with limited financial resources and urgent needs for specific facilities, such as water or wastew-

ater treatment plants, BOO/BOT contracts can be an efficient way to channel private investment and initiative to new facilities. Under a BOT contract the government-owned utility pays a private company to source water or treat a certain volume of raw water or sewage. To provide the basis for project financing, the revenue stream is secured through a take-or-pay arrangement, under which fixed payments are made whether or not the service is used. The contract length is negotiated to allow for retirement of debt and provide a return to equity investors. At the end of the contract, which generally lasts 15–25 years, the private company transfers the facility back to the government. In contrast, the private company owns and operates the facility for perpetuity under a BOO contract.

While placing greater capital at risk than in management or lease contracts, the BOT/BOO arrangements do not deal with the inefficiencies of the distribution sector—water losses, lack of metering, and inefficient tariff setting. Indeed, these arrangements are often perceived as a short-term mechanism by which to avoid dealing with the long-term, less tractable, problems. In this respect, they follow the same philosophy that led to independent power generators under long-term take-or-pay contracts in the power sector. In both sectors

the danger exists that the supply sources thus created will be inefficient because they supply a service that is not needed (in the worst situation the extra supply will be wasted where distribution losses are not stemmed). Greater coordination of supply and distribution investments is, therefore, required.

Full Utility Concessions

A few countries have gone farther by awarding concessions for operating entire water and sanitation systems for fixed periods (25–30 years) and requiring an investment commitment on the part of the concessionaire. Although the outcomes are sensitive to the precise contractual and regulatory arrangements, recent evidence suggests that significant gains are possible.

Privatization of Assets

Beyond such concessions lie the full privatization of assets, which has been done only in England and Wales, where privatization has transformed the once undercapitalized and underperforming water companies into viable and competitive enterprises.

Managing Risks through Project Finance—and Beyond

Tapping substantial new sources of finance is a prime motivation for attracting private participation. Successful transition from the current system of government financing to private financing will depend on the establishment of a sound pricing and regulatory framework, which determines the future flow of earnings and their stability.

Governments would ideally like to eliminate their financial support to private projects. Incomplete reforms, continued subsidies to certain low-income consumers, and the risks associated with the transition from public to private management, however, require direct and indirect government financial assistance. To phase out such support over the long-term, it will be necessary to transform poorly performing utilities into economically viable enterprises with access to significant internal cash for investments and with the ability to raise resources from diverse sources on the basis of their balance sheets.

The evolution of private financing may be viewed as a three-step process. In the first step, the key mechanism is *limited-recourse financing*. Project equity and commercial lending are supported primarily by the cash flows and assets of the project, which may be a discrete BOT or a concession for a distribution system. Financing is also supported in part by recourse to the balance sheets of project sponsors and by various implicit and explicit government guarantees. In the second step, a stable set of rate-paying customers and some confidence in the regulatory system is established, and the basis for a sustainable water utility is created, leading to substantial investments through *retained earnings*. In the third step, capital market financing, especially *bond financing*, is likely to develop as the track record of stable revenue sources become evident.¹ Where private ownership of assets exists, *equity markets* can play an important role in disciplining the management of water utilities.

Governments can support the development of capital markets through general measures and also those specific to the water and sanitation sector.

Project finance techniques have been the preferred method of attracting equity investors and lenders to water and sanitation projects. Like other privately financed infrastructure facilities, such as power plants, toll roads, ports, and airports, these projects are structured around a project's ability to generate a stable stream of future revenues. Nonrecourse or limited-recourse financing is based primarily on a project's future cash flows and its assets, rather than on the balance sheet of the government or the project developer. The direct link between a project's cash flow generation potential and funding gives the project sponsors, investors, and lenders strong incentives to ensure that projects are structured and operated to generate positive cash flows.

The high capital intensity of water projects and consumers' sensitivity to tariff increases indicate that the financing challenge for the water sector is to access long-term financing at reasonable rates to match the long-term payback period associated with the large investments required to rehabilitate and expand existing assets and construct new facilities. Additionally, for new investments such as BOT projects, the long gestation period from initial construction financing to operation and stable revenue generation may represent two or three years without debt repayment.

To date, debt has been the major component of the financing package. Most of this debt has come from official sources, including several international financial institutions and the export credit agencies (ECAs). Domestic financial institutions have provided financing in local currency in the more advanced countries, including Malaysia

and Thailand; international commercial lenders have been unable to lend on their own account for tenors of 10 years or more, as required by these projects.

The Fundamentals of Project Finance for Water and Sanitation Projects

Under limited-recourse project finance, a project's cash flow and risk profile determine the financial structure, sources of finance, and terms of lending. These profiles are affected by four main factors: (a) the type of contractual arrangement, (b) the stage of the project's development, (c) the availability of local finance (the presence of exchange rate risk), and (d) the underlying political commitment to secure private participation, as reflected by government undertakings (such as establishing an independent regulatory authority or raising tariffs to cost recovery levels before privatization).

The cash flow and risk profiles, security interest, and customer type for the different approaches to private sector participation in the water and sanitation sector are shown in table 3 (exchange rate risk, which is not shown, depends on the quality of local capital markets). The significant variation in the cash flow and risk profiles across projects and phases of project development suggests the need for different risk mitigation and financing strategies. Financially, certain entities are better suited to participating in project financing than others. Commercial banks, for example, may

have specific sectoral and country expertise that enables them to shoulder and manage a project's financial risks; multilateral and export credit agencies may have specific knowledge and experience analyzing and managing country risk.

Allocating more risk to the private sector (that is, moving to the right along the continuum shown in table 3) entails increased commercial responsibilities, greater control, and a longer duration of private participation. Under a concession agreement, a project company's shares cannot be freely transferred or pledged; only under full asset ownership can the private operator use such assets as collateral. With rights to cash flows in perpetuity and a clear security interest in a utility's assets, asset ownership has the greatest long-term certainty of revenues, and it thus generally provides the greatest flexibility for financing new investment. At the same time, the greater monopoly concerns associated with asset ownership mean that government oversight will play a greater role, and thus regulatory risk will be higher.

Risk Management

The reliability and timing of the cash flows and the allocation of risks influence the ease and sources of funding. All parties have an interest in requiring that risks are fully transparent and allocated to the project participants best able to mitigate them. The process of identifying, assessing,

TABLE 3
Risk and cash flow profiles of alternative privatization mechanisms

Indicator	O & M contract	Lease contract	BOT concession	Full utility concession	Asset sale
Time horizon	2-5 years	10 years	10-20 years	20-30 years	In perpetuity
Customer	Government	Retail customers	Single buyer/ government	Retail customers	Retail customers
Cash flow profile	Fixed-fee for service paid directly by government	O & M fee paid directly from retail consumers and thus subject to market risk	Post-construction purchase contract, typically with a government utility	Subject to market and regulatory risk	Subject to market and regulatory risk
Security interest	Not relevant	Right to part of cash flows generated by assets; no right to own or pledge assets	Right to cash flows generated by assets; usually no right to own or pledge assets	Right to cash flows generated by assets; usually no right to own or pledge assets	Ownership rights to pledge as security; shares are tradable
Construction risk	None	Little	High	Medium	Low
Operations risk	Low	Medium	High	High	High
Regulatory risk	None	Medium	Low	High	Very high

and assigning commercial and regulatory risks is, however, a difficult one. In water and sanitation projects, a variety of strategies have been adopted to deal with market and payment risks, construction risks, operational risks, currency rate and convertibility risks, regulatory and policy risks, and *force majeure* (table 4).

Market risks

Market risks in the sector take the form of demand (ability and willingness to pay) risk and payment (or credit) risk (table 5). Under BOT/BOO arrangements, demand risk is mitigated through a long-term contract with the government utility, which bears the risk of nonpayment by customers. The utility commits to purchase a minimum amount of service over the life of the contract through so-called take-or-pay contracts. These contracts oblige payment even when services are not required; they thus give comfort to lenders that a project can service its debt. Payment risk exists nevertheless in BOT/BOO contracts, however, since the government entity purchasing the services may not be creditworthy. If the government entity is viewed as uncreditworthy, lenders and investors will require some form of credit support from the federal government or other third

TABLE 4

Types of risks and mitigation mechanisms

Risk	Mitigation mechanism
Market or customer risk	<ul style="list-style-type: none"> • Independent tariff and demand studies • Right to cut off service • Utility combinations or regionalization (project bundling) • Loan covenants (debt service coverage ratios)
Offtake or nonpayment risk	<ul style="list-style-type: none"> • Take-or-pay contract with two-part tariff • Credit support (guarantees)
Construction/completion risk	<ul style="list-style-type: none"> • Turnkey contracts with performance bonds, liquidated damages, and insurance • Selection of reputable firms, recourse to sponsors' balance sheet during construction
Performance/operational risk	<ul style="list-style-type: none"> • Performance-based operation, maintenance contracts • Long-term ownership interest • Selection of reputable operators
Currency risk	<ul style="list-style-type: none"> • Indexed tariffs • Debt service payment escrow accounts
Regulatory risk	<ul style="list-style-type: none"> • Credible concession agreement • Independent regulatory authority • Fair arbitration procedures • Partial risk guarantees • Political risk insurance

party (see box 4). In addition, escrow accounts may be set up to provide a cushion in the event of nonpayment.

TABLE 5

Mechanisms used to mitigate market risk

Project	Market risk faced by private operator	Mitigation mechanism
BOT water treatment/Izmit, Turkey	Payment risk	<ul style="list-style-type: none"> • Government of Turkey guarantees Izmit payments • Take-or-pay contract
BOT wastewater treatment/Chihuahua, and Puerto Vallarta, Mexico	Payment risk	<ul style="list-style-type: none"> • Take-or-pay contract with debt service escrow accounts • Line of credit from Banobras
BOO water treatment/Sydney, Australia	Payment risk	<ul style="list-style-type: none"> • State government guarantee of payments by Sydney Water Corporation
BOT water treatment/Johor, Malaysia	Payment risk	<ul style="list-style-type: none"> • Strong credit of municipal water authority • Two-part tariff • Immediate cash flow availability • Phased capacity additions
Water supply lease contract/Guinea	Demand and payment risk	<ul style="list-style-type: none"> • Phasing in of higher tariffs, with declining government subsidies • Disconnection for nonpayment
National sewerage concession/Malaysia	Demand and payment risk	<ul style="list-style-type: none"> • Minimum guaranteed return
Water and sewerage concession/Buenos Aires, Argentina	Demand and payment risk	<ul style="list-style-type: none"> • Tariff adjustment process • Guarantee of payment by government customers • Disconnection for nonpayment
Water and sewerage asset ownership/England and Wales	Demand and payment risk	<ul style="list-style-type: none"> • Five-year tariff adjustment process by independent regulator • Disconnection for nonpayment

BOX 4

Mitigating the risk of nonpayment through credit enhancement in Mexico

Because the water and sanitation sector is fragmented, buyers of bulk water and wastewater treatment are often small, local government utilities without track records for collecting user fees and making reliable payments. To mitigate the risk of nonpayment, lenders look for some form of credit enhancement, such as a government guarantee of contractual performance, direct assignment of part of the buyer's revenue stream, or trust funds and escrow accounts in which several months of debt service are deposited.

In Mexico, where the need for capital to upgrade, rehabilitate, and extend the water and wastewater sector is significant, the federal government is devolving financing responsibility to the local governments, which are exploring different mechanisms with which to mitigate the nonpayment risk stemming from the financial weakness of the local water authorities.

The Mexican government has given authority to its public works bank, Banobras, to provide credit enhancement to municipal projects. In 1994 Banobras played an instrumental role in closing a \$17

million BOT water treatment plant in Chihuahua by providing a line of credit that was supported by a pledge by the State of Chihuahua to share its tax revenues.

In addition, to ensure that monies are appropriately allocated to items of cost and debt service, local authorities use Fidecomiscos (trust funds) to handle incoming and outgoing funds. The payments to the contractor are deposited in the Fidecomisco, thereby guaranteeing the banks financing the project that repayments will be made from the income from the project. Bank loans are also handled through the trust.

The ultimate form of security against nonpayment risk, especially in the case of a default by the offtaker, is a solid termination clause. In the power sector, sponsors may negotiate a "put" requiring that, in the event of termination, the offtaker will "buy out" the sponsors for an amount corresponding to the discounted cash flow expected to be generated during the remainder of the term of the power purchase agreement.

In a lease contract, full utility concession, or asset privatization, the demand and payment risks are borne by the private operators, who sell services directly to individual consumers. Market risk arises because consumption by retail consumers may decline as a result of increased tariffs or greater measurement of consumption through metering. Uncertainty associated with the drop in demand may be particularly high in developing countries in which meters have never been used or tariffs have been kept artificially low. Accurately predicting the consumer's response to a tariff increase is critical to ensuring that future revenue requirements are met. Lenders will generally seek independent appraisals of market demand and include sponsor guarantees and loan covenants to ascertain the ability of a project to service its debt out of cash flow.² Such risk protection measures have been used in concessions in Malaysia and Argentina and in the regional utilities in England and Wales.

Market risk may be particularly problematic in the case of sewerage concessions that are not bundled with concessions for potable water services. Consumers are generally more sensitive to paying for sewerage services than water services. This is especially true where individual households have traditionally relied on their own sewage disposal meth-

ods. Bundling the water and sewerage bill tends to reduce the risk of nonpayment.

An important aspect of market risk is the ability to secure payment from customers through the threat of disconnection. Private developers will be less willing to operate a water or wastewater system if this right is not contractually guaranteed and will look for some other form of guarantee to cover fixed costs. For example, in the national sewerage concession in Malaysia, where private operators do not have the legal authority to shut off sewerage service, the government guarantees a minimum rate of return.

Construction or completion risks

Lenders and investors face the risk that the construction contractor will fail to complete a project on time, within budget, and per contract design specifications. Construction risks are especially important in BOO/BOT projects because of the long gestation period between the time lenders agree to finance a project and the time the first debt service payments are made. Lenders are sensitive to delays in completion, abandonment, cost overruns, and failure of a facility to achieve stipulated performance levels, all of which may adversely affect the timing and level of cash flows.

Lenders and investors will generally insist that sponsors allocate construction risks to reputable engineering construction companies through strong fixed-cost, date-certain turnkey contracts. These contracts guarantee completion and, where applicable, performance: they provide for liquidated damages if guarantees are not met.³ The performance of the contractor may also be backstopped with an insurance package that includes a performance bond, letters of credit from reputable financial institutions, and pledging of the contractor's capital through an equity stake in the project.

Governments are able to impose heavy penalties for failure to meet completion dates. In some agreements, for example, the project company is required to pay the government water authority a substantial lump sum for each week beyond the scheduled construction period that the plant remained uncompleted. Once the maximum delay is reached, the water authority can terminate the contract. The project company may also provide a performance bond for the construction of the plant for an amount equivalent to a substantial percentage of the value of the plant's construction and equipment.

Operational risk

The main operational risk in water and wastewater facilities is that they fail to meet the agreed upon performance parameters. Sponsors are generally required to put up performance bonds as guarantees of their operational obligations and to pay penalties if performance standards are not met. The amount of the performance bond is typically equal to an average year's capital expenditure program, so that if the private party were to default on performance targets and be asked to leave, the government could use the performance bond to fund capital expenditures before a new operator was put in place.

Currency exchange and convertibility risks

A fundamental concern for foreign sponsors, lenders, and equity investors is the ability of a local project to generate revenue in a currency that maintains value and can be converted to foreign exchange. Because water and sanitation projects generate revenues in local currency, the convert-

ibility of the local currency is essential to obtaining financing. The relatively low imported content of water infrastructure projects also means that less foreign financing is required than in other infrastructure sectors, such as power or telecommunications.

To protect against adverse fluctuations in cash flow, sponsors require that tariffs be indexed to exchange rate fluctuations (as well as to inflation and interest rate changes). Two-part tariff formulas for BOO/BOT projects such as those in Johor, Malaysia, and Sydney, Australia, provide a means of indexing variable and fixed costs to local inflation. In England and Wales the price-cap formula automatically links tariffs to changes in the price level. In addition, reserve funds can be set aside to mitigate against devaluation risk.

Regulatory and political risks

Regulatory and political risks include the risk of expropriation, regulatory interference (such as unilateral changes in contracts), early termination, and change of law. These are risks that the private sector is not in a position to evaluate or shoulder. The special attributes of water and wastewater projects—their local nature, the need for tariff and environmental regulation, the difficulty of determining the asset value of underground pipes—accentuate these risks. Municipalities with little if any regulatory experience often become responsible for significant regulatory functions.

The high level of exposure to regulatory and political risks creates significant investment uncertainty. To mitigate these risks, private parties to water and wastewater companies and concessions have relied on various mechanisms (table 6). A basic level of protection is established by the chief regulatory instrument, the concession contract, the credibility of which depends on how well it assigns and enforces the rights and obligations of the concessionaire and provides for fair and workable contract and tariff renegotiation rules (Crampes and Estache 1996).

Ensuring the credibility and fairness of the regulatory entity charged with monitoring and enforcing a concession agreement's obligations and regulatory requirements further mitigates regulatory and political risk. The presence of an independent regulatory agency—such as ETOSS, in Argentina—diminishes the risk of political interference.

TABLE 6

Mitigating regulatory and political risks

Project site	Mitigation mechanism
Malaysia (national sewerage project)	<ul style="list-style-type: none"> • Local company equity participation • Tariff review and adjustments • Government commitment to privatization
Buenos Aires, Argentina	<ul style="list-style-type: none"> • Compensation of concessionaire in event of early termination • Independent regulatory authority • IFC and local investor participation • Transparent tariff adjustment process
Izmit, Turkey	<ul style="list-style-type: none"> • Significant export credit agency (ECA) participation • Commitment by the Government of Turkey and credit support
Chihuahua and Puerto Vallarta, Mexico	<ul style="list-style-type: none"> • Municipal grant funding (Chihuahua) • Local investors/developers equity participation • Banobras credit support • IFC participation (Puerto Vallarta)
Johor, Malaysia	<ul style="list-style-type: none"> • Federal and state government commitment to privatization • Local developer equity participation
Sydney, Australia	<ul style="list-style-type: none"> • Credible BOO concession agreement • Local developer participation • Fair and competent judiciary
England and Wales	<ul style="list-style-type: none"> • Disbursed shareholding by local investors • Independent regulatory authority • Reputable judiciary • Moving to a multi-utility structure

The obligation of the government or regulatory entity in the event of early termination is of significant concern to lenders, investors, and sponsors. Lenders in particular look for early termination clauses in concessions that, depending on the circumstances, enable them to "get out whole."

Force majeure

Force majeure risks are those that are beyond the control of the private sector or the government parties to a contract. Under force majeure, either party has the right to suspend obligations under the contract. Force majeure events include domestic political events, such as wars, riots, general strikes, and changes in laws, and "acts of God," such as natural disasters, fires, and epidemics.

Elements of Financing: Structure, Maturity, and Sources

Because water and sanitation projects create long-lived assets, with cash flows that grow slowly, financing requires debt struc-

tures with long maturities. The limited ability and willingness of consumers to pay also requires that debt be amortized over long periods (10 to 20 years) to help minimize annual debt repayments and reduce the necessity to increase tariffs. The availability of long-term debt is, however, limited by the political, regulatory, and credit risks associated with water and sanitation projects in developing countries. For example, in many developing countries financial markets are not developed sufficiently to provide long-term lending. Consequently, foreign sources with associated currency risk must be tapped.

For the projects examined in this study, these tensions have led to the following outcomes (table 7):

- A high initial debt to equity ratio, with debt constituting 50–85 percent of the financing (the English and Welsh companies have a much lower debt ratio because of debt write down at the time of privatization and "green dowries")
- Maturities ranging from about 7 years at the lower end to 15–20 years in the more advanced, higher credit-rated countries

TABLE 7

Summary of project financing

Project site	Project cost	Debt/equity	Country rating	Source and maturity of debt
Malaysia	\$2.4 billion (about \$500 million in first two years)	75/25	A+	Government soft loans (for length of concession)
Buenos Aires, Argentina	\$4.0 billion (\$300 million for first 2 years)	60/40	BB-	10-year IFC A-loan; 12-year IFC B-loan (recourse to Argentine government in event of early termination)
Izmit, Turkey	\$800 million	85/15	B	13-year export credit agency loans, 7-year MITI loan, 7-year commercial bank loan (recourse to Turkish government)
Chihuahua, Mexico	\$17 million	53/15/32 (debt/equity/grant); debt in US\$	BB	8.5-year commercial bank loan with limited recourse to Banobras
Johor, Malaysia	\$284 million	50/50	A+	10-year project finance loan from Public Bank Bhd (nonrecourse)
Sydney, Australia	A\$230 million	80/20	AAA	15-year commercial loans; state government stands behind Sidney Water Corporation payment
England and Wales	\$5.24 billion	25/75	AAA	Variety of borrowing sources

- Much of the debt financing in the lower credit-rated countries coming from multilateral or export credit agencies (domestic financing is restricted to the higher credit-rated countries)
- Significant government backing through payment and other obligations in the lower-rated countries.

Sources of debt

In countries with weaker sovereign credits, financing has been provided by multilateral institutions and export credit agencies (see box 5). These are the only agencies that are in a position to accept political and regulatory risk and hence provide the longer tenor lending at reasonable rates required for water and sanitation projects. The prominence of the export credit agency is somewhat surprising. The expectation had been that export credit agencies would be less important in water and sanitation projects than in power projects because of the limited imported content of the investment in water and sanitation. However, the Izmit, Turkey, example shows that export credit agency funding may be sought even for construction financing.

The fact that little financing of the water and sewerage sector has been provided by the capital market indicates that individual investors are not in a position to mitigate the risks involved. Projects can be expected to access longer-term debt instruments and capital markets as the level and

predictability of cash flows to support debt service becomes more stable and certain. The English and Welsh companies have drawn on a variety of sources, including the bond markets. The low-risk profile of more mature utilities is indicated by the fact that the 24-year bond issue Anglian Water floated in 1990 was priced at just 53 basis points over U.K. Treasury gilts due November 2006. The English and Welsh companies have also taken advantage of low-cost loans from the European Investment Bank (EIB).⁴

Sources of equity

Although debt is generally cheaper than equity, a long-term equity stake by the sponsor (who is sometimes also the operator) ensures that management does not have a short-term bias and that cash flow growth creates capital appreciation. Equity also reduces the burden on the cash flow required to support debt service payments, which can be especially important in a project's early development phase.

Equity has been provided largely from the established water and sanitation companies that have sponsored and developed projects in the sector. Although the number of large water developers is small (with the French, English, and Welsh companies dominating the market), barriers to entry are low, suggesting that fears over the lack of competition may be unwarranted. Domestic, private engineering and development companies in countries such

BOX 5

Easing the policy transition with partial risk guarantees

Multilateral development banks have recently reemphasized their guarantee powers to support private projects. The focus has been on power projects, although several water projects are potential candidates for these guarantees, which reinforce a government's contractual agreements. Multilateral development bank guarantees can cover the following commitments:

- Payments in the event of early termination of the concession contract
- Payments to cover the subsidy element of consumer bills
- Payments to cover expenses of severance pay and labor retraining
- Timely delivery of civil works and other structures
- Application of the agreed-upon tariff determination process
- Disconnection of nonpaying customers
- Foreign exchange convertibility

The World Bank requires a counterguarantee from the host national government before it guarantees a government's commitments. Other multilateral development banks (the Asian Development Bank, the European Bank for Reconstruction and Development, and the Inter-American Development Bank) do not always require such counterguarantees.

Other sources of international political risk guarantees include the Overseas Private Investment Corporation (OPIC) and the Multilateral Investment Guarantee Agency (MIGA), which provide cover against currency transfer, expropriation, and war and civil disturbance. Political risk insurance has typically not been available from private sources for large infrastructure projects. That may be changing, however, as demand for emerging market exposure is growing. Force majeure events can also include legislation and rulings made by a government or judicial authority, unanticipated pollution, power failure, and raw water shortages.

as Malaysia and Mexico have begun to participate in the sector, and companies in other utility sectors, such as power distribution, are investigating opportunities in the sector.

Lenders like to see sponsors achieve a reasonable return on their investment to provide an adequate incentive to maintain support for the project, at least throughout the duration of the loans. In addition, the lower priority claims of equity investors in a project's revenues means that by absorbing unanticipated shortfalls in revenue, equity holders partially shield lenders. In full utility concession projects and privately owned utility companies, internal cash gen-

eration can provide an important source of equity that can be used to finance investment.

To compensate for greater country and political risks in most developing country projects, the required returns are likely to be significantly higher than returns in industrial countries and closer to those obtained in other infrastructure sectors. Baughman and Buresch (1994) found that, for a sample of power projects in Asia and Latin America, the estimated equity return was 18–25 percent. Fishbein and Babbar (1996) found that investors in privately financed toll roads expect annual returns of 15–30 percent.

Beyond Project Finance

Project finance is a costly and complex process of identifying and evaluating risks associated with future cash flows of projects.⁵ The long lead times and high transactions costs associated with project finance are likely to make it less attractive than finance raised on the balance sheets of larger companies. Before capital markets can be accessed, however, the cost of assessing, allocating, and mitigating project-related risks must decline. Once these costs fall, the pool of prospective investors will increase, and the sector will be able to tap a broader group of intermediaries, including insurance companies and pension funds, which have long-term fixed rate liabilities. Corporate finance simplifies this transition to capital market financing, since the risk of a project's debt is absorbed, in part, by other corporate activities. Financing project debt from the balance sheet, however, exposes a company to significant risk and thus requires a strong and large balance sheet. Partly to shield a company's balance sheet, innovative financial instruments, such as equity funds, are being developed. These infrastructure equity funds provide a means by which developers can raise capital and investors can participate in the emerging market for financing infrastructure projects. To infrastructure developers, funds can be particularly attractive because they can leverage their contributions with that of other investors. For investors, equity funds mitigate project and country risk by creating a portfolio of projects under one company.

The French water company, Lyonnaise des Eaux, introduced an Asia water fund in 1995. Contributors to the fund include the All State Insurance Company, the Employees Provident Fund Board of Malaysia, and the Lend Lease Corporation of Australia. The \$300-million fund will refinance the equity of the original sponsors, thus allowing sponsor equity to be conserved for development. Investors

in the fund expect to receive steady utility-like returns and the potential for a significant gain in the event that the fund or a portion of it is publicly listed. A Latin American fund is also under consideration.

Corporate Finance

Balance sheet financing may be particularly attractive for overcoming some of the obstacles to financing water and wastewater facilities on a project basis. The nature of the risks in the sector (the small size of projects, the lack of creditworthiness of local governments, uncertainty over asset valuation, the fact that revenues are in domestic currency and local capital markets are undeveloped) makes raising long-term project finance at reasonable rates especially difficult. Reducing the reliance on limited-recourse debt, especially in a project's early high-risk development years, could lower project costs.

As in other sectors, projects in water and sanitation have been financed with some recourse to a sponsor's balance sheet. Corporate sponsors have provided protection in the Buenos Aires project, for example. But recourse to project sponsors goes only part of the way, since, unlike in the power sector, relatively few highly capitalized companies operate in the water and sanitation sector, and domestic regulations have limited the ability of the large English and Welsh companies to shoulder international risks.⁶

Hence, increasing balance sheet financing may require significant industry restructuring, such as consolidating ownership and operation of regional water utilities or encouraging the integration of different utility sectors. Malaysia's approach to bundling the country's entire sewerage system under one concession is an example of project pooling. Although that project is experiencing tariff collection prob-

lems and has forgone the benefits of comparative competition that are achieved when systems operate side by side, the approach secured revenue streams for the project sponsor with which to finance a large number of small investments that would not have been commercially viable on their own.

Financial and operational sustainability requires a utility to finance investments from internal cash and long-term bond issues. Water projects are in a position to use these sources of finance effectively. Once established, water projects can have stable revenues, which permit not only internal financing but also access to a much broader class of investors through bond issues. Of developing country projects, only Aguas Argentinas has moved significantly in this direction: internal cash generation accounted for 9 percent of financing in the first three years and was expected to rise to 30 percent in the subsequent three.

The use of bond financing by privately financed water projects and utilities is relatively new. In most developing countries both the general development of bond markets and the development of economically viable water utilities is at an earlier stage. It is likely that just as utilities will benefit from bond market development, the growth of strong utilities will spur the growth of domestic bond markets.

Overcoming the Disadvantage of Small Size: The Role of the Public Sector

On average water and wastewater investments tend to be much smaller than in other infrastructure sectors because of the small fragmented size of the market. Municipalities are in charge of water and sanitation, and investments in facilities reflect demand within their jurisdictions. Even where large investments are expected, they are spread out over time. This pattern of small, incremental investments contrasts with the construction of power plants and transportation projects (toll roads, ports, airports), where large investments are typically made over a short period of time.

The relatively small scale of water and wastewater infrastructure projects is an obstacle to attracting finance. Potable water and sewage treatment facilities generate little interest from commercial banks because the projects are small, their credit is unrated (or the credit of their sponsor is weak), and transactions cost are proportionately higher than for large projects. For banks the cost of due diligence is about

the same for large and small projects; since the fees earned are greater for larger projects, there exists a natural bias against small projects. Overall, the transactions costs of a project—the legal, consulting, and financial costs of structuring a small project—may be as high as those for a larger project (Klein, So, and Shin 1996).

To address the scale-related finance gap, small projects may have to rely on greater equity commitments and credit enhancements by third parties and look for creative financial structuring techniques, such as bundling of projects. Governments and official financial agencies, such as the EBRD's private multi-project financing facility and state revolving funds, can also provide financing.

Formation of multi-utilities may also help overcome the small scale problem. By combining, different utility sectors may be able to achieve the necessary balance sheet size and credit strength (through diversity) to attract long-term private financing. Convergence or bundling of utility services creates opportunities to realize the following economic benefits:

- Cost savings from rationalizing two or more complementary cost bases, especially in customer services (meter reading and tariff collection) and finance and administration
- Diversification of regulatory risk
- Provision of total utility solutions for customers
- Transfer of important strategic and marketing knowledge from a deregulated business to a regulated company.

The United Kingdom has been the leader in the formation of multi-utilities. United Utilities and Scottish Power, two of the three British multi-utilities, provide electric generation/distribution, water and sanitation, gas distribution, and telecommunication services. The convergence of utility services can be expected to bring about far-reaching organizational and regulatory changes. For example, British companies have already created facilities management companies to handle ancillary overlapping services and serve the broader market, and industry regulators have demanded strict ring fencing of the core utilities to make the ownership structure transparent. Financial changes are also expected, as companies take on greater debt to buy assets, and new services may be exposed to competitive markets.

Multi-utilities are playing a growing role in developing countries. Combined gas and water utilities exist in Slovenia and Argentina. In Côte d'Ivoire the project company developing the water supply concession went on to develop the electricity distribution system and a power generation pro-

ject. This multi-utility approach is being adopted in the concessions recently awarded in Casablanca and Gabon and is being looked at for water and power projects in Morocco and the Congo. The implications for the concentration of monopoly power are a concern, however.

Conclusions

The experience of the private sector in the water and sanitation sector has been a positive one, in which the private sector has successfully demonstrated its ability to provide water and sanitation services with increased efficiency and at affordable rates within different country, regulatory, and contractual contexts. The growing worldwide shortage of water, serious problems with access to clean drinking water, and the escalating requirements for waste treatment can be expected to prompt increasingly bold experiments with private involvement in the water and sanitation sector.

While firm conclusions are premature in what is yet an incipient movement, certain lessons emerge for successful private sector involvement in the water and sanitation sector.

Commitment and Strategy

- Governments must strongly commit to private participation, both financially and politically.
- A strategic sector view that sets a sustainable utility structure as its goal (that is, goes beyond discrete BOT/BOO projects) must be adopted in the future. Full utility concessions and asset sales, which offer the broadest scope for operational and financial improvements, can address systemwide problems.
- Where full utility concessions or asset sales are not feasible, the operation and financing of utilities should be separated from their regulation through corporatization, and operations and cash flow should be improved through operations and maintenance and lease contracts.

Financing Responsibilities

- In the transition from government to private financing, government support is likely to continue through

various types of credit enhancement and, in some cases, direct subsidies.

- In the long run, measures to develop financing methods for several small water and sanitation projects under the jurisdiction of provincial and municipal governments will be required.
- Forms of credit pooling and enhancement should be explored.

Contracting and Regulation

- When possible, transparent competitive tendering should be used to generate information on asset values, tariff levels, and qualified operators.
- Mechanisms for adjusting tariffs must be transparent and predictable, and they must provide incentives for increased efficiency.
- Although gains in efficiency can be expected as a result of private participation, in most countries it is realistic to expect and plan for price increases if utilities are to expand systems and meet increasingly stringent environmental standards.
- Contracts must spell out the private sector's obligations and clearly identify the penalties for nonperformance. Security of contracts should be provided to facilitate financing.
- A contractual and regulatory structure that minimizes uncertainty and provides flexibility in renegotiation and operational autonomy for the operators—while ensuring that environmental and health standards are met—must be established.

Notes

1. In principle, capital market financing can occur earlier. Its importance is likely to grow substantially, however, once a track record of revenues is established.

2. Everything else equal, projects that face greater market risk will have less capacity to service debt and thus lower debt-equity ratios. Through loan covenants lenders protect their residual claims by requiring, for example, that projects meet minimum debt service coverage ratios or that cash dividends not be disbursed if the current ratio falls below a certain level.

3. The economic interest of each party should be borne in mind when allocating risks and responsibilities. For example, construction companies are generally less concerned with the long-term operating performance of a facility than with the opportunity to take out construction profits from a project. Turnkey contracts and the need to maintain a reputation for high-quality work act to align the construction company's incentives with those of the sponsor. To prevent the distortion of incentives that may occur if a construction contractor is also a sponsor, the government may

require that the sponsor hold a significant stake in the project over the life of the concession (as it did in the Aguas Argentinas concession).

4. The European Investment Bank (EIB) is the largest infrastructure financing institution in Europe. From 1991 to 1995 the EIB lent ECU 84 billion in 15 member states in the European Union and 11 Central and Eastern European countries. The bank is a shareholder in the EBRD and the European Investment Fund, with which it also cofinances. It raises funds by issuing bonds on the capital markets, where it is the world's largest nonsovereign borrower (*Project Finance International* 1996).

5. The prefinancial closure cost of preparing a limited recourse financing for a power project ranges between \$4 million and \$8 million, with legal costs representing about half of these costs (Churchill 1995).

6. The regulated English and Welsh water companies will have difficulty exposing their balance sheets to international project risk.

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Bidding for Private Concessions

The Use of World Bank Guarantees

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Foreword

With the move toward private provision of public services, governments are increasingly using competitive bidding to award infrastructure concessions to private sponsors. Financing these projects, however, has often been difficult for countries with a less than investment grade credit rating and with limited access to the capital markets. Furthermore, preparing and launching a competitive bid for the award of a private infrastructure concession is a complex and resource-intensive undertaking, the outcome of which affects not only the project, which is the subject of the concession, but the credibility of the government in relation to projects that it is planning to implement in the future. It is important that, throughout this process, the government and its implementing agency be supported by a qualified team of financial, technical, and legal advisers.

To assist in this effort, the Bank has worked closely with governments and public entities to structure bidding and project documents. It has also provided technical support to governments in the areas of preparation, negotiation, and award of private concessions for high-priority infrastructure projects. Within this context, governments have also asked the Bank to provide loan guarantees in the bidding process to facilitate viable financing proposals on the best possible terms. Recognizing the increased participation of the World Bank in this area, West Merchant Bank Limited was appointed by the World Bank's Project Finance and Guarantees Department to produce a report that provides general guidance on how governments may award a competitively bid private concession.

Hiroo Fukui
Vice President
Resource Mobilization and Cofinancing

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Abstract

The report identifies the critical issues that are involved in the tendering and evaluation stages of bidding for private concessions. It draws on a survey of bidding experience in eight water and toll road projects in seven countries (China, Hungary, Mexico, Peru, Thailand, Turkey, and the United Kingdom). Although the information available from this survey was not comprehensive enough to establish any strong overall generic trends, either by industry sector or geographical region, it was observed that where the process of selecting of the concessionaire appears to have been handled more informally, it was difficult for the host government to be satisfied that it had achieved an optimum level of risk transfer from the public to the private sector.

The report also proposes an approach by which a World Bank guarantee can be effectively integrated in the bidding process with the aim of providing the optimal level of credit enhancement necessary to attract responsive and competitive bids. For partial risk guarantees this necessitates the government making up-front decisions about the risk and obligations it is willing to assume and then reaching agreement with the Bank on the extent of risk coverage under its guarantee. This process may proceed in a structured manner, in which the guarantee terms are presented in the bid documents, or the bidders may be asked to propose the use of the guarantee and the scope of risk coverage.

Executive Summary

The broad findings and recommendations of the report are summarized below:

- To maximize competitive interest from well-qualified bidders, the government should adopt a strategy aimed at minimizing the costs to bidders of preparing their proposals and restricting the number of bidders in the final tender round to no more than three or four. Governments should also ensure that the tender process is undertaken swiftly and efficiently.
- Governments should take a number of steps before the tendering process begins: (a) establish a dedicated project team made up of experienced individuals in the areas of engineering, financing, market analysis, revenue forecasting, and legal matters; (b) make progress toward the establishment of an appropriate legal and regulatory framework for the operation of private concessions; (c) establish a clear definition of what is required from the private sector; (d) launch an expert review of the financial viability of the project, to evaluate its suitability for private finance; (e) decide on how any financing gap revealed by the financial review will be filled; and (f) develop a firm plan for the bidding process, including the timetable, number of stages, and the objectives to be achieved at each stage.
- The government needs to ensure that the tender documents to which bidders are asked to respond contain a clear set of requirements and specifications covering the commercial, financial, and technical aspects of the project.
- In producing the technical specifications, the government needs to consider carefully the tradeoff between issuing an output-based performance specification, which will give bidders scope for innovation in design and risk taking, and a more detailed input-based specification that, while having the advantage of reducing bidders' costs, will have the effect of transferring more risk to the government.
- The government should consider testing the market through the bidding process in those areas where there is uncertainty about the private sector's appetite for assuming different levels of risk. This can be achieved by inviting tenders on a manageable number of alternatives, specifying different levels of risk transfer.
- In order to attract responsive bids that focus on the government's key objectives, the evaluation criteria need to be spelled out transparently in the tender documents.
- If the need for any World Bank guarantee is identified in the review of the project's financial viability, detailed information on the terms of the guarantee should be provided in the tender document. If there is any uncertainty about whether or the extent to which such a guarantee is required to ensure that the project can be financed by the private sector, the government could test the market by inviting bids based on different types and levels of risk protection.

A Summary of Experience with Bidding for Concessions

This section examines experience in selected concession-based projects in two infrastructure sectors, toll roads (including estuarial crossings) and water, in Western Europe, Eastern Europe, Latin America, and Asia (figure 1).

Together, the projects cover a spectrum of countries, financing and commercial environments, project sizes, and contract structures. (The relevant features of these projects, to the extent that such information is in the public domain and not of a commercially confidential nature, have been briefly summarized in the appendix. However, considering that the sample size of the projects investigated was restricted to a relatively small number and that the available project information was limited as described above, there were insufficient data to make it possible to establish any overall generic trends (by industry sector or geographical region) either in relation to the bidding or the financing processes for these projects. This is especially so with regard to what was expected by the government in relation to these projects *ex ante* and how this compared with what was achieved *ex post* the bidding process and final selection. Among the eight projects examined, a few broad observations can be made.

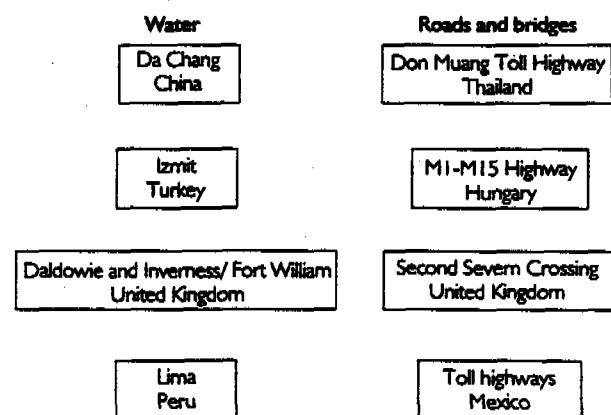
Bidding Process

Formal competitive bidding carried out with a varying degree of thoroughness appears to have been a feature of projects cited for Hungary and the United Kingdom, and possibly for some in Mexico, but appears not to have occurred in China and Turkey, where it is possible that more informal approaches might have been used. The details of the concessions in these countries evolved in a long negotiation process with one party. Information is not available on the

project in Thailand. The pros and cons of formal and informal approaches to bidding are discussed in later sections. While an informal process may result in a project reaching signature and financial close more quickly, this type of approach, which generally involves little or no true competition among different private sector groups, makes it virtually impossible for the government to be fully confident that it has obtained the best possible price (or tariff) and achieved its other objectives.

The Second Severn Crossing project in the United Kingdom used an explicit two-stage bidding process, and the approach adopted by the government had many features of transparency and clarity in bidding requirements and evaluation that are discussed in later sections. Since the Second Severn Crossing project was tendered, the government has formally adopted a policy known as the Private Finance Initiative, under which a framework has been developed for private sector involvement in projects in fields ranging from transport and infrastructure to health

FIGURE 1
Two infrastructure sectors in Western Europe, Eastern Europe, Latin America, and Asia



care and information technology, which were previously done in the public sector. This usually takes the form of a concession. Guidance has been provided by the government to various departments and agencies, including among other things, how the bidding process should be handled and the considerations that should apply to achieving optimal risk transfer to the private sector and obtaining value for money for the public sector. A number of features of the Second Severn Crossing tender process have been incorporated into this guidance. Over the years the U.K. government has refined its guidance to the departments implementing the many different types of projects that now come within the scope of the Private Finance Initiative. Consequently, where these steps have been well applied, a significantly greater level of effectiveness has been achieved in the bidding process. Scottish Private Finance Initiative Water projects are expected to follow these processes.

The bidding process adopted for the M1-M15 Motorway project in Hungary was similar to that adopted for the Second Severn Crossing in that it involved the release of extensive tender documents for bidders, including a draft concession agreement. The tender documents displayed somewhat less clarity, however, than those for the Second Severn on some of the government's requirements and evaluation criteria. It is interesting to note that the financial adviser to the Hungarian Government was Morgan Grenfell, a British merchant bank.

Based on the information available, the other competitively bid projects were not perceived to have achieved comparable standards. It is likely that the governments in the countries where these projects are located had not sufficiently addressed all the critical issues in relation to bidding and evaluation, including the establishment of an appropriate concession framework before embarking on the process. As discussed in later sections, a number of critical issues need to be addressed at the appropriate time by the host government to facilitate a smooth, competitive bidding process that promotes the achievement of government objectives. Arguably, one of the reasons for the lack of success thus far in the water project in Lima, Peru, relates to insufficient attention to these issues at the outset.

Accurate information on the elapsed time from the date the respective governments began work on a project to the date of contract award is not available; broadly speaking,

however, projects diverge considerably in this area, with projects in the developing country environments sometimes taking considerably longer largely as a result of delays in policy implementation. An estimate of the time that should be allowed for when planning for a competitive bid situation for such an infrastructure project is provided below.

Risk Sharing between the Public and Private Sectors and the Role of International Institutions

Among the sample of projects, the U.K. projects, such as the Second Severn Crossing, have the most clearly defined risk-sharing arrangements between the public and the private sectors. (*Private sector* here includes investors, lenders, contractors, and the users of the service.) Also, in view of the relatively well-developed legal and financial environment, a large number of risks relating to construction (including ground conditions), long-term maintenance, and operation could be passed to the private sector. The rationale for why it is possible to achieve a more systematic risk transfer in countries with such a legal and financial environment is discussed in later sections.

In the M1-M15 toll road project in Hungary, some of these risks were also passed to the private sector. However, at the time of the bidding competition, there was considerable concern among international lenders and investors about the economic and political risk, and therefore the involvement of the European Bank for Reconstruction and Development (EBRD) in the financing package was seen as essential. Although in the bidding document the government suggested that the EBRD's involvement would be limited to the provision of a loan of about US\$75 million, the financing that was eventually put together after the selection of the winning bidder needed much more extensive EBRD participation. One possible reason could be that there was a greater shortfall in the availability of private sector finance than had been anticipated at the outset. As far as is known, the EBRD did not participate in the evaluation of bids.

It is conceivable that had the government done its analysis more thoroughly in advance and indicated in the tender documents the availability of a more realistic level of EBRD financing (as opposed to making this known after the selec-

tion of the preferred bidder), it would have been able to obtain, under competitive pressure, a better overall price from the private sector. The preferred bidder has no incentive to make meaningful adjustments to its offer when additional support is offered after it has been selected. This point is relevant to the discussion on the inclusion of World Bank guarantees in bid documents.

The risk transfer to the private sector in the other projects examined, especially to international lenders and investors, does not appear to have been achieved to a comparable degree, as summarized in the appendix. There may be many reasons for this, including:

- Absence of an appropriate legal and regulatory framework for limited recourse financings in the country.
- Private sector concerns, unanticipated by the government at the time the private sector was approached (and possibly by the bidders in the early stages of the tender), about domestic political risk and economic and credit-standing issues.
- Private sector concerns, unanticipated by the government at the time the private sector was approached (and possibly by the bidders in the early stages of the tender), about specific commercial risks being transferred—for example, consumer risks in a water supply project—which may be intrinsically unacceptable to the private sector in certain locations.
- Inappropriate attention given by the government to the critical issues relevant to the bidding process, as outlined in later sections, and thereby a suboptimal handling of this process.

General Considerations

The development of a concession-based project in any infrastructure sector will be a substantial undertaking in any geographical region. This is often not sufficiently understood by governments and as a result, the challenges involved are underestimated. The aim of such a project is to involve the private sector more directly in providing a public service, with the public sector functioning in a facilitating role and, if appropriate, also as an ombudsman conveying the interest of users of the service.

Key Objectives in Concession-Based Projects

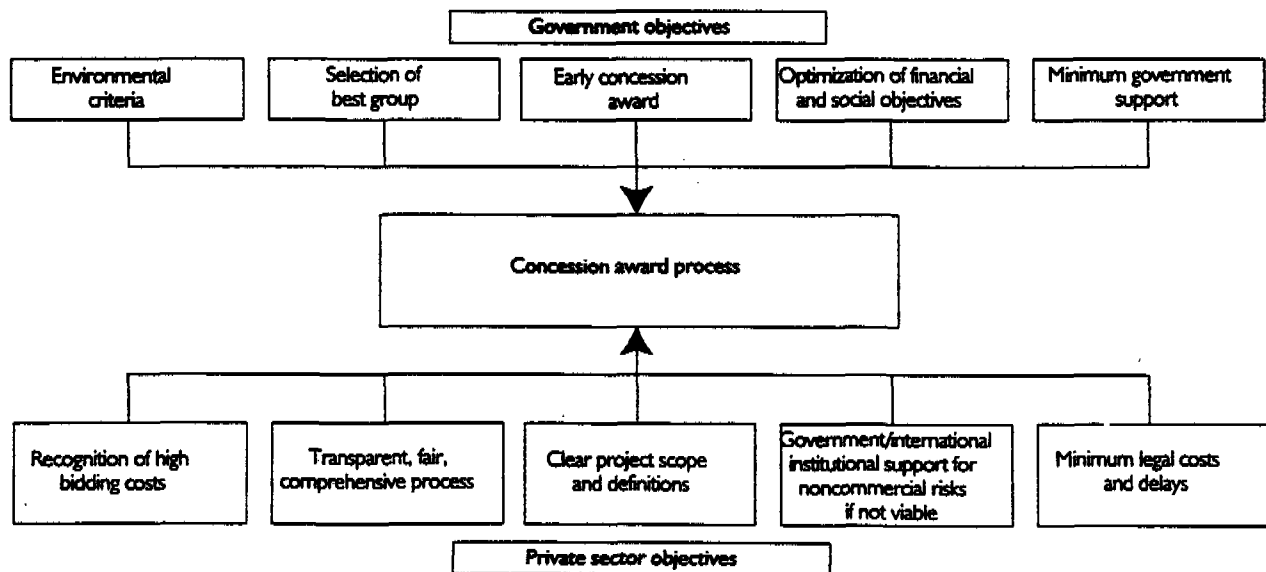
An assessment of critical issues in projects involving bidding for concessions must be based on a proper apprecia-

tion of the key objectives of both the public and private sector participants in such a project (figure 2).

The key objectives of the host government are likely to include:

- Minimizing government expenditure and contingent support for key infrastructure.
- Ensuring that the lowest possible cost of service provision can be achieved through competition and the harnessing of private sector efficiencies while at the same time achieving an optimal level of risk transfer to the private sector.
- Providing for transparency in the competition.
- Ensuring timely project completion and operation.
- Maximizing the wider economic and financial benefits of the project.

FIGURE 2
Government and private sector objectives



These objectives will need to be reconciled among themselves and with the concerns of the private sector, which include:

- *Clarity in project definition.* The project, including its interface with other infrastructure and with various third parties, must be clearly defined, although a balance needs to be struck with the desirability of encouraging private sector innovation in the competition. This issue is discussed in more detail in later sections.
- *Adequacy of available information.* Sufficient information of adequate quality needs to be made available so that realistic, comprehensive expressions of interest can be made and final bids submitted.
- *Realism of bid structure.* The bidding procedure needs to be clear and unambiguous, have a realistic timetable and provide opportunities for questions and feedback of bidders' views.
- *Transparency in evaluation.* The process of selecting the concessionaire should be transparent, smooth, and fair, and the basis for awarding the concession must be defined comprehensively at the outset.
- *Minimizing bidding costs.* The bidding process should minimize the high costs of preparing a final bid.
- *Clarification of external support.* Any external measures required to make the project financeable (such as support from the government or international institutions) should be clarified before the bidding process begins and be perceived as practical.
- *Efficient resolution of legal and regulatory issues.* Arrangements need to be made to ensure that the costs and delays of resolving any legal and regulatory issues are minimized.

Suggested Overall Approach

To achieve the government's objectives and to maximize interest from potential bidders, thorough preparation is required. This includes:

- Establishment of an appropriate legal and regulatory framework for the project in advance of the bidding competition. If an appropriate framework is

already in place, this aspect of the preparatory work will not be necessary.

- Clear definition of the government's requirements of the private sector with respect to the project, and a realistic commercial framework for private sector participation.
- Review of the financial viability of the project, including an expert assessment of the basis for and extent to which private sector finance can be obtained.
- Decisions on filling any funding gap revealed by the review of financial viability.
- Decisions about the bidding process itself, such as the number of stages involved, the extent of negotiations after bid submission, and so on.

It cannot be emphasized too strongly that thorough preparation is fundamental to ensuring that the bidding process can proceed smoothly and that the government can achieve its other objectives. A well-prepared project will attract a wider and more competitive response from the private sector, as potential bidders are more likely to be convinced that they will be better able to control the costs of bidding for the concession. To the extent that this approach is not followed, the later stages of the bidding process are likely to be characterized by delays, confusion, and an inability to optimize the key objectives of both sides.

This suggested approach, which clearly requires that the government make firm policy decisions on key issues relating to the project in advance of the bidding process, need not exclude the possibility of private sector innovation in design, engineering, and commercial risk taking where it has the freedom to propose its own solutions. For instance, in areas where the government is uncertain which approach will yield the optimum competitive response, it could consider testing the market by inviting bidders to bid on a range of different specified alternatives. These could include, for instance, prices that bidders may charge for assuming different specified levels of technical, financial, or regulatory risk, and innovative technical solutions that bidders may be able to propose relating to project design, construction, or maintenance, while still meeting defined minimum perfor-

mance criteria. Issues treated in this way need to be few in order to keep the tendering and evaluation processes manageable.

Other Approaches

If approaches different to the one described above are adopted, such as those that may be described as open-ended (major policy decisions and clarifications are not made in advance of bidding), a number of drawbacks are likely to be encountered:

- Creation of confusion in the minds of bidders regarding the government's requirements and its approach to evaluation.
- Receipt of widely differing bids that are very difficult to compare and evaluate.
- Considerable delays in effective project implementation.
- Higher bidding costs for the private sector as well as (eventually) higher costs for the government.
- Inability to achieve either public sector or private sector objectives.

Preparation for the Competitive Process

The key issues that need to be addressed in the preparation phase are:

- Assembly of the government's project team.
- Legal and regulatory framework.
- Economic analysis of the project.
- Assessment of financial viability, including the extent to which private finance can be obtained and the nature of government or other support required, if any.
- Framework for private sector participation.
- Nature of the prequalification process.
- Preparation of final tender documents.

These are discussed in turn and showed graphically in figure 3, with an indication of the sequence in which they are taken.

Assembly of the Project Team

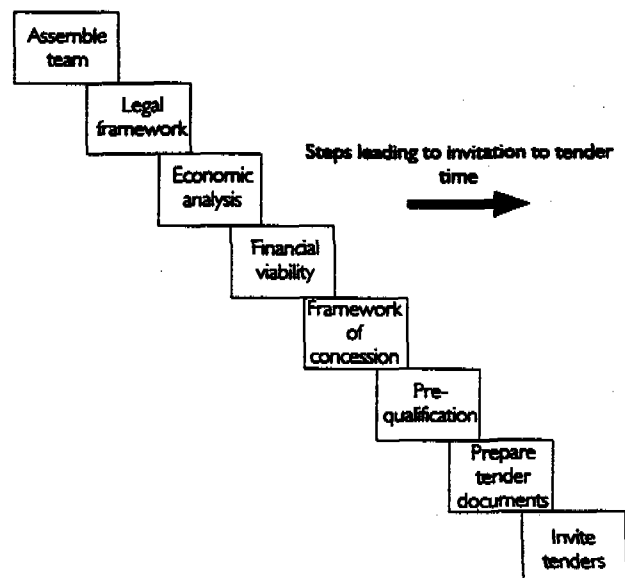
It is essential that the government put together, at an early stage, a multidisciplinary project management team with representation from the different areas of expertise that have a critical bearing on the project. The team would, in most instances, be led by a senior official from the sponsoring government department or ministry. The team should also include:

- Technical and engineering personnel with expertise in the design, construction, and operational aspects of the project.
- Financial advisers.
- Specialists in procurement.

- Specialists in forecasting revenues (depending on the project—for example, traffic economists for a transportation project).
- Legal advisers.
- Personnel concerned with overall policy issues.

Consideration needs to be given to whether there are available resources with relevant expertise in-house or whether outside specialists need to be appointed. Unless the sponsoring department has substantial experience with awarding concessions to the private sector, as well as resources that are able to devote a substantial part of their time to what will be an intensive and demanding process, it is generally advisable to appoint outside consultants to provide technical, revenue, financial, and legal advice.

FIGURE 3
Preparation for the competitive process



It is critical that the official appointed as team leader be capable and credible both internally, in harnessing the work of his team and in securing key policy decisions, and externally, in being able to negotiate with senior private sector figures.

It is beneficial from the government's point of view that external advisers have the knowledge and experience of providing effective and practical advice on similar concession-based projects and in dealing with both the public and private sectors. Up-to-date expertise in the relevant industry sector and local knowledge are other criteria on which a selection can be made.

The relative importance of the selection criteria referred to above varies, depending on the nature of the advice and, potentially, the nature of the project. The relative importance of various selection criteria in the appointment of the financial, technical, legal, and revenue adviser is depicted in table 1.

In many cases, whether the adviser is a foreign entity or a local one is immaterial to its selection. The possession of local knowledge, which is often viewed as particularly important for the legal adviser and the consultant providing advice on revenue forecasts, is an attribute that may be held by local firms or international firms with a local operation. It is important, however, that the advisers be able to communicate effectively in a language with which the government officials and internal advisers are comfortable. This may make local participation in the adviser's team essential.

Language skills and other elements of local expertise can be obtained in a number of ways: for example, by appointing an international firm with a well-established local presence and requiring that it ensure that key team members will have appropriate language skills and other local expertise; by selecting an international firm that has formed a joint venture with a competent local firm for the purpose of the pro-

ject; or by selecting a local adviser who meets all the other selection criteria. The external advisers can be appointed either individually under separate contracts, or under one arrangement with a lead adviser—for example, appointment of the financial adviser, with other advisers reporting to him and their inputs coordinated by him. Examples of team structure are illustrated in figures 4a and 4b.

An example of the arrangement illustrated in figure 4b is the appointment of West Merchant Bank in 1993 as a lead adviser to the U.K. Government for a potential toll road project in Scotland, known as the Fastlink. The bank provided financial advice and was responsible for coordinating the activities of engineering consultants, traffic and revenue forecasting specialists, an environmental consultant, and a property consultant. The main advantages of this approach are that, first, the lead adviser can remove much of the administrative burden of managing the advisory team from the government team's shoulders, second, the lead adviser can bring a degree of focus to the advisory team, such that unnecessary work and duplication of effort can be more easily avoided; and third, the lead adviser can help the government avoid having to deal with conflicting advice from different members of the team. The main disadvantage of this structure is that the government loses a certain amount of control over the advisory team.

Legal and Regulatory Framework

Before the private sector is approached, an appropriate legal and regulatory framework must be in place. This should enable the government to award, enter into, and regulate concessions and enable the private sector to carry out all the tasks that may be required to effectively manage the project. In considering the nature of the required legal and regulatory framework, the following issues (among others) need to be addressed:

TABLE 1
Qualifications of team members

	Concession experience	Sector experience	State of the art expertise	Public and private sector experience	Local knowledge
Financial	1	3	2	3	4
Technical	2	1	2	4	3
Legal	1	4	2	3	1
Revenue forecasts	3	1	3	4	2

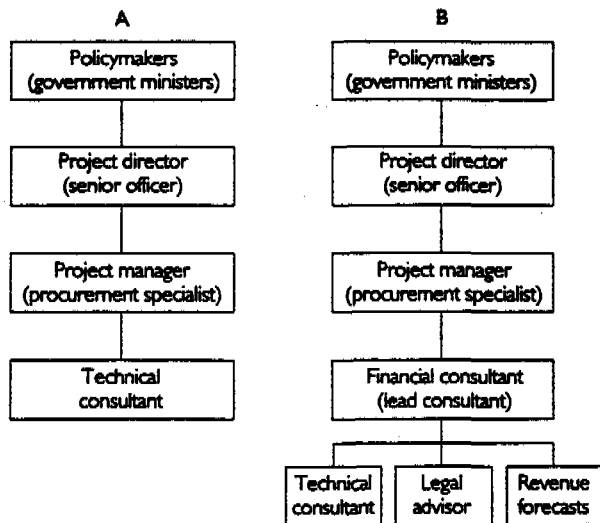
Note: Skills are ranked from least relevant (1) to most relevant (4).

- The power of the government to grant concessions to private sector entities in the relevant sector and, if necessary, to regulate the concessionaire's activities.
- The nature and degree of regulation of the concessionaire's activities that may be appropriate and whether this is best achieved by legislation or through the terms of the concession agreement.
- The power of the concessionaire to undertake the obligations imposed upon it by the concession.
- The possibility that existing legislation inhibits or prevents the concessionaire from maximizing the value of the concession.
- The acceptability of the legal and judicial system to international companies and financiers.
- The existence of laws enabling financiers to take acceptable security.

The absence of an appropriate legal and regulatory framework, if not addressed early enough, can cause considerable impediments to the efficiency and success of the bidding process. For example, in the Second Severn Crossing project in the United Kingdom, the government had to take additional risk as the concession contract agreed with the successful tenderer could not be made effective until it was confirmed by the legislature, which of course could introduce changes or even delay or deny its approval. In

FIGURE 4

Examples of team structure



Poland the implementation of the tendering process for the toll road program had to wait until enabling legislation for the functioning of road concessions could be passed in 1994, including the creation of the Agency for Motorway Construction and Operation and other bodies.

Economic Analysis

Before the private sector is approached, the government should undertake a thorough economic analysis of the project and verify that it is justified on economic grounds. This has the following advantages: it confirms the long-term rationale for the project, it can serve to focus and confirm support for the project from different areas of the government, and it provides the project with credibility in the eyes of potential private sector bidders, international banks, and institutions. Preferably, a report on the economic analysis should be made available to all those interested in bidding for the concession.

Review of Financial Viability

Early in the preparation phase the government's financial adviser should review the financial viability of the project. This will involve the following main steps as appropriate:

- Review of project assumptions, risks, and financing options.
- Financial analysis.
- Consideration of ways of enhancing project revenues, if appropriate.
- Consideration of potential government actions to support project funding.
- Investigation into any support that might be available in relation to political and economic risks which are perceived by banks and financial institutions to be unacceptable.

Before the review of financial viability, a decision should be made on the scope and definition of the project (for example, for a tolled bridge: its location and whether the project includes the provision of access roads); or at the very least, the options should be narrowed down to no more than two or three whose viability can then be examined.

Review of project assumptions, risks, and financing options

The financial adviser, in conjunction with the rest of the project team, will first need to understand the technical and economic assumptions on which the project's financial viability is to be assessed, examine the risks associated with these assumptions, and assess financing options that may be available against this background.

Technical assumptions. Depending on the type of project, the technical assumptions that need to be considered include, as appropriate:

- Capital cost estimates and the extent of their firmness.
- The construction program, including a timetable and its interaction with the costs;
- The degree of risk associated with design and construction and the implication for costs estimates and the timetable, for example, ground condition risks and design risks.
- Operating costs, including maintenance and staff costs, and the risks associated with these.

Although the technical assumptions are developed by the technical advisers, the financial adviser's understanding of these issues is often critical in raising the right questions on which such assumptions must be formulated to make the project financeable.

Support infrastructure. If applicable, the requirement for providing or upgrading any supporting infrastructure for example, approach roads for a tolled road or bridge project—the indicative costs, and the timetable for completion of these will need to be examined.

Revenue projections. Of critical importance is the availability of up-to-date revenue projections. For a tolled road project, for example, the financial adviser, in conjunction with the project team, needs to examine the assumptions made in any traffic study conducted. Such an assessment would take into account a whole series of factors that would have a bearing on the revenue projections. By way of example, for a tolled road these would include:

- Existing patterns and level of demand for travel on the proposed road.
- Growth in demand for road transportation in the relevant area as a result of economic growth, increases in the rate of car ownership in the country, and changes in the cost of road transport relative to other modes.
- Factors that would attract motorists to the proposed road rather than to other existing road links, if any, for example, time savings, and road quality.
- Changing development patterns, particularly the location of commerce, industry, and residential facilities.
- The effect of provision or upgrading of competing forms of transport for both passenger and freight traffic, for example, rail links.
- The extent to which any new journeys will be made (that is, generated traffic).
- The proportion of foreign traffic, if any, and the potential for collecting tolls in foreign currency.
- The potential for charging differential tolls to freight and passenger traffic and to domestic and foreign traffic.
- The resistance of motorists to paying tolls at different levels.
- Any requirement on the part of the government for tolls to be regulated to ensure that the road will appeal to a sufficiently wide number of users.

For a water project, factors affecting revenue projections are likely to include:

- Demand, based on existing population estimates, ignoring existing constraints on service provision.
- Potential changes in demand as a result of the introduction of water metering, changes in consumer lifestyle (for example, as a result of economic growth), industrial requirements, and improvements in industrial water recycling.
- The rate at which consumers are likely to switch from existing supplies (for example, wells or existing distribution networks), to the service provided by the concession.
- The demand from areas that hitherto had no access to water supply infrastructure, and the rate of increase in this demand.

- The effect on revenues of the reduction of consumer fraud and the introduction of efficient debt collection.
- The effect on demand of the cost to the consumer of connection to the service, the tariff, and different degrees of tariff regulation.

The uncertainties associated with the various factors affecting the revenue projections need to be thoroughly investigated and, where possible, an estimate made of the probability associated with each of them. A statistical analysis can then be undertaken to establish the robustness of the revenue projections and the comparative impact of each factor.

Financing options. Since a key component of the review of financial viability is identification and analysis of the requirements of lenders and investors, a comprehensive understanding of the following will be required:

- The potential types of investors and lenders and other financial sources.
- The particular requirements of each potential source of finance, in relation to such projects in general and the specific project in particular, taking account of the technical, economic, and financial aspects of the project as well as the wider country, political, and economic environment risks.
- The scope for variation in these requirements, depending on the project scope, risks, and potential for upside benefits and other types of ancillary revenues, if any.

Potential sources of finance for a concession could include:

- *Development finance institutions*, such as the IFC, the World Bank, the EBRD, and the IDB. Each of these has its particular requirements. For example, the EBRD and the IDB's lending activities are restricted to Central and Eastern Europe and Latin America, respectively. The World Bank requires a government counter-guarantee in its partial risk and partial credit guarantees to projects, whereas the IFC lends or invests without reliance on any government counter-guarantees;

- *Foreign export credit agencies.* This type of funding can be advantageous in that it is often at a fixed rate of interest and of a longer maturity than bank debt. However, in general it is tied to the supply of goods and services from the country whose export credit agency provides or facilitates the finance. It is therefore unlikely that projects such as tolled roads, which usually have little imported content, can make much use of it.
- *Domestic bank debt.* This can prove to be a very flexible source of financing for a project. Its availability depends on the depth of the local market and the appetite of local lenders for limited recourse project finance. In addition, its usefulness will depend on whether the maturities available match the needs of the project.
- *Foreign bank debt.* Many international lenders have an appetite for well-structured project financings in infrastructure. The availability of this type of finance could depend on, among other things, the view taken by international banks of the country risk (particularly the foreign currency risk) and its usefulness will depend largely on the term for which such banks are prepared to lend.
- *The bond markets.* This type of financing has been used to serve a limited number of large projects, particularly in the power sector. Although less common for other types of infrastructure, it was used successfully for the M1-M15 Motorway project in Hungary, where domestic bond issues, partly guaranteed by the EBRD, formed a significant element of the funding package. It has also been used more recently in the United Kingdom for four transportation projects, which are concessions implemented under the terms of the U.K. Government's Private Finance Initiative. The appetite of international investors for a project-related bond depends on their perception of the country risk, the specific project risks, and the likely liquidity of the paper. The potential for a domestic issue depends on these factors as well as the depth and diversity of the domestic financial markets.
- *Commercial interest investors.* These investors contribute to the equity of a project either because they have a

direct commercial interest in its success (for example, the contractor responsible for construction or the company responsible for long-term operation) or because their long-term business interests may be indirectly affected by it. An example of this is the investment made by National Express, a bus company, in the Channel Tunnel Rail Link project in the United Kingdom. While investment by companies with an indirect commercial interest is not common, at least at the preconstruction stage, investment by companies who have a direct contractual interest generally provides the main part of the equity portion of funding for concession-based infrastructure projects, at least until the initial construction has been completed.

- *Institutional investors.* The availability of long-term institutional investment for concession-based projects at the preconstruction stage depends largely on the depth and diversity of the domestic financial markets. Recently, however, specialist infrastructure funds have been established that are prepared to invest internationally in concession-based projects, if specific requirements are met.
- *Venture capital.* This is sometimes considered a potential source of finance for infrastructure projects, but its use is limited as the investors require a high rate of return and a high degree of confidence in an exit route for their investment after a relatively short period, for example, five years.
- *Public share issues.* These have been successfully undertaken for some large, high-profile projects in well-developed markets, for example, the Hub Power Company's project in Pakistan and the Channel Tunnel in France and the United Kingdom. A public issue is also planned for the United Kingdom's Channel Tunnel Rail Link. For most projects, however, a public issue is only a realistic prospect once construction is complete.

Financial analysis

The financial adviser will need to construct a project-specific financial model, utilizing the information derived from the various assumptions described above. The model should be designed to take account of the wide range of potential

financing and support options particularly relevant to complex financing situations. The model will need to allow a full examination of:

- The project's overall financial return, based on several scenarios of capital costs, revenue forecasts, and duration of the concession.
- The likely returns required by investors and lenders relative to the risks identified.
- The size of the private sector contribution to project financing based on the direct cash flows of operating the project, in turn based on different corporate, financial, and commercial structures.

The assessment will provide the government with an expert analysis of the likely maximum contribution of private sector financiers to the total investment needs of the project. It will therefore define the funding gap, if any, that must be covered from other sources. The financial model can then be used to investigate the options available to the government to complete the financing scheme.

If the project lends itself to being financeable merely by adjusting the toll or tariff rate to a level that is adequate to meet the projected funding and operating costs and provide a return to investors, the financial analysis will be able to provide the government with an assessment of the type of financing structure that will lead to the lowest possible toll or tariff rate. It is important that price elasticity of demand be taken into account when examining the effect of pricing differences on project revenues.

The model can also be used to analyze the potential that might exist for any sharing by the government in the upside of the project, that is, profit in excess of that projected by the base case. Such profit sharing mechanisms have formed part of a number of concessions, including some Private Finance Initiative projects in the United Kingdom, for instance, the recent private prison concessions. However, while governments sometimes seek such mechanisms in order to generate revenue for the public sector and prevent the private sector from making exceptional returns, it can be argued that the greater the restrictions imposed on the concessionaire's legitimate upside potential, the greater will be the return it requires under base-case conditions.

Project revenue enhancement

Options for enhancing project revenues could include exploitation of ancillary activities, exploitation of property-related benefits, and packaging the project with other higher-return projects.

Exploitation of ancillary activities. Activities ancillary to, for instance, a road project are potential sources of income. Examples of such activities are service stations containing shops, restaurants, filling stations, motels, and advertising. However, experience of such activities, at least for road projects, shows that they are not significant revenue enhancers although it may nonetheless be appropriate to give the concessionaire the opportunity to exploit them in order to enhance the upside potential of the project. Unless the bidders for the concession can satisfy themselves as to the certainty of such revenues in advance they are likely to discount their value significantly when pricing their bids. Bidders for the M1-M15 Motorway project in Hungary were offered the opportunity of exploiting filling station revenues, although this is unlikely to have had a significant effect on the project's overall financial viability.

Exploitation of property-related gains. The potential for property development gain in connection with a project's implementation can be significant, depending on the circumstances of the project. Significant new transport infrastructure projects, for example, have a positive effect on the value of neighboring land and provide opportunities for development profits to be made. In some instances, it may be possible to offset such gains against the cost of the project and thereby enhance its viability. Where potential gains are identified, a thorough investigation of their potential value and how they can be captured for the benefit of the project will need to be undertaken. In many cases it may only be possible to capture the gain where the government already owns the land in question. The proposed Corridor Sur toll road in Panama is an example of a project where government-owned land with potential development value will be made available to the concessionaire in order to improve the financial viability of the project, although in this case the development gain stems largely from the change in land use (from an airport to residential or other uses)

rather than from the project itself. Similarly, the Hong Kong government was able to exploit property development gain to finance part of the cost of the Hong Kong metro system.

Packaging the project with other, higher-return projects. Packaging the project with another associated high-return project from which revenue could be earned, but which would not necessitate any significant additional capital expenditure to the concessionaire, would be another way of enhancing overall project revenues. After identifying the second project, the key issue will be whether it is a logical fit with the likely skills of groups bidding for the first project. If the fit is not optimal, it may be better to tender the two projects separately to optimize the total benefits to the government. An example might be the packaging of the operation and tolling of an existing road or bridge requiring refurbishment with a concession involving the design, construction, and operation of a new road or bridge. An example of this is the concession for the Second Severn Crossing in the United Kingdom. This possibility is likely to have a more limited applicability in some developing countries, where the value of projects available for packaging might not be sufficiently certain for them to have a significant effect on the financial viability of the concession.

Government actions and support

It is not possible to finance the project on a fully private sector basis, even after taking full account of revenue-enhancing possibilities. It will be necessary to explore ways in which the government could support the project to make it financeable. The primary concern for many governments will be to minimize direct, up-front contributions to the cost of construction, although the extent to which this type of support can be avoided will depend on the economics of the project and the results of the review of financial viability. Depending on the type of project, mechanisms that could be considered include:

Government participation in revenue risks. In certain types of projects, for example, a new toll road, potential bidders are likely to attach a high degree of uncertainty to the traffic forecasts produced by the government or its advisers

and will therefore adopt a conservative forecast for their base-case financial projections. This will result in a reduction in the amount of finance a private sector bidder can provide. The government, however, may be more willing to treat the forecasts as relatively certain, and consequently could afford to agree to provide some revenue protection if the traffic falls below certain levels.

Government participation in geotechnical risks. If existing geotechnical surveys are inadequate for a definitive risk assessment by bidders or if there are serious geotechnical risks that cannot be insured, prices bid for a concession can be adversely affected in a way that could reduce the project's financeability. If these circumstances arise, consideration could be given to the government assuming some of these risks, focusing particularly on risks that it would be unreasonable for the private sector to bear. In this case the government would contribute to the construction costs if additional costs arose as a result of unexpected ground conditions.

Contributions of associated infrastructure. The government can reduce the capital costs of project and enhance revenue by, for example, contributing associated infrastructure works for no or little charge (although this would imply an up-front contribution to construction costs), or by including existing infrastructure in the concession—say, in the case of a new toll road project, a section of existing road, on which additional toll revenues could be collected. If the existing road was previously untoll, the approach is more likely to work if upgrades are first carried out on the road to make it more acceptable for users to pay tolls on it.

Favorable tax regime. The granting of special income tax holidays to the concessionaire (over and above those that may already be available) during the early years of operation and the refunding of any tax on construction and operating costs could have a significant effect on financial viability, although the government would have to weigh the effect of this against the revenue forgone.

Subsidies during the operating period. In many new infrastructure projects the achievement of a positive cash flow in the early years can be difficult and will continue to be so

until the initial level of demand has stabilized. This is especially the case for transport projects. An alternative to the government making cash available to the project up-front would be to make cash subsidies to the project during, say, the first five years, either on a lump-sum basis or on the basis of, for example, units of throughput. These could be in the form of nonrefundable grants or subordinated debt.

Cash contributions during the construction period. The lowest-priority type of direct government support tends to be provision of cash contributions to the construction costs. These could be in the form of nonreturnable grants or subordinated debt or equity.

Support in relation to economic and political risks

Infrastructure projects in countries with a difficult political or economic environment will raise particular issues of a trailblazing nature in relation to financeability, especially where the earnings of the project would be generated significantly in domestic currency, while the finance may be largely foreign currency. These are primarily currency convertibility in relation to the debt service and returns on investment, the risk currency devaluation, and the financing of any government obligations to the project in a situation of budgetary constraints.

Unless these issues are addressed at an early stage, private sector interest in the project will be considerably reduced. Even if the government is prepared to carry the above risks, the project still may not attract sufficient finance if the political risk of the country is not acceptable to international banks and investors. Backup of government obligations by international institutions is likely to be the most feasible way of resolving this issue. Failure to deal adequately with this issue has meant that a number of major non-foreign exchange-earning projects have not been realized in non-OECD countries.

In the first place it is necessary to establish the level of support that government authorities are required to provide, taking account of all the circumstances of the project. Next, the required form and amount of external support by international and bilateral institutions, such as the World Bank, and development finance institutions to back up these obligations must be assessed. The

support mechanisms can vary depending on the precise risks, perceptions of financiers, and the flexibility of the international institutions. The common thread is that the support be focused, that it be the minimum necessary to achieve the objectives, and that it not dilute the bearing of key financial risks by the private sector project promoters.

In addition, if it is shown to be necessary for the government to make an up-front contribution to the construction costs, it may be that an international institution like the World Bank or regional institutions like the Asian Development Bank or EBRD (none of whom would normally lend directly to the project without a government guarantee) would be prepared to finance this on concessional terms. Such institutions are only likely to do this if they determine that the government has relatively severe resource constraints.

Upon completing the review of financial viability, the government's financial adviser should be able to provide recommendations to the project team and the government on the project scope, the financing of the project by the private sector, the form and amount of any government or international institutional support necessary, and the optimal corporate, financial, and commercial structures. The recommendations should be practical, recognizing the particular environment, but should also aim to be innovative and imaginative and take full account of international experience in similar situations.

Framework for Private Sector Participation

Simultaneously with the review of financial viability, and before the bidding process can begin, it will be necessary to define the framework for the bidding process, resolve key policy issues, and if necessary, secure external support from international funding institutions.

Definition of bidding framework

The bidding framework needs to be designed so as to extract from bidders the most competitive proposals that are technically compliant as well as financially feasible. The issues to be resolved and tasks to be undertaken in

designing the bidding process will, depending on the project, include the following:

- The nature of the bidding process.
- The definition of the project in technical terms.
- Identification and undertaking of detailed work to enable the government to provide revenue forecast information—for example, traffic forecasts for a road project—and any other technical and geological data likely to be of importance to bidders.
- Confirmation of a detailed timetable, including, depending on the project, a timetable for items such as any planning procedures, land acquisitions, and legislation.

Nature of the bidding process. Experience suggests that it is preferable that the bidding process be undertaken in a manner that holds the expensive full-bidding stage to a limited number of bidders. The benefits include the following:

- A fewer number of bidders improves the chances for any single bidder to win the concession, and as such, bidders would be more willing to incur the high cost of bid preparation.
- Maximizing the commitment and enthusiasm of the relatively few shortlisted final bidders.
- Saving time at the final bidding stage by confining discussion to fewer prospective concessionaires.
- Allowing early consideration of any innovative alternatives presented.

With such a small number of bidders, it is important to minimize the possibility of any bidder withdrawing, as this would have the effect of undermining the competition. Careful evaluation of prequalification candidates, proper structuring of the bidding process in a way that recognizes the legitimate concerns of bidders, and careful implementation of the bidding process are needed to ensure that bidders do not withdraw at any stage. In addition, consideration can be given to the usefulness and desirability of requiring bidders to submit bonds at different stages of the tender in order to protect the government from the additional costs it may incur as a result of a bidder or the concessionaire withdrawing. The bond-

ing requirements for projects vary greatly with the particular circumstances and therefore it is not possible to provide any generally applicable guidelines about such bonds and their relative magnitudes. However, in very broad terms, based on actual experience of such projects, for a project of substantive size the bonds listed below may be considered, depending on the circumstances of the project and the degree of risk protection perceived by the government as necessary:

- *Conforming bid bond*—issued by or on behalf of short-listed tenderers within, say, one to two months of issuing tender documents (to allow time for tenderers to assess the documents and make suggestions for changes), undertaking that the tenderer will submit a bona fide fully conforming bid. Indicative amount: .01–.02 percent of capital costs.
- *Tender bond*—issued by or on behalf of the tenderer at the time of tender submission, guaranteeing that the tenderer will not withdraw or seek to vary any conforming or additional alternative tender, but will negotiate in good faith with the government up to signature of the concession. It will supersede the conforming bid bond. Indicative amount: 2.5–3 percent of capital costs.
- *Concession signature bond*—issued by or on behalf of the winning tenderer at the signing of the concession agreement to guarantee performance of the concessionaire until the agreement becomes effective. This bond will supersede the tender bond. Indicative amount: 5 percent of capital costs.
- *Performance bond*—issued on commencement of the concession period to guarantee fulfillment of the concessionaire's obligations under the concession agreement. It supersedes the concession signature bond. This bond can be allowed to lapse when a reasonable amount of money has been spent on construction, since by then the project itself could provide the government with sufficient security against concessionaire default. Indicative amount: 15 percent of capital costs.
- *Maintenance bond*—applicable during the last years of the concession to ensure that the project is handed over in the agreed condition. Indicative amount will

depend on a number of project-specific circumstances, including terms of the concession agreement relating to maintenance.

Technical definition. A key issue for early decision will be the nature and extent to which the project will be defined in technical terms and the nature and detail of the specification. A balance will need to be struck between a detailed physical specification that could save bidding time and costs and make evaluation easier, and performance specifications that would allow bidders the flexibility to produce their own cost-effective solutions and that has the effect of transferring design risk to the private sector.

Revenue forecasts. Given the critical importance of forecasts for the underlying demand for an infrastructure project (for example traffic forecasts for a toll road) and the limited bidding period, experience shows it is highly desirable that bidders be provided with full demand (and preferably revenue) forecasts together with the assumptions underlying them and a detailed description of the methodology used to produce them. Although the concessionaire and its financiers will need to undertake their own investigation of demand and produce their own revenue projections eventually, the provision of full demand forecasting information by the government at the bidding stage will shorten the time and expense of bidders in undertaking basic work at a time when their exposure is the greatest. It may also encourage bidders to take a more optimistic view of the revenue projections. If bidders are presented with scanty information, they are more likely to treat it conservatively because they will be unable to satisfy themselves as to the assumptions or methodology used without undertaking expensive original work, which will have the effect of increasing bidding costs. This will be particularly important for a project in which there are considerable uncertainties surrounding the potential demand due to, say, a radically changing economic environment and the lack of experience of other similar projects in the area.

Timetable. The government should prepare a detailed critical path timetable for the project incorporating, if relevant, aspects such as the legal steps involved in land acqui-

sition and planning processes. The interest of bidders can be reduced considerably if they conclude that the necessary measures have not been taken by the time the bidding process starts.

Resolution of key policy issues

It is desirable that key policy issues affecting the scope and nature of the potential concession agreement are resolved before the prequalification process is complete. This is to ensure that bidders focus on the government's key objectives, and that they do not drop out of the competition because of major surprises when such issues are eventually resolved. Prequalification candidates should be advised of the decisions made, and they should be given the chance to amend their submissions, if necessary. Apart from those issues decided in the context of the review of financial viability referred to above, depending upon the project, the policy issues that need to be resolved at this stage include, as appropriate:

- The packaging of the project with other similar undertakings in order to enhance financial viability (as discussed above).
- The nature of risk sharing between government and the private sector.
- The nature of the government's role in participating in or regulating the operations of the concession.
- The form and basis of any other government or external support for external risks required for the project.
- The scope of the concession agreement.

The issues listed above, which all need to be resolved before the prequalification process is completed, are discussed in more detail below. (There will, of course, be many other policy issues to be resolved later in the process.)

Government role in participating in or regulating the concession. A number of mechanisms can be employed by the government in the supervision and regulation of the concession. These range from the government having a minority equity stake to a formal arms-length supervisory relationship. The general preference is for the government to undertake supervision on an arms-length basis.

Defining the scope of the concession agreement. As it is desirable for the concession agreement to be released at the same time as the bidding documents, the legal advisers should begin drafting the concession agreement, in conjunction with the project team as soon as possible, in order to ensure that the completion of the draft agreement does not delay the issue date.

Securing support from international financing institutions

If external financing support is deemed to be a requirement then such support can take a number of different forms: back-up of government obligations (discussed above), funding of government cash contributions to construction costs (discussed above), provision of debt finance direct to the project, and investment of equity directly in the project. The mobilization and integration of this support is critical in ensuring the financeability of the project.

Prequalification Process

In general, for large projects the objective of the prequalification process should be to reduce to about three the number of interested bidders selected for the main bidding process. This stage in the bidding process needs therefore to be stringent so the government can distinguish adequately among candidates. Bidders need to be provided with sufficient information on the project to enable them to undertake an adequately detailed assessment that will allow them to justify the commitment of substantial resources to making a comprehensive and competitive submission. The information provided to potential prequalifiers must be sufficient to attract suitable bidding groups. Apart from information on the design, scope, timetable, and background to the project, the following will be particularly important to candidates, depending on their specific situation:

- Summary demand forecasts, with estimates of revenue and assumptions of demand elasticity.
- Progress on the various critical path actions relevant for the project.
- Scope of the proposed concession, including an outline of the concession agreement covering the key issues.

- Outline of the selection and evaluation criteria to be used.

The assessment procedure should be designed to select the candidates who have:

- The financial, technical, and managerial capacity and expertise to build, finance, and operate the type of project in question.
- Experience of bidding successfully for similar projects and mobilizing project finance.
- Demonstrated commitment and competitive enthusiasm to participate aggressively in the main bidding process.
- The knowledge and experience of conditions within the host country.

In addition to providing details of past technical performance, bidders should be asked to provide, as appropriate:

- A description of their experience on the design, construction, and operation of the type of project being considered.
- A description of the bidder's (a) proposed commercial structure, if awarded the concession, and their understanding of the commercial issues; (b) likely sources of financing; (c) proposed scale of financial commitment and, if relevant, the level of the financial commitments of consortium members; and (d) likely level of financial returns sought.
- Their approach toward managing any construction contracts.
- Their experience of competitive tendering for projects involving a design, construct, and operate concession.
- Their experience of major construction and operational undertakings in the host country.

In evaluating bidders at this stage, relative weights may be allotted to the various criteria listed above and, given the nature of these criteria, careful judgments will often be called for in assessing bidders' capabilities in a number of these areas, rather than there being any strict quantitative criteria.

Assessment of the financial capabilities of sponsors should include the following criterion: the combined net worth of the sponsors should, at a minimum, exceed the sum of the level of equity plus the quantified value of any guarantee-like undertakings, including bonds (which may be required from sponsors to make the project financeable), by a margin that is comfortable enough to enable them to undertake their original business commitments. This element in the assessment carries, arguably, greater relative weight than, for instance, track record in mobilizing project finance. In addition, other factors, such as the realism of the bidder's expected rate of return and how well it has demonstrated its understanding of some of the key commercial and financing issues likely to be encountered on the project, will also carry a significant weight. This approach should allow a judgment to be made about how well a bidder has grasped the risk and business characteristics of the project and reflected this in his or her thinking about the likely financing structures. This has implications for the bidder's capacity and appetite to persist with the demanding bidding and negotiation process and to formulate and implement a credible and competitive financing structure.

A hypothetical example of how six candidates could have scored in a prequalification process for an infrastructure concession in a developed country environment is depicted in table 2. Two candidates prequalified relatively easily, two were judged to be well below requirements, and the remaining two were on the border of acceptability, with each offering a different mix of strengths and limitations. It would only be possible to distinguish between these two bidders with confidence if the information they have provided is sufficiently comprehensive. This will be determined partly by whether the information provided to them by the government is of adequate depth and quality, and partly on whether the demands put on them by the prequalification process are sufficiently rigorous.

Prequalification processes conducted in some developing countries may also result in similar outcomes. However, for a country whose international creditworthiness is perceived to be marginal, the interest of suitably qualified international bidders is likely to be severely limited. To make the project attractive to such bidders, it is important that key

TABLE 2

Prequalification criteria

Criterion	Candidates					
	A	B	C	D	E	F
<i>Capacity/expertise</i>						
Financial	✓	✓	✓	X	✓	✓
Technical	✓	✓	✓	✓	✓	✓
Managerial	✓	✓	✓	X	✓	(✓)
<i>Experience</i>						
Similar projects	✓	✓	✓	X	✓	✓
Bidding successfully	✓	✓	X	X	✓	X
Mobilizing finance	✓	✓	✓	X	✓	X
Commitment/enthusiasm	X	✓	✓	✓	✓	X
Knowledge of local conditions	(✓)	✓	✓	✓	X	X
Prequalification	?	✓	✓	X	?	X

✓ High score; (✓) Moderate score; X Low score; ? Not available.

areas of concern to the private sector be addressed at the early stages of project preparation.

Main Bidding Process

Ideally, the main bidding documentation should be complete and clearly presented so that the amount of abortive work by bidders can be minimized. Bidders allow for uncertainty by increasing expected costs and reducing bid values.

Critical issues

Before the main bidding process begins, certain critical issues will need to have been resolved, including:

- Whether the concession period is fixed, or whether bidders are free to propose the duration of the concession. (Each approach has pros and cons, depending on the nature of the project, including the overall risk transfer structure that has been adopted.)
- If appropriate, the basis on which the concession will revert back to the government or be transferred to another concessionaire.
- Whether it is appropriate to impose liquidated damages relating to delays in completion of construction and commencement of operation.
- The degree of design freedom to be permitted,
- Whether it is appropriate to include in the concession agreement any financial incentives relating to the

operation of the concession, and the mechanism for these.

- Final decisions on risk sharing.
- Common information provision, for example, the commissioning of a ground conditions survey by the government and its inclusion in project costs.
- Final decisions on government support.
- Any bonding or guarantee requirements. (Careful consideration should be given to the appropriateness of these as their cost will reduce the value of the bid.)
- Treatment of qualified or variant bids.
- Restriction, if any, on competing infrastructure.
- Agreements on external support.
- Potential reimbursement of abortive bidding costs.
- Areas on which specified alternative bids will be required from bidders so as to test the market.

These issues involve complex considerations. A balance has to be struck between ensuring that the government's commercial, economic, and social requirements are met, and offering a structure that will attract the private sector. Imposing on bidders restrictions that are unreasonable, impractical, or costly would minimize the private sector contribution or render the concession unattractive.

Given the level of detail required and the importance of maximizing the bid value, a minimum bid period of five to six months is usually appropriate, depending on the complexity of the project. During this period bidders' questions and comments need to be answered with speed and on a

consistent and open basis, with any new information provided to one bidder being copied to all other bidders. Bidders' conferences in which information is disseminated simultaneously may be considered appropriate. However, care needs to be taken to address any bidders' concerns in relation to the intellectual property aspects of their proposals.

Separate consultation meetings with each bidder can also be used to allow bidders to raise issues that they may not wish to raise in the presence of third parties. Governments need to retain an open mind and be prepared to issue amendments to the bidding documents where gaps and inconsistencies are identified by bidders or where issues that could affect the financeability of the concession have been raised.

Considerations relating to the government's technical requirements

The government's technical requirements can be expressed either in a very detailed manner, in the form of an input specification, or more simply, in the form of the performance requirements of the project, that is, an output specification. The pros and cons of these two approaches are summarized in table 3.

As indicated in table 3, compared with an input specification, an output specification allows for a greater transfer of design responsibility to the private sector and provides more scope for innovation and for efficient and cost-effective interface between design, construction, and operation. In order to ensure the effectiveness of such an approach, the government needs to:

- Ensure that its technical team has the relevant experience to enable it to produce a specification that will permit a like-for-like evaluation of bids, and against which the concessionaire's performance can be monitored.
- Consider bidder consultation meetings during the tender period to ensure that the technical solutions bidders have in mind are likely to be acceptable.
- Be prepared to issue amendments to output specifications after consultations with bidders.

This approach was successfully adopted in the M6 Design, Build, Finance, and Operate road project in the United

Kingdom, where the concessionaire's revenue is to be in the form of "shadow tolls" paid by the government.

Bid documentation

The documentation for submission of private sector concession proposals should include, as appropriate, the government's requirements relating to the project and the bidding process, detailed information on the project, and clear bidding instructions.

Government requirements. The bidding documents must include a clear definition and description of the government's contractual, financial, and technical requirements and how they will handle the bidding process up to contract signature. Specifically, this should include:

- A detailed definition and description of the project.
- A draft concession agreement that will include, as a schedule, a technical performance specification relating to both construction and operations, and drafts of any other key agreements to which the government will be a party, such as any direct agreement between the government and potential lenders that gives the lenders the right to take over the concession in the event of concessionaire default. This should help to reduce the post-bid negotiation period, as the government's position on all aspects of the concession will be clear. It is important that these documents be balanced and realistic, rather than reflect an initial negotiating position.
- Full details of the government's proposed support for the project.

TABLE 3

Technical definition: Input versus output specifications

Specification	Input	Output
Most engineers have the expertise	✓	X
Straightforward evaluation of bids	✓	X
Straightforward monitoring of performance	✓	X
Transfer of design risks to private sector	X	✓
Scope for private sector design innovation	X	✓
Scope for acceptable technical solutions	✓	✓
Maximum scope for efficient and cost-effective interface between design, construction, and operation	X	✓

- Details of any external support agreed for the project.

Information on the project. The information provided to bidders on the project should be as full as possible to avoid the bidders incurring unnecessary time or expense, and to enable them to meet the government's requirements. It should be made clear to bidders that, although this information is provided in good faith, it is not warranted by the government and will not form part of the contractual arrangements with the government. The information provided should include, as appropriate:

- Detailed, independently validated underlying demand forecasts and revenue projections, with assumptions and methodology used.
- Survey reports including any detailed soil and ground condition tests that may be relevant, or any detailed environmental assessment of the project site.
- Legislation, existing and proposed, that will affect the project, including any applicable environmental regulations or guidelines.

Bidding instructions and information. The bidding instructions and information should inform the bidder precisely what it needs to do in order to submit a compliant tender and what will happen to its bid once it has been submitted. It should specify:

- The timetable that bidders must adhere to for bid submission.
- The required form of tender.
- Details of any bonds and guarantees required.
- Details of what the bid should contain (see below).
- The precise criteria on which both compliant and variant bids are to be evaluated.

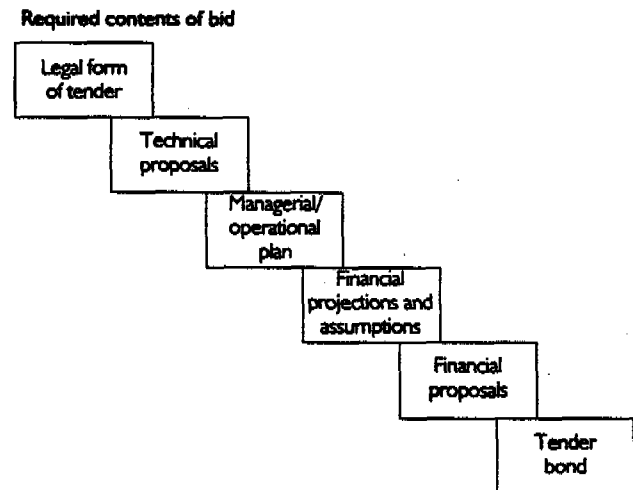
As a minimum, bids should contain the information shown in figure 5:

- A signed form of tender in the specified format.
- Technical proposals that clearly demonstrate the way in that the bidder intends to meet the government's specifications.

- A coherent, well-developed commercial and organizational plan for operations of the concession company.
- Financial projections and analysis demonstrating the viability of the concession company's operations over the life of the concession.
- The assumptions underlying this analysis on all aspects of construction and operation.
- Comprehensive, detailed financing proposals together with evidence of the support of lending and investing institutions. These should cover the full capital costs of the project apart from any amount to be funded by the government or international financing institutions.
- Evidence of adequate financial resources from the bidder, other investors, and lenders to cope with unforeseen circumstances.
- Any bonds or guarantees required at the bidding stage.

Alternative bids. Within the context of the overall suggested approach which, as stated above, could also require bidders to bid on the basis of specified alternatives to test the market on certain issues, it is also feasible to allow tenderers to put forward unspecified alternative proposals that do not comply with all the requirements of the tender documents. However, such alternatives should only be additional to the fully conforming proposals that must also be submitted so that the government can be reasonably sure of receiving

FIGURE 5
Tender documentation



ing a set of bids that it can evaluate on a like-for-like basis. Alternative bids could be based on variations in the allocation of risk specified in the bidding documents or variations in other tender requirements, for example, those relating to technical performance. However, experience shows, especially with Private Finance Initiative projects in the United Kingdom, that such proposals should be made subject to the following:

- Discussions of any proposed alternative bids in confidence with the government during the period before the submission of final bids.
- Acknowledgment by the government that the alternative proposal is acceptable in principle.
- For alternative proposals judged acceptable, determination by the government as to whether the proposal can be considered intellectual property (this is more likely to apply with alternative technical solutions rather than with alternative allocation of risk).

- In the event that the government determines that a the proposal is not intellectual property, notification of the bidder of this judgment and an opportunity given for withdrawal of the proposal. If the bidder chooses not to withdraw the proposal, the government should reserve the right to invite other bidders to bid on the same basis.

The above approach provides for:

- Increasing the scope for further innovation on the part of bidders.
- Confidentiality and protection of intellectual property.
- Elimination of the possibility of bidders spending a large amount of time and expense on preparing fully developed alternative proposals that are subsequently determined not to be of interest to the government.
- Reconciliation of the objective of a fair and equitable evaluation process with the need to provide flexibility to bidders to innovate.

Evaluation and Negotiation

The issues and tasks involved in the evaluation and selection of the concessionaire in the final bidding phase, and negotiation and conclusion of the concession agreement are discussed in this section.

Evaluation

Bidders' proposals are more likely to match the government's critical objectives if the evaluation criteria are precise and transparent. Also, evaluation of tenders on a common basis can be handled more easily and rapidly. It is therefore recommended that considerable effort should be spent in developing firm, precise evaluation criteria (figure 6). Vague and general evaluation criteria result in bidders inevitably spending considerable time and effort on proposals that do not meet the government's critical objectives. The extra time spent is reflected in their tender price, and there will be criticism from the unsuccessful bidders about high abortive bidding costs, as well as lack of transparency and fairness in the award process.

The precise approach to evaluation will depend on the government's objectives, the framework within which the candidates have to bid (for example, for a tolled road project, whether they have complete freedom to vary tolls during the concession period), and the level of detailed information available on the potential socioeconomic impact of the project. If the necessary information is available, it is sensible to assess:

- The *value for money* to the government of each proposal.
- Whether the bids are *technically feasible and compliant* with the specification.
- Whether the bids are *financially feasible and compliant* with the government's financial requirements.

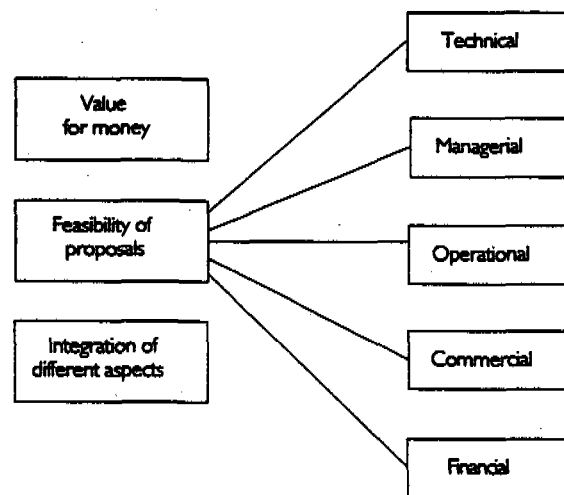
Finally, the different elements of the assessment are integrated and a preferred bidder selected.

Assessment of value for money

The assessment of value for money could involve taking into account, for each bidder's proposal; the level of government support, if any, required to complete the funding; and the costs and benefits of each proposal.

Level of government support. The type of government support (if any) will have been defined in the bidding documents. The evaluation will focus on the amount of support (whether a direct contribution to construction costs or contingency financing) required by each bidder. Clearly, this factor will be irrelevant if the financial viability review shows that government support is not necessary. In this case bidders would have been told that such support would not be available.

FIGURE 6
Evaluation criteria



Costs and benefits. The first issue to consider is whether there is any difference between compliant bids in terms of charges the concessionaire will seek to impose in return for the services provided. Where the concession involves the provision of services to a single government agency—for example, a water treatment project, such as the Daldowie Sludge Treatment project, or shadow tolled roads, such as those known as DBFO roads, both in the United Kingdom—it is appropriate to assess the cost to the government of the charges made by the concessionaire over the concession period. This can be done by calculating the net present value of the initial charges proposed by each bidder—in other words the bidder is obliged to fix the charges for a prescribed period at the level proposed in its bid, and a common discount rate is used to compare the proposed charges. Where the concessionaire is required to take demand risk, the calculation should be based on the government's own demand projections in order for a like-for-like comparison to be made between different bidders, and should incorporate the bidder's proposed escalation regime (if bidders have the freedom to propose this) or the government's prescribed escalation regime (where this is specified in the tender documents).

For concessions where there are multiple customers, such as toll roads or water supply concessions, but where the concessionaire's tariff is regulated, it may be appropriate, depending on the nature of the regulation, to undertake a comparative assessment of bids based on the proposed charges of each bidder on a similar basis as described above. In a completely unregulated environment, for example, where a toll road concessionaire has the freedom to fix the tolls throughout the concession period, it will not be necessary to take toll levels into account, as it may be safely assumed that any concessionaire will eventually adopt a revenue maximizing toll strategy regardless of its initially proposed toll charges.

Apart from the charges to be levied by the concessionaire, other factors could give rise to differences in the costs and benefits of bids received (figure 7). It will be particularly important to focus on these where the concessionaire charges are to be unregulated.

If the tender process gives the bidders the freedom to propose any such factors, one approach would be to calculate the net present value of such costs and benefits for each bid. It is important that the costs and benefits that are taken into account are those for which an objective value

can be calculated, and that their value is affected by those factors that the bidders have the freedom to propose.



For a road project, for example, the bids could differ in terms of the amount of road congestion relief each bid produces in the area where the road is to be built. For such projects, the degree of congestion relief can be said to represent the net benefit of the proposal. The value of this benefit is commonly used in the United Kingdom as one measure of the economic viability of potential new roads. Provided the appropriate data are available, its value can be calculated by expert traffic economists.

This is often done by ascribing values to the various elements of congestion relief—such as time savings to motorists as a result of relieved congestion, savings in vehicle operating costs as a result of reduced journey times, and a reduction in the cost of dealing with accidents, which would reduce in number as a result of congestion relief—and computing a net present value of the aggregate of these individual elements for the period of the concession. The value of the individual elements will vary from bid to bid as each will depend on the proposal the bidder has made for some or all of the factors it has been given the freedom to propose. For example, different time savings will result depending on the road capacity (which will affect traffic speed), the number and location of junctions (which will affect the volume and type of traffic using the road), and the proposed construction period (which will affect the period over which the time savings will accrue). To calculate a value for time savings, it is necessary to be able to assign a unit "value of time" to each category of traffic that is likely to use the road.

Congestion relief may not be a relevant benefit for all tolled road projects, for example, interurban roads. Another

FIGURE 7

Factors resulting in different economic costs and benefits

 <p>Toll roads</p> <ul style="list-style-type: none"> ▼ Road/bridge capacity ▼ Number/location of junctions ▼ Open/closed tolling 	 <p>Water concessions</p> <ul style="list-style-type: none"> ▼ Rate of expansion of coverage ▼ Enhancement of emergency water reserves ▼ How well environmental issues are addressed
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Also, construction period, concession period, and risk taking approaches.

benefit that may differ between bids is the tax revenues to be collected from the concessionaire, which will be inflows to the government. Such revenues, which will differ depending on factors specified by bidders, such as the duration of the concession, the capacity of the road, and the construction period, may be readily calculated.

If some or all of these factors have been predefined for bidders in the tender documents, a simpler approach could easily be adopted. For example, where the concession period is the only variable, a comparison could be made of the toll revenue not collected, measured from the end of each bidder's concession period to some defined point in time. In this case a maximum construction period would need to be specified to bidders, as it would not be possible to integrate the evaluation of different construction periods with different concession periods.

In circumstances where no government support is necessary and all aspects of the project are prescribed by the government except for the construction period, the best value for money could be said to be offered by the bidder proposing the shortest construction period.

To the extent that detailed information on economic benefits, such as the methodology and assumptions necessary to calculate congestion relief, is not available and cannot be provided to bidders to ensure full transparency, then some of the more simple approaches that limit the bidder's degree of freedom would need to be used to make proper value-for-money comparisons.

Technical evaluation

The technical aspects include, as appropriate:

- Whether the bidder's technical and management proposals are likely to meet the requirements of the performance specification.
- Technical and design risks of the proposals.
- The proposed construction costs, their timing, and the likelihood of their attainment.
- The proposed operating and maintenance costs, and the likelihood of their attainment.

Evaluation of technical aspects during the construction and operating period could be simplified by speci-

fying sufficiently stringent technical standards, providing for penalty points to be given for noncompliance, and adopting high standards in relation to the bidder's experience. In these circumstances it could be argued that all the proposals that meet the required technical standard should be treated alike; proposals that do not should be rejected. An alternative approach would be to undertake a probabilistic and risk-weighted analysis that would be applied to the relevant factors in each proposal. The result would be a value for each factor, that would then be applied as an adjustment to the price offered. This second approach is complex and should, in most circumstances, be avoided.

Financial evaluation

It is essential to assess the credibility of the commercial and financial aspects of the bidders' plans over the concession period. This needs to be undertaken with a stringent and detailed review of the underlying assumptions in each bid. The past track record of the sponsors, their financial advisers, and the supporting financiers will be of considerable importance. The assessment of the credibility of a bidder's proposal will involve considering issues such as the bidder's own capital structure, and the sources and availability of funding. At one extreme, if the bidder is a company of substance and is willing to provide guarantees for the repayment of debt, considerations of the financial structure and availability of funds will fall away. However, aspects to be considered in the absence of guarantees will include:

- The amount and nature of the subscription of *equity*.
- The strength and credibility of expressions of financing support from banks and institutions that accompany the bid.
- The *requirements of lenders and other project participants*, such as suppliers and operators, with whom there is an arms-length contract.
- The availability of *standby equity and debt*.
- In the absence of equity, the extent to which the commitment of other participants (in terms of bonds, guarantees, and other conditions) provide an adequate *substitute for equity*.

- The realism of the bidder's *revenue projections* as compared with the government's projections.
- The soundness and feasibility of the *financing proposals*, that is, the extent to which they move into relatively uncharted territory, are complex, or are dependent on external factors.
- The bidder's *proposed timetable* for obtaining underwritten commitments.
- An assessment of the risk that this may not be realized because of problems with the financial, technical, and operational aspects.
- The adjustment of the value-for-money assessment in light of this risk assessment.

Some of this assessment will involve qualitative judgments. The objective would be to define stringent standards of acceptability and, possibly, penalties for not meeting them. Using an adequately specified financial model, the robustness of the financial structure can be tested by sensitivity analysis to assess the ability of the bidder's projected cash flows to withstand adverse variations in economic assumptions. The assessment can then be converted into a yes-no judgment or into a weighting sufficient to remove the risk of failure.

If the bidding and evaluation process is well handled with appropriate built-in protections, including bonding, there is likely to be much greater consistency between the final financing plan and the one initially submitted by the winning tenderer as part of his bid. This was the case in some of the U.K. Private Financing Initiative projects. In other situations discrepancies can arise, as, for example, occurred in the case of the M1-M15 Motorway project in Hungary.

Integration of evaluation

It is necessary to integrate the different components of the evaluation methodology. As indicated above, two broad approaches can be adopted: making judgments between different aspects of bidders' proposals, either implicitly or explicitly (through assigning weights); or developing quantitative criteria where practicable, and using hurdles or yardsticks for other criteria. The second approach has several advantages, although it is recognized that there will be areas where judgments need to be made. The government will, in the last analysis, need to be able to exercise judgment in the round. Depending on the project, the approach should entail:

- Quantitative assessment of the value for money using one or more of the methods described above.

Provided proper preparation has taken place before bid documents are issued, and compliant bids have been received, the selection process should be reasonably straightforward on the basis of the criteria set out above. The process should be conducted comprehensively and with speed. Under appropriate circumstances it may be possible to ask bidders to remove any exceptions and departures from the government's requirements and to reprice their bids on a fully compliant basis. In the event that this proves impossible to achieve, any residual differences between the bids in terms of the risks being assumed could be dealt with by making quantitative adjustments to the value-for-money assessment that reflects the government's view of the value attached to the differences.

Negotiation and Conclusion of the Concession Agreement

It will be necessary to remain alert to a number of issues that can be resolved only during or after the negotiation phase of the final concession agreement. These may include ensuring that:

- Private sector finance can be underwritten on terms contained in the preferred tender.
- Construction and equipment supply contracts have been negotiated that reflect the terms of the concession agreement, and are executed at the same time.
- The process of obtaining legal powers and ensuring other conditions precedent are satisfied in time.
- The government's timetable of actions and contributions is consistent with the proposed timetable for signing the concession agreement.

Underwritten offers of debt finance and shareholders' guarantees should be required at this stage only. This is to ensure that the financial markets are not flooded with competing financial proposals for the same concession (especially in developing country environments with a limited

availability of international finance), and to ensure that abortive bidding costs are minimized by necessitating the completion of financiers' due diligence and imposition of commitment fees only after a preferred bidder has been identified.

The obligation would be on the private sector consortium (and not the government or financial adviser) to raise the finance for the concession. However, the government will need to ensure that the finance promised in the bidding documents is confirmed.

Depending on the circumstances of the project, governments generally find it helpful to negotiate in parallel with, say, the first two of the top-ranking bidders. This has the advantage of preserving the government's ability to exert competitive pressure on the bidders until all contractual details have been agreed, and of ensuring that if the leading bidder withdraws the second choice is more likely to step in to the leader's shoes quickly. In practice, however, because of constraints on the government's resources, the second bidder is often kept in reserve and negotiations with it carried at a less intensive level than with the top-ranking bidder. In addition, the second bidder often becomes aware

of the fact that it is not in the leading position and may object to committing the substantial resources that may be needed to participate fully in the final negotiations.

Integration of Agreements

If the approach described above has been effectively implemented, the final process of integration of the various contractual agreements, and ensuring that the concession agreement becomes effective, should be straightforward. However, bidders sometimes seek, at the last moment, to recover some of the ground they might have lost in earlier negotiations. Delays also occur frequently in the preparation of documentation—all of which needs to be coordinated up to the signing date of the concession; this is more likely to happen in certain developing country environments or where there has been limited experience of such projects. Pressure and momentum has to be maintained on the bidders to prevent this, and, on the government's side, steps need to be taken to ensure that all tasks within its own province are anticipated well in advance and promptly addressed.

Costs and Timetable

This section considers issues relating to costs incurred by bidders during the bidding process as well as those incurred by the government in preparation, evaluation, and selection. It also comments broadly on the timetable required for the government and its team for the preparation of bid documents, evaluation, and selection.

Bidding Costs

One of the major deterrents to serious bidders for concessions for major infrastructure projects is the high cost of bidding. The costs include not only the costs associated with the development of a design-and-build project (which are greater than for a build-only project) but the extremely high cost of developing the operational, commercial, and financial aspects of the bid. These costs include the costs of financial advisers, lawyers, consultants advising on demand and revenue aspects, and a range of other external third-party costs as well as greatly increased business development costs associated with the commercial issues. Bidding costs in relation to some recent concession awards in an industrial country environment have totaled around US\$5 million. Arguably, there is considerable potential for this figure to be exceeded in developing countries, given the likely additional uncertainties and pioneering nature of the project structures relative to what may have been achieved before.

These high bidding costs have a number of effects:

- They affect significantly the willingness of bidders (especially those of smaller net worth) to participate in major bids. This effectively limits the government's access to market competition and innovation and, arguably, affects adversely the value for money that the government can achieve.
- They increase the pressure from bidders to limit the bidders participating in the expensive bidding stages to the smallest feasible number.
- Over the longer term, they erode enthusiasm in the market generally for concessions.

Controlling bidding costs

The approach to the bidding process described in earlier sections—involving thorough preparation and a stringent prequalification stage, followed by a tender based on clearly defined requirements and evaluation criteria—offers the best prospect of enabling bidders to control their speculative bidding costs while at the same time allowing the government to achieve optimum value for money.

Reimbursement of bidding costs

Another measure that has been considered by some governments as a way of overcoming the problems arising from high bidding costs is to reimburse a portion of the costs incurred by unsuccessful bidders. For instance, some years ago the Greek government agreed to reimburse bidding costs of up to about US\$2 million to unsuccessful bidders for the concession to build a new airport, for which the initial capital costs of the project were in excess of US\$750 million.

The purpose of holding a bidding competition is to maximize the benefits to the government and the public using the service to be provided by the concessionaire. It has therefore been argued that, quite apart from developing a process that minimizes bidding costs, there is a case for these costs not be internalized by the bidders to the detriment of the competitive process. However, if a government is to consider any reimbursement of bidding costs, several

issues arise concerning who will bear the cost of reimbursement, the amount and conditions for repayment, and the timing of the payment.

Who bears the cost. Since, in theory at least, bidding costs should be more than recouped from the benefits of the competition, it would seem appropriate that costs associated with the bidding process should be incorporated into the project. Therefore, it can be argued that the winning bidder should bear the costs. The winning bidder will, of course, pass these costs on to users through the tariff (or back to the government in cases where the project's viability depends on a government contribution).

Amount. The amount of reimbursement paid to each unsuccessful bidder should be sufficient to make a material impact on actual bidding costs, but should not exceed them.

Circumstances of payment. The reimbursement of an individual bidder's costs should be conditional on the bidder producing a compliant bid.

Timing. The reimbursement of unsuccessful bidders should take place once the concession agreement has been signed.

Timetable for the Government

The timetable for preparation, prequalification, bidding, evaluation, selection, and negotiation is influenced by a number of factors, including:

- The extent and suitability of any preparatory work already done before efforts formally begin on the project—for example, if a suitable legal and regulatory framework already exists, provision for this does not need to be made in the timetable.
- The speed with which decisions can be taken by the government on the critical issues that affect the bidding process, from policy issues at the beginning to selection of the concessionaire at the end.
- The level of specification and design provided. The more detailed the level of specification and design, the shorter the bidding period needs to be. (The poten-

tial benefit of a shorter bidding period resulting from a detailed performance specification needs to be weighed carefully against the potential value-for-money benefits of a less detailed specification.

- The level of interest of potential bidding groups and financiers and the need for an active campaign to generate their enthusiasm.
- The comprehensiveness of the bid documentation. As indicated in earlier sections, initial time spent in preparing a comprehensive bidding document, evaluation criteria, and draft concession agreement is more than compensated by a shorter evaluation and negotiation process.
- The competitiveness of the bids received, and whether they are compliant and unqualified.
- The complexity of the project from a technical, legal, and financial perspective.
- The sophistication and experience of the government, and in particular of the relevant department, with similar or comparable projects, as well as the competence and experience of the project team.

With so many factors bearing on the government's timetable, it is difficult to provide a meaningful estimate of the time that needs to be allowed. However, a possible timetable for a project of average complexity done in a developed country environment, where the approach described in this study is shown in table 4.

Based on the timetable proposed in table 4, the concession agreement and the contract award process could be completed within about two years. This is roughly in

TABLE 4
Timetable for the government

Activity	Weeks to complete	Elapsed time in weeks
Review of financial viability	16	16
Government decisions on policy issues	8	20
Preparation for prequalification (up to release of invitation to the private sector)	16	22
Submission of prequalification proposals	12	34
Selection of bidding list	6	40
Preparation of bidding documents	26	42
Bidding period	26	68
Evaluation and selection of preferred bidder	20	88
Final negotiations and tenders' due diligence	18	106

line with the time taken to complete certain of the United Kingdom's larger Private Finance Initiative projects, for example, in the roads sector. Achieving completion of contracts in this time scale assumes that the government's team is able to handle certain tasks in parallel (in particular, the preparation of tender documents during the prequalification phase); that each stage in the process is handled on a prompt and priority basis; that the government's policy decisions on critical issues (which is often where the greatest delays occur) are reached smoothly; and that no unusual difficulties arise. Where circumstances are more complex than those assumed, which may be the case in some inexperienced developing countries, the timetable can be expected to expand considerably.

Cost of Advisory Services

The cost to the government of using external advisers for a concession-based road or water infrastructure project will depend on factors similar to those listed for the timetable. The existence of specialized skills within the government, such as legal skills, that could partly or fully obviate the need for certain external advisory services will of course affect the government's costs. Experience indicates, however, that governments rarely have the financial, legal, or technical resources or expertise available in-house that are necessary to cope with the demands of a concession award. Because of the wide range of factors that can come into play, advisory costs will tend to vary greatly, making it difficult to provide meaningful estimates in general terms. However, estimates of the cost of advisory services (excluding any direct out-of-pocket expenses) for a project of average complexity done in an industrial country environment, from bid preparation to contract award and financial closure, are provided in table 5.

The estimates in table 5 do not take into account the costs for any significant technical preparation (for example, ground conditions investigation). And as the estimated costs apply only to the cost of external advisers, they do not include any costs that are internal to the government in terms of its own resources. Further, for a more complex developed country project or for a project in a industrial

TABLE 5

Cost of advisory services

(millions of US dollars)

Service	Cost
Financial advisers' fees	2.2
Technical advisers' fees (including demand forecasts)	2.0
Legal fees	2.2

country environment (assuming that the government has appointed international advisers with the appropriate experience), the above costs can be expected to be appreciably higher.

It may be possible for a government to enter into arrangements with advisers whereby a portion of the adviser's remuneration is in the form of a success fee payable at the time of the drawdown of finance and included in the winning bidder's final financing plan for the project. The winning bidder will, of course, be permitted to pass these costs on to users through the tariff (or, effectively, back to the government where the project's viability depends on a government contribution). However, advisers will wish to protect themselves against the risk of such a success fee either being delayed or not being paid at all, for reasons outside their control (such as, a government's either delaying or canceling the project for policy reasons). Depending on their assessment of the project, they may seek to provide for such protection using, among others, one or more of the following mechanisms:

- Building a contingency into the success fee.
- Seeking one or more advance partial payments of the success fee payable upon milestone dates, in the event that there are delays in the agreed project timetable for reasons outside their control.
- Building a provision for indexation into the success fee to offset the effect of delays.
- In the event that none of the above financial protections is available, limiting the amount and quality of resources they make available to the project. This should be avoided if at all possible.

Clearly, the greater the perceived risk in the project, the higher will be the success fee required by the adviser.

The Use of World Bank Guarantees

One purpose of the review of financial viability prior to embarking on a tender process is to determine whether support from any international financing institution, such as the World Bank, is necessary to ensure that sufficient private sector finance can be raised for the project. The precise nature of the support required—for example, the types of risks to be covered and quantification of the likely amounts involved—would also have been identified. It is important for the government to have discussed and agreed with the international financing institution the extent, type, terms, and conditions of support that might be available in advance of the tender process. This will facilitate a harmonized and integrated approach to the financing of the project and will avoid an inefficient and potentially unproductive situation where different types of dialogue are opened with the financing institution by different bidders. It will also help focus the support of the international institutions on those aspects of the project that are most critical.

The Bank's Guarantee Mechanisms

Partial risk guarantees are likely to be used for concessions where the borrower is a private sector entity. In general, the partial risk guarantee is the one likely to be needed for infrastructure projects in countries that are on the margin of being able to attract international financing. Further, longer debt maturities can be achieved by addressing underlying political, regulatory, or force majeure concerns of international lenders and investors through such a guarantee. For such countries the key issue is the availability of international finance rather than how the term of such finance can be extended.

Offering a partial credit guarantee in a competitive bidding process for the award of a private concession (whereby the Bank guarantees late-dated payments or undertakes to

roll over short-term loans if this cannot be achieved in the commercial markets at the appropriate time) relates primarily to the difficulty of determining why a failure to refinance in the domestic or international financial markets has occurred, and to determining the appropriate price to be charged for different types and maturities of loans and guarantees made under these conditions. The partial credit guarantee would be a suitable mechanism where the reason for the failure to refinance as well as the pricing of the loans and guarantees can be reasonably determined on the basis of the Bank's knowledge of the financing marketplace. The Bank may consider it appropriate to appoint an independent adviser to assist with this who is actively engaged in the relevant financial market.

Guarantees and the Bidding Process

If a Bank guarantee is determined to be essential, clear information on this credit enhancement should be included in the tender documents. This information should cover:

- The types of guarantee mechanisms available.
- The applicable terms (total maturity, guarantee amount, fees and charges, and maturity profile).
- Conditions, if any.
- Clarity on precise risks covered.
- Any information on how these mechanisms would work in conjunction with different financial instruments being used by bidders.

The Use of the Guarantee

The Bank needs to ensure that its guarantees are used where absolutely necessary and that they are used efficiently, that

is, that they are used to cover specific risks that the private sector is genuinely unable to accept, rather than to provide blanket coverage. The different approaches that could be adopted to achieve this objective are discussed in the following paragraphs.

The Bank first needs to be satisfied that a project's economic justification, financial viability, and the financing options deemed appropriate for it have been thoroughly investigated. Here, the Bank would rely on its own internal analysis as well as the review carried out by the host government and its team of technical and financial experts. Such an assessment should reveal:

- Whether there is a genuine need for financing support from an international institution such as the Bank.
- If so, what is the most efficient way in which such support could be used.
- What is the minimum risk coverage that would be needed to make the project financeable.

Such confirmation of the need for the Bank support would provide assurance that the guarantee is not being used for arbitrary or spurious reasons. Having identified the most efficient structure for doing so, the government (and the Bank) needs to investigate the precise level of risk coverage required. Should the Bank then agree to provide support, information on the type of support available would need to be provided in the tender documents with a suitable mechanism or cap to give bidders the incentive to rationalize the use of the guarantee. If it cannot be included in the tender documents, such information should be made available no later than, say, four to six weeks before the tenders are to be submitted—otherwise tenderers will not be able to take it into account in their proposals.

In certain cases it may be more cost-effective to have a financial structure whereby the government provides risk mitigation measures, such as participation in revenue or geotechnical risks, rather than, for instance, a structure whereby the government offers up-front subsidies (for example, grants for construction). The first structure may enable the project to support a larger overall level of debt financing (resulting both from improved terms, such as longer maturities, as well as from addressing those issues that lenders are most concerned about) than the second struc-

ture, thereby making it more efficient. In such circumstances the Bank may accept that it may be more efficient to maximize the use of its guarantee by assuming certain contingent obligations to the project in order to reduce the level of up-front government subsidy. In this case the bid evaluation criteria should not penalize bidders for using the guarantee.

Testing the Market

It may be argued that the ex ante investigation of the need of a guarantee is an inadequate indicator, especially for certain countries in the middle range of creditworthiness, and that in a competitive environment private sector financiers and sponsors may be willing to assume greater risk than the government's or the Bank's analysis suggested. The government and the Bank may therefore wish to test the market to establish whether guarantees are being used in the most efficient way possible. This could be achieved by the government inviting bids on either of the following bases:

- Tenderers are asked to specify the type and level of risk protection they require from the Bank.
- The government specifies, say, two or three different options for type and level of risk coverage, requiring a bid on each.

These approaches are discussed further below. Having established the need to offer a guarantee, these approaches can help to determine the minimum extent of risk coverage that a particular project requires, rather than whether a Bank guarantee is indeed needed. As a lender or guarantor of last resort, the Bank may question the need and justification for a guarantee if bidders are willing to submit parallel financing offers without a Bank guarantee, albeit at less favorable terms.

Tenderers propose level of risk coverage

As tenderers could propose a range of different types of guarantees, this approach raises the issue of how bids that require different levels of risk coverage can be evaluated on a like-for-like basis. For example, tenderer A's offer with minimum risk coverage may require, say, protection against

the risk that the government will fail to perform its obligation to provide foreign exchange for debt service for 10 years on a foreign currency loan of \$100 million (table 6); tenderer B's minimum risk cover offer may require protection against the same risk, but for a loan amount of only US\$80 million for 10 years plus protection against, say, force majeure events relating to changes in law in the host country that might adversely affect debt servicing on the same loan amount. Clearly, a direct comparison of these two tenderers would be extremely difficult to achieve on an objective basis (table 6).

Whatever criteria are used to make the comparison, they should be spelled out to tenderers in advance in the bidding documents, such that bidders have the incentive to minimize their use of the guarantee (and of the government's exposure to the Bank under its counter-guarantee) and to focus their bids on the true objectives of the Bank as well as the government. One approach would involve the government stating that bids will be evaluated in terms of those requiring the least amount of guarantee protection they require. Another evaluation approach is to focus not so much on the amount of the guarantee but on value-for-money considerations, for example, selecting the bid that provides the optimal tradeoff between the cost of the guarantee used and the tariff offered. This would involve specifying in the tender documents a series of premia or factors that could either be applied to compound the net present value of a bidder's tariff requirement (or whatever factor is used to determine value for money) or be used as part of their financing cost assumptions in preparing their bids. In effect, this is a method of applying a penalty (or a surcharge) for incrementally higher levels (or different types) of guarantee usage, which will offset the benefits of a lower tariff a bidder may have achieved by an increased use of the guarantee. Each bidder would then be free to determine its own optimum tradeoff.

The main practical problem with this value-for-money

TABLE 6
Tenderers propose level of risk coverage

Tenderer	Minimum risk coverage required
A	Foreign exchange convertibility cover for 10 years on foreign exchange loan of US\$ 100 million.
B	Foreign exchange convertibility cover same as A but for \$US80 million plus protection against specified political force majeure events.

evaluation approach would be the difficulty of developing factors or premia that would adequately reflect the cost to the Bank (and to the government) of the different types of risks the Bank could cover through the partial risk guarantee.

The government specifies alternative risk coverage levels

This approach would involve the government specifying, say, two or three options for the type and level of risk coverage, and requiring tenderers to bid on each of them. Bidders would be informed that the government and the Bank would decide which of these options to adopt after bids had been received. This would make it clear to bidders that they need to make a competitive bid for each option to be sure of remaining in contention for the concession. An example of three options for which bids could be invited is shown in figure 8. As indicated, one of these options could include, if realistic, a bid that does not require any guarantee at all.

The evaluation would involve comparing the bids of different tenderers within each option. The bid providing the best value for each option would be identified. The government and the Bank would then choose either the bid that was the cheapest at the minimum level of risk coverage required or the bid that optimized value for money with efficient guarantee usage. The second choice would require the Bank and the government to carry out their own internal analysis to determine the cost they might attach to providing the different levels of risk coverage and to compare this with values received—in terms of, say, reduced net present value of tariff for each incrementally higher level of risk coverage. Thus, for instance, for the options indicated

FIGURE 8
Government specifies different risk coverage levels

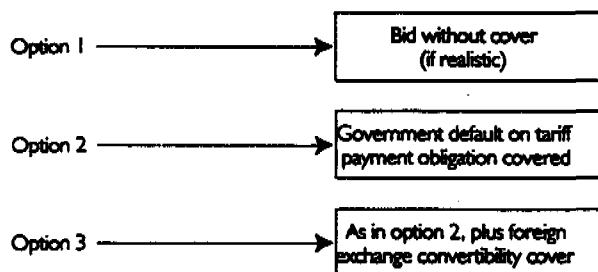


TABLE 7

Tenderers submit bids for options 2 and 3

(Net present value of tariffs in millions of US dollars)

	Option 2	Option 3
A	100	95
B	110	90
C	105	98

in table 7 let us assume that tenderers A, B (net present value of tariffs in millions of dollars), and C all fail to provide a bid under Option 1, but submit the bids (net present value of tariffs in millions of dollars) for Options 2 and 3.

The most attractive offer on the basis of Option 2 is that from tenderer A, while for Option 3 it is the bid from tenderer B. As Option 3 requires the government and the Bank to provide greater risk coverage than Option 2, let us assume that, according to the government's methodology, the *incremental* cost to it of providing this additional risk protection is valued at \$5 million. Thus, after allowing for this cost, tenderer B's bid on Option 3 has a total cost to the government of \$95 million, which

is lower than the least costly bid under Option 2. Thus, B's bid under Option 3 offers better value for money, even though it requires a greater level of risk protection than this bids under Option 2.

While the approach in which tenderers propose the risk coverage could be used if the government's and the Bank's evaluation methodology is based simply on the minimum level of guarantee requirement, the alternative approach, in which the government specifies different options for risk coverage, lends itself more easily to evaluation based on value-for-money considerations. It has the advantage of simplicity, both for the tenderers, in that they bid for clearly specified risk coverage options, and for the Bank, in that it eliminates the need to provide detailed information to tenderers on the cost to the Bank or government of different risk coverage levels, (which would be required if tenderers were proposing the risk coverage). Furthermore, as the specified risk options could cover as broad a spectrum of possibilities as the Bank wished to test (within the limits of practicality), the Bank would have thereby tested the private sector's need for different levels of risk protection and the value the private sector might attach to such protection.



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