EXECUTIVE SUMMARY

This report examines the prospects for expanding private sector participation in infrastructure in developing East Asia, particularly since the Asian financial crisis. Even before the crisis, private investors and some governments were reassessing their commitment to private infrastructure participation, due to profitability, risk and cost concerns. With the Asian crisis, the region has suffered major depreciations, economic slowdown and massive capital withdrawal by domestic and international financial institutions, exacerbating pre-existing caution. Many major projects have stalled or been cancelled, and few new projects were considered in 1998.

The Asian financial crisis increases the urgency for regional governments to vigorously pursue legal, regulatory, financial market and sectoral restructuring reforms, regain the momentum of private infrastructure investment evident in 1996, and sustain it. Private infrastructure investors will require evidence they can earn appropriate returns for risks borne, and consumers and governments require tangible benefits, lower prices and/or better services, from private sector infrastructure participation. For this to occur, governments need to improve the project sponsors' operating environment by reducing sovereign risk and increasing transparency and certainty in legal environments, bidding processes and regulatory frameworks. Governments also must ensure privatised infrastructure assets operate in competitive environments or are properly regulated, and wherever feasible, private sponsors must bear commercial risks for potentially profitable projects.

THE FINANCIAL CRISIS AND ECONOMIC OUTLOOKS OF EAST ASIAN ECONOMIES

The Asian financial crisis is fast becoming the most significant economic shock to the global economy since World War II, seriously affecting most East Asian economies and potentially threatening global economic stability. However, barring further deterioration in non-regional economies, the immediate financial crisis stage appears to be over for most regional economies. Currencies are stabilising and current accounts are becoming positive. Assuming relative stability in the rest of the global economy, recovery now depends on each economy's commitment to rationalising and refinancing its banking system, dealing with corporate debt and excess capacity, maintaining social stability and encouraging the return of foreign capital.

Progress in these areas varies across the region. Indonesia's economy still has serious problems with only limited banking system restructuring and corporate debt resolution. However, the rupiah appreciated significantly in October and positive economic growth was recorded in the third quarter of 1998, after steep declines in the first half of the year. Nevertheless, full economic recovery will be slow and difficult. Malaysia's new exchange controls may further dampen international investor confidence because they may allow it to avoid essential structural banking and corporate reforms. Both the Korean and Thai governments are firmly committed to reform. While some local interests resist change, both governments are significantly rationalising and re-capitalising their financial systems, tackling other

major problems like corporate debt and regaining foreign investor confidence. The Philippine economy contracted only modestly in 1998, due to its sounder financial system and lower exposure to foreign financial flows and Asian trade. It should resume positive growth during 1999, assuming growth in Europe and the USA continues. China's economy is slowing but its external position remains strong. Its exports to non-Asian economies are growing strongly and the government is committed to stimulating growth via monetary and fiscal policies. Despite its strong financial position, Singapore entered a technical recession in mid 1998 which is expected to continue into mid 1999. Its recovery will depend on its regional trading partners recovering and the US and European economies remaining strong.

A major key for the region's recovery is Japan, as the prime source of foreign direct investment and bank lending, and a major import market. Assuming financial sector restructuring progresses smoothly, Japan may start to grow in 1999 once fiscal stimulus measures become effective. Regional economic recovery also hinges on a strong US economy. Depreciation of the US dollar against the yen in October 1998 eased pressure in the global financial and trading systems.

PROSPECTS FOR ASIAN GROWTH AND INFRASTRUCTURE DEMAND

While the severity of the Asian crisis increases uncertainty about future growth rates and the worst affected economies have suffered serious setbacks, most economies should recover in the next two to five years. When growth resumes, East Asian economies are unlikely to return to the 7 to 8 per cent growth rates they experienced in the mid 1990s, as these were artificially inflated by short term speculative capital inflows. However, the region is quite likely to average 5 to 7 per cent growth rates, equal to or somewhat less than growth in the 1980s.

At these lower growth rates, the World Bank's pre 1997 East Asian infrastructure demand forecast - $1.5 trillion over the decade to 2004 - is unlikely to eventuate. However, the region's infrastructure requirements still should reach from US$1 trillion to $1.2 trillion over the next decade. China's economy should grow at around 6 to 8 per cent and alone account for about half of this demand. Indian infrastructure demand could boost Asian infrastructure demand by a further US$200 million to $300 million.

In the short to medium term, policies to stimulate demand and create employment in the worst affected economies should boost infrastructure demand. For example, in early 1998, the Chinese and Malaysian governments announced major new infrastructure expenditure programs to stimulate their slowing economies. Infrastructure projects which facilitate increased export activity, generate significant employment and provide broad welfare benefits should receive priority, including:

- transport projects such as air and sea ports and road and rail linkages important for export competitiveness
- water, sanitation, rural and urban roads and other smaller infrastructure projects, particularly in depressed rural and urban areas.

In the long term, regional governments clearly recognise failure to install adequate infrastructure will reduce potential growth in output and living standards, and undermine their global competitiveness. This will underpin strong long term infrastructure demand.

PROSPECTS FOR ASIAN INFRASTRUCTURE INVESTMENT

The financial crisis has reduced the fiscal capacity of many regional governments to finance infrastructure from their own resources. Falling taxation revenue, new spending demands to refinance failing banking systems and provide social safety nets increase the attractiveness of private infrastructure provision.

However, private investors are likely to be very cautious, at least in the short term. They fear income growth will not reach previously forecast levels, undermining demand projections and project profitability. Depreciated currencies also will reduce foreign currency revenue from projects, most of which generate domestic currency income. The weakening financial viability of several public infrastructure authorities with high foreign debt levels and foreign currency take-or-pay contract obligations, and questions over the ability of some countries to guarantee foreign exchange for remittances increase sovereign risk perceptions. These factors compound concerns private investors held before the crisis regarding sovereign risk, inadequate legal safeguards, poor tendering transparency, weak regulatory policies and implementation, inappropriate risk allocation and low profitability. The significant gap between government and private investor expectations about private infrastructure investment requires regional governments to act urgently to address investors' legitimate expectations regarding reforms.

INTERNATIONAL AND DOMESTIC FINANCING

Throughout the 1990s, international flows of private sector limited and non-recourse finance for infrastructure projects expanded rapidly, supplementing domestically raised funds and significantly boosting private sector infrastructure activity. Annual financial closures of private sector water, transport, telecommunications and energy projects peaked at US$36 billion in the year to August 1996. However, excessive reliance on short term, foreign currency denominated debt was one key cause of the financial crisis and, as the crisis progressed, created severe repayment difficulties for infrastructure projects with revenue in domestic currency. Rapid withdrawal of portfolio and commercial bank funds is reducing infrastructure project financial closures. In the year to August 1998, private East Asian infrastructure activity slumped, reaching only US$14 billion.

Private sector activity in Malaysia and Indonesia is in the greatest relative decline. The worst affected sectors are telecommunications and transport, both down by more than 75 per cent on 1996. Surprisingly, investments in energy are the most resilient in 1998, largely because new projects in the Philippines, Malaysia and Taiwan came on stream as the crisis hit, reducing the effect of major declines elsewhere. However, power demand is highly sensitive to economic growth, and given the current contraction of many regional economies, the recent surge in installed generating capacity and higher tariffs stimulating greater conservation, supply growth is likely to slow over the medium term.

Despite some of the highest savings rates in the world, Asia's domestic financing of private infrastructure is only modest. During the 1990s, equity market finance for infrastructure grew rapidly in several regional economies, reflecting foreign capital inflows, but domestic corporate bond markets are relatively under-developed, except

in Malaysia and Singapore. Mobilisation of domestic funds through local capital market deepening and reform is essential to reduce projects' foreign exchange risks and crucial to stimulate private sector infrastructure activity.

BEST PRACTICE LEGAL AND REGULATORY ENVIRONMENT

Developed regional economies with British common law-based systems, such as Singapore, Hong Kong and Australia, provide best practice examples of transparent and predictable legal systems which provide certainty for private infrastructure investors. Elsewhere, weak legal, institutional, regulatory and policy frameworks may dampen the growth of private sector infrastructure. Poorly developed private property rights and commercial law, the lack of predictable outcomes from legal proceedings, unclear accounting, environmental and other standards, and weak and non-transparent bidding and regulatory regimes create major uncertainties for private investors, increasing the costs and risks of project development.

To overcome gaps in regulatory and legal environments, several East Asian economies have introduced specific build, operate, transfer, BOT legislation to encourage private sector infrastructure development via long term BOT concessions. For example, Philippine and Chinese BOT laws and model approaches in key sectors like electricity and water streamline government approval processes, accelerating absorption of new private sector funds. However, BOT laws do not automatically overcome legal environment weaknesses or address investors' concerns as demonstrated by Vietnam. Political will to accept private sector infrastructure investment and capacity to transparently and efficiently implement BOT legislation also is necessary.

COMPETITIVE BIDDING IMPROVES CONFIDENCE

Competitive bidding processes increase transparency and certainty. Best practice bidding procedures include the granting of Manila's water concessions in 1997 and final evaluation and selection for Melbourne's City Link project. Negotiated bids often result in less transparent processes, concealing the best bid. Competitive negotiations, starting with competitive bids and moving to negotiations with the favoured bidder/s, can combine the benefits of competitive bidding with the flexibility and creativity of direct negotiations.

INFRASTRUCTURE TARIFF REFORM

Before the financial crisis, several East Asian electricity and telecommunications authorities introduced economic tariffs for services and allowed returns to cover capital and operating costs. However, many electricity, telecommunications, water and rail authorities still operate at a loss.

Usually tariff reform is fundamental to improve infrastructure utility efficiency and economic outcomes for the community. By providing economic returns on investments, tariff reform is a prerequisite for private sector involvement. Uneconomically low tariffs mainly benefit middle and high income users, reducing utilities' ability to maintain existing assets and extend services; poor urban and rural

areas usually are the losers. Congestion charging and two-part tariffs for infrastructure projects can help recover investment and operating costs and optimise use. Singapore leads Asia in electronic tolls and time-of-day road pricing.

FINANCING AND RISK MANAGEMENT

Shorter term commercial bank debt finance funds most infrastructure projects. However, the long term nature of infrastructure financing better suits institutional investors such as pension funds and life insurance firms, which prefer to purchase bonds rather than direct debt. Lack of investor confidence in financial market prudential controls and corporate accounting practices constrain the development of long term East Asian corporate bond and equity markets, creating a bias towards short term savings instruments, particularly bank deposits that carry an implicit or explicit government guarantee. Government controls preventing institutional investors from holding corporate bonds also limit the growth of domestic corporate bond markets. Reliance on short term and foreign sourced financing exposes project sponsors to commercial, foreign exchange and sovereign risk.

As Singapore and Hong Kong have open and transparent capital markets, a major foreign financial institution presence and accumulated expertise in risk structuring and loan syndication, infrastructure financing is centred here. Before the financial crisis, Malaysia successfully developed its corporate bond market; some infrastructure projects accessed this. Several infrastructure enterprises in Malaysia, Indonesia and the Philippines also listed on local stock exchanges.

However, in 1997 and 1998, the financial crisis paralysed liquidity in Asian debt markets. New bond issues and initial public offers virtually ceased. Sharp increases in interest rates and several domestic corporate bond defaults mean domestic and international investors only consider creditworthy government guaranteed bonds. Even some of these have slipped below investment grade.

ALLOCATING RISKS

Gaps in perceptions about risks and who should bear them significantly reduces private infrastructure sponsorship and funding. Increased investor risk perceptions make it even more imperative for regional governments, multilateral banks and bilateral donors to continue developing mechanisms to mitigate and more efficiently allocate risks to parties best able to manage them. Private sponsors should bear construction, commercial and operational risks, while governments should bear sovereign risks, guaranteeing that sponsors will not be adversely affected by government policy changes and government utilities will meet contractual obligations. Guarantees that transfer commercial risk away from private sponsors generally are inappropriate.

The Philippines is one of the most advanced regional economies in allocating risks to public and private sponsors in an efficient and transparent manner.

BEST PRACTICE IN INFRASTRUCTURE RESTRUCTURING

The existence of natural monopoly networks at the core of most infrastructure sectors means private sector participation cannot proceed without governments ensuring competition and carefully regulating monopoly assets to prevent abuse of monopoly power. Natural monopoly networks include high voltage electricity transmission lines, gas and water pipelines and fixed wire telephone networks. Private enterprises generally respond to market signals, and produce goods and services at a lower cost than do public sector operators. However, if monopoly networks are sold to the private sector without appropriate government regulation or competitive access regimes, owners could abuse their monopoly power. Some infrastructure sectors, like rural and suburban roads, also produce public goods and others, like highways and railways, have significant spillover effects. Often user charges are insufficient to cover all the benefits such services generate. These issues dictate a continuing role for government.

Best practice infrastructure policy and regulation vary depending on monopoly networks, spillovers and public goods elements in particular infrastructure sectors, but include:

- vertical unbundling of infrastructure assets, separating competitive from non-competitive elements, such as electricity generation from transmission and distribution networks
- geographical or horizontal unbundling of integrated monopolies by regions, enabling competition by comparison
- contracting out or selling unbundled services to competitive suppliers
- leasing public assets to the private sector, creating competition *for* the market via mechanisms such as fixed term concessions, franchises and BOTs where competition cannot occur *in* the market
- removing artificial constraints to access, such as limits on foreign and domestic competition, especially where only a few potentially oligopolistic local firms can achieve the minimum efficient enterprise size
- staging private sector involvement, using management contracts before implementing concessions or full privatisation, particularly if use is traditionally free and tariff regimes need reform
- creating an independent regulator where monopoly elements remain, to ensure monopoly assets are operated efficiently and earn only a normal return or infrastructure markets remain competitive
- preventing cross ownership of unbundled assets, like transmission and generation facilities where this could compromise competition
- ensuring competitive suppliers have unrestricted access to residual monopoly network assets
- treating equally state and private firms competing in the same infrastructure industry.

Different historical, political and social conditions mean the 'best pragmatic' policies for infrastructure development vary between economies and sectors. Serious backlogs of unmet infrastructure demand due to poor planning may necessitate emergency expansion of infrastructure services at higher cost. Institutional development and regulatory capability, consumer capacity and willingness to pay for infrastructure services, legal or constitutional constraints on ownership, social stability concerns, the depth of domestic capital markets, sovereign credibility with institutional investors and security problems also affect economies' short term options.

SECTORAL REFORM

While the same economic principles govern the most efficient way to introduce competition, actual best practice mechanisms vary across sectors.

Electricity

A best practice approach to electricity reform is exemplified by Victoria, Australia, where the generation, transmission, distribution and retailing sections of the industry are unbundled and privatised. In all industry segments except transmission, many alternative producers operate in competitive markets. Generators compete to sell power in an independently run wholesale electricity market. The power is sold to independent retailers who can compete for customers, with guaranteed access to the line network of the five privately-owned regional distributors. Transmission network tariffs are closely regulated with access and cross ownership rules maintaining competition. Households and businesses benefit from significant real tariff reductions.

By comparison, a more partial, staged approach to reform is evident in Thailand, the Philippines, Indonesia and China. They plan to unbundle generation, transmission and distribution as regulatory structures are developed. At present most private investment is through independent power producers, IPPs, which have power purchasing agreements with state-owned electricity utilities. While IPPs can relieve critical supply shortages, they do not contribute to more thoroughgoing sectoral reform, as all the risks ultimately reside with state-owned authorities, many of which are still very inefficient and heavily overstaffed.

Furthermore, due to depreciations during the Asian currency crisis, IPPs with US dollar denominated power purchasing agreements have become very expensive in local currencies. The financial position of several state electricity utilities is precarious. This situation, combined with constrained government budgets, and the need to achieve efficiency and cost savings, increases pressure to fundamentally reform electricity sectors. Unfortunately, economies with long term power purchasing agreements may find it very costly to buy out IPPs to establish competitive generation markets.

Water

Organisational restructuring, corporatisation and unbundling of water sectors should precede commercialisation or full private sector participation. Resource management functions such as catchment planning and management should be separated from potentially commercial functions of service delivery. Government should be responsible for the former; private operators can compete to provide the latter.

Concessions leave government owning the monopoly water pipe and sewerage network while private operators lease the long term (20 to 30 years) right to use these assets and collect revenue from service delivery. Concessionaires have strong financial incentives to reduce water losses, expand services and connections, and deliver significant cost savings and service improvements to customers.

Economies can limit private involvement to management and service contracts as in Adelaide, South Australia, provide long term concessions as in Manila, or fully privatise as in the United Kingdom. Two best practice approaches to private sector water supply in the Asia Pacific are the concessions granted for east and west Manila's water system and Macau's water concession. Manila's tendering process was highly competitive and the regulator can evaluate the two concessionaires' operational efficiency by comparing their performance. Macau's very efficient private water concession provides a high quality, reasonably priced service.

Many East Asian economies are considering or implementing water concessions or BOTs to develop bulk water sources and new water distribution networks. However, bulk water BOTs with take-or-pay contracts leave commercial and foreign exchange risks with public water authorities; are expensive to buy out; and may constrain subsequent progression to more competitive models.

Highways

By contrast, BOTs are the best practice model for private sector involvement in highways. Private investors in tollroad BOTs theoretically can collect revenue directly from the public and bear full construction, operation and demand risk. Competition from alternative routes and transport modes limits monopoly power. However, tollroad projects often are only marginally commercially viable, although they have large spillover benefits that tolls cannot capture. Governments need to minimise revenue guarantees, and encourage private sponsors to recoup the full capital costs of highway investments by time of day and congestion charging using electronic tolls, traffic management and intelligent highway systems.

Some best practice tollroad projects are in Hong Kong, China and Australia, as commercial operators take full risks, without government guarantees. City Link in Melbourne and recent Hong Kong expressways also reflect best practice bidding procedures and transparency.

The major risk associated with tollroad BOTs is the uncertainty of traffic forecasts, due to traffic leakage to untolled roads and uncertain income growth. This risk was highlighted in 1997-98 when many tollroad projects were postponed as demand projections proved unrealistic and construction costs increased with currency devaluations. New approaches to tendering tollroads include the minimum least present value of revenue method used in Hong Kong.

Ports

Except when in unique locations, ports generally have fewer monopoly attributes, as new wharves can be built by potential new entrants, making it relatively easy to introduce private competition. The concession model is used most often, with private sponsors undertaking BOTs for new ports facilities or taking out long term concessions on existing port assets. Prior to inviting private participation, governments should unbundle public good aspects of port operation such as coordinating port planning, maintaining channels and associated road and rail infrastructure, and possibly monitoring tariffs charged by monopoly port facilities from potentially competitive activities. The latter include providing stevedoring services or developing new wharves. Large ports with many wharves and competing service firms ensure competition limits any abuse of monopoly power.

Hong Kong is the world's largest privately financed and operated port and an outstanding best practice example. In recent years, most East Asian economies have let concessions to private port operators. Initially governments invited private sponsors to develop and operate container terminals and bulk handling facilities but now private firms in the Philippines, Indonesia, Malaysia, Thailand, China and South Asia are developing general cargo facilities as well.

Railways

New Zealand, Canada, Japan and Britain recently privatised railway operations, while in the USA most railways have been privately funded and operated since the 1800s. In the 1980s and 1990s, Latin American economies successfully implemented many private railway concessions, providing several best practice examples. Unlike the full transfer of assets to the private sector, concessions avoid the potential for private railway network owners to abuse their monopoly power. To date no developing East Asia economy has privatised its entire rail network, although several have approved BOTs for new lines.

Unbundling railway services involves separating monopoly elements, such as railway network ownership and train scheduling, from competitive elements like rail service operation and rolling stock ownership. Letting concessions for competitive services and line operation and maintenance saves costs, improves maintenance and provides better service orientation while reducing government outlays in a sector traditionally a large drain on public resources.

Telecommunications

Mobile phones, satellites and the Internet increase the scope for new telecommunications entrants while industry regulators developing competitive markets must prevent incumbent operators restricting access to the monopoly fixed line network. Chile's successful telecommunications sector privatisation gives new operators full freedom of entry and access to the fixed line telephone network.

Integrated government-owned monopolies dominate East Asian telecommunications. Governments may permit competition in the cellular and international markets but only the Philippines, Hong Kong, Japan and Australia permit domestic competition. Japan, Australia, Singapore, the Republic of Korea, Indonesia and Malaysia sold minority shares in the major state-owned

telecommunication company through public offerings. However, most regional economies have yet to undertake comprehensive reform to fully unbundle the network and service components of the integrated supplier, allow entry of many competing domestic, international and cellular suppliers, guarantee access to trunk networks and independently regulate the industry. The Philippines is closest to this objective with six new entrants in the domestic market, eight new international and five new cellular operators competing with the dominant private providers.

Mass Transit

The financial crisis has caused cancellation or postponement of several mass transit projects in Malaysia, Thailand, the Philippines and Indonesia as construction costs have blown out, revenue projections proved overly optimistic and projects, underwritten by property development, became unviable. Mass transit projects may not be viable without significant public subsidies. Singapore's well run system demonstrates private operators can cover operating costs, but recouping capital costs is more difficult. Government generally will have to contribute to line construction capital costs or offer other subsidies, like adjacent or right of way land.

INFRASTRUCTURE AID

Increased development assistance for economic governance of infrastructure is vital to support Asia's private sector infrastructure development. Bilateral and multilateral official development assistance programs can help develop institutional capacity to attract and effectively use private sector infrastructure. Well targeted technical assistance and training courses can increase developing economy governments' ability to:

- develop and implement competition policy and appropriate infrastructure regulatory frameworks
- corporatise and privatise public infrastructure enterprises, including implementing tariff reform policies and competitive bidding procedures
- reform and expand capital markets, including developing local corporate bond, equity and risk markets
- develop and implement commercial law dispute resolution mechanisms and special purpose BOT laws
- mobilise internationally competitive advisers to assist with these processes.

The World Bank and Asian Development Bank play a leading role in leveraging private sector funding via guarantees and selected equity stakes in private infrastructure projects. They also advise developing countries on infrastructure policy reform, disseminate best practice approaches and provide training and technical assistance. Bilateral aid agencies also identify and initiate technical assistance and training for recipient governments, build key skills in infrastructure sector restructuring and reform, and assist with financial market development and legal, institutional and regulatory reform.

Australia has considerable public and private sector expertise in many of these areas; the Australian aid program can access this to assist regional governments. Institutional and consultancy resources could provide training in competition policy, infrastructure regulation and financial market reform and regulation. The Vancouver Framework, agreed at the 1997 APEC Leaders' Meeting, urges APEC members and multilateral financial institutions to promote sound frameworks to facilitate private financial flows to infrastructure. APEC is attempting to encourage greater private sector investment in regional infrastructure through its infrastructure workshop and sectoral working groups for energy, transport and telecommunications.

IMPLICATIONS FOR BUSINESS

In the short to medium term, business conditions will be very difficult in many Asian infrastructure sectors. By late 1999 or early 2000, accelerated infrastructure reforms, privatisations and stimulatory infrastructure spending should start to expand business opportunities. However, in the post crisis environment, funds only will be available for correctly structured projects with a good balance of risks and rewards and strong internal rates of return, able to withstand downside foreign exchange and demand growth risks. Organising limited recourse finance is likely to be difficult in 1998-99 and possibly beyond, due to banks' reluctance to extend new credits and uneven regional progress with financial system reform. Banks could well require higher debt cover and stricter covenants on default.

Assuming regional governments restructure and privatise monopoly infrastructure sectors, they will need skilled engineering, legal, treasury, financial, regulatory and institution building advice, potentially providing opportunities for many Australian firms and consultants. Increasing sophistication of project financing structures will generate demand for Australian financial services. Increased private involvement will stimulate regional infrastructure investment and provide opportunities for manufacturers of infrastructure goods, including plant and equipment. Crisis-induced infrastructure asset sales will provide investment opportunities for Australian infrastructure investment firms.

IMPLICATIONS FOR GOVERNMENT

More private infrastructure in the Asia Pacific and opportunities for Australian providers affects the Australian Government by:

- highlighting the importance of encouraging Australian infrastructure reforms so experienced local infrastructure enterprises can achieve commercial advantage in export markets (and to raise domestic infrastructure efficiency)
- ensuring the Australian aid program focuses on fast moving developments in infrastructure provision, providing governance assistance to encourage private participation
- continuing to support APEC in encouraging private sector infrastructure provision
- continuing high priority for service trade liberalisation negotiations, including infrastructure related services

- examining commercial implications for trade promotion through Austrade
- identifying infrastructure investment insurance and credit needs via Australia's Export Finance and Insurance Corporation, EFIC.

Rigorously applying national competition policies, including restructuring and unbundling public monopolies where appropriate, encouraging competitive or contestable infrastructure services, assessing the need for public ownership and encouraging further new private sector infrastructure investment, all assist Australian enterprises in gaining infrastructure sector expertise relevant to winning private infrastructure contracts in Asia. This is furthered by continuing administrative reforms including rationalising tariffs, identifying and directly funding community service obligations, outsourcing non-core services, supporting competition policy through labour market and tax reforms, and improving infrastructure planning and investment.

FUTURE PROSPECTS

While the current declines in infrastructure investment create severe difficulties for project sponsors and governments, they also provide opportunities for reform oriented governments and private infrastructure businesses. Financing availability, based on the commercial fundamentals of individual projects rather than the desire of fund managers to balance portfolios, will determine the financial closure of infrastructure projects over the medium term. Development of domestic capital markets is essential to ensure adequate supplies of long term, domestic currency funding, reducing financing and foreign exchange risks.

To regain private infrastructure investment momentum, regional economies must:

- undertake competitive infrastructure industry restructuring and reform, including selling assets within transparent and competitive regulatory and legal frameworks
- achieve financial sector reform and deepening, including permitting entry of competitive foreign financial institutions
- reallocate project risks, so private and public sectors are responsible for the risks they are best able to manage, and returns better compensate for risks borne.

Apart from improving infrastructure efficiency and private investment inflows, these reforms should provide commercial opportunities for Australian businesses and consultants. The Australian Government should promote and facilitate such reforms through Australia's aid program, APEC and services trade and investment liberalisation negotiations, and assist Australian business to access these opportunities.

Chapter 1

ASIA'S INFRASTRUCTURE NEEDS

Since mid 1997, significant East Asian currency realignments and the consequent financial crisis have lowered the region's short to medium term growth prospects. Despite these upheavals, longer term infrastructure demand forecasts for regional economies have not changed significantly. Recovery in East Asian economic growth should occur within the next two to five years, depending on the economy concerned and success of reform efforts. With recovery, expansion of industrial, service and agricultural output will resume and rising consumption and urbanisation will generate massive demands for infrastructure.

The severity of the recent crisis has heightened the need to efficiently provide infrastructure. East Asian economies' export-oriented development is based on international competitiveness within increasingly globalised production strategies. These economies cannot remain competitive unless transport, electricity and telecommunication infrastructure provision keeps pace with demand.

ROLE OF PRIVATE SECTOR INFRASTRUCTURE PROVISION

Most regional governments now realise that even if public infrastructure investment is efficient, public resources alone cannot meet their future infrastructure needs unless essential government social and economic spending is sacrificed (World Bank, 1995, p. i). Financial crisis generated fiscal demands, required to rescue financial systems and alleviate poverty, strengthen this recognition.

Governments increasingly accept the need to implement policies to mobilise private resources efficiently to meet infrastructure shortfalls. To encourage private participation, several regional governments are deregulating infrastructure markets, liberalising investment regimes and developing special purpose legislation and market-based tariff regimes. If successful, such policies will not only greatly enhance regional economies' infrastructure growth prospects but will provide major new opportunities for private sector providers from Australia and elsewhere.

INFRASTRUCTURE: A DEFINITION

The focus of this report is on economic infrastructure, including electricity and gas networks, transport networks such as roads, sea and airports and rail links, telecommunication networks and urban infrastructure such as water and sewerage. As economic infrastructure provides unique and essential services to produce other goods and services, it is a crucial input to economic activity and growth. Social infrastructure, not covered in this report, includes physical infrastructure required for health care provision, education and community care. For a detailed discussion of the distinguishing characteristics of economic infrastructure, and basic principles governing its provision, see Chapter 2 – *Principles*.

Purpose of the Report

Few regional economies yet have made the necessary policy changes to encourage sufficient private capital flows into infrastructure to overcome growth constraints. Even before the financial crisis, private flows were modest compared to projected requirements. As most economies face similar problems in attracting private infrastructure investment on appropriate terms and are experimenting with many different approaches, their successful experiences and policies need publicising to expedite the process.

This report seeks to identify best practice approaches to efficient and equitable infrastructure provision through private sector involvement. In the process, it examines the major constraints to private sector participation in infrastructure and appropriate governmental reform and regulatory approaches. It suggests ways to expedite implementing commercially viable new projects and privatising existing public assets while meeting the social and economic performance expectations of regional governments and populations. Finally, the report examines the commercial opportunities flowing from privately providing infrastructure in the region, and implications of this for Australian government.

Chapter 1 assesses the impact of the Asian financial crisis and East Asia's resultant demand for infrastructure over the next decade. Chapter 2 identifies the core characteristics of economic infrastructure distinguishing it from other sectors and the principles governing its efficient provision. Chapter 3 explores the basic legal, regulatory and tariff environment required to encourage private sector infrastructure provision. Chapter 4 examines necessary financial market developments and risk allocation mechanisms to increase flows of private finance without exposing private sponsors or governments to unacceptably high risks. Chapter 5 looks at best practice approaches to unbundling and privatising infrastructure in different sectors, including electricity, telecommunications, water and transport. Chapter 6 analyses the implications of best practice private infrastructure provision for delivering official development assistance and Chapter 7 draws together conclusions and implications for business and government.

IMPACT OF THE FINANCIAL CRISIS

The Asian financial crisis is fast becoming the most significant economic shock to the global economy since World War II, with serious impacts on most East Asian economies and the potential to threaten global economic stability. Credit in regional economies has contracted sharply due to domestic and international banks' high exposure to bad loans and a major withdrawal of short term foreign capital, significantly slowing short to medium term growth across East Asia (Table 1.1).

However, barring further deterioration in non-regional economies and Japan, the immediate financial crisis stage appears to be over for most regional economies. Currencies are stabilising and current accounts becoming positive. Assuming relative stability in the global economy, recovery now depends on each economy's commitment to rationalising and refinancing its banking system, dealing with corporate debt and excess capacity, maintaining social stability and encouraging the return of foreign capital (Eslake, 1998). South Asia so far has weathered the crisis well, although recent nuclear sanctions against India and Pakistan will reduce growth.

Table 1.1

East Asian Growth Slowing since the Crisis – Long Term Prospects Remain Good

Growth Expectations for South and East Asia (Annual percentage change in real GDP)

	Actual				Forecast			
	1981-90	1991-97	1996	1997	1998	1999	2000	1998-2007
East Asia[a]	7.3	9.5	8.8	7.1	0.4	4.1	5.8	5.7
East Asia[a] excluding China	5.5	6.8	7.2	3.9	-9.1	-1.2	3.1	2.7
South Asia	5.8	5.3	6.9	5.0	4.5	4.9	5.6	5.4

Note: a Uses the World Bank definition of developing East Asia, which excludes Japan and the Republic of Korea.
Source: World Bank, 1998c.

Individual Country Impacts

Both the Republic of Korea and Thailand are making significant progress in resolving the serious bad debt problems of their financial systems, tackling corporate indebtedness and regaining foreign investor confidence. The downturn in 1998 is more severe than expected in both economies, which face real GDP declines of 7.0 to 8.0 per cent in 1998 (International Monetary Fund, 1998). Both undertook extensive short term foreign borrowing and have excess real estate and industrial capacity. However, given policies now in place, these problems should be resolved by late 1999 or early 2000, enabling growth to resume. In Thailand, tardy bankruptcy law reform and foreign ownership restrictions may slow recovery in foreign investment inflows, reducing capacity to refinance the banking system and reduce corporate debt. In addition, public sector unions and corporate interests are resisting privatisation of public utilities and corporate law reform. The Republic of Korea's new government is energetically tackling corporate and financial sector restructuring issues, but faces considerable resistance from organised labour and the powerful chaebol, as well as rising unemployment and possible social unrest.

Indonesia's economy still has serious problems with only limited progress to date in restructuring the banking system and resolving serious corporate debt problems. Full economic recovery will be slow and difficult. The banking system must be completely rebuilt and creditor confidence has been severely shaken by the debtors' repayment moratorium. Nevertheless, the rupiah appreciated significantly in October 1998 and positive economic growth was recorded in the third quarter of 1998 after steep declines in the first half of the year. Once functioning effectively, the new bankruptcy law should encourage those firms that can, to start repaying loans, providing scope to resurrect the financial system and reschedule foreign debt.

Malaysia's new exchange controls may enable it to pursue more expansionary economic policies in the short term, but increase the risk of government avoiding necessary structural reforms in banking and corporate sectors. If this occurs, Malaysia

may have difficulty regaining the confidence of international investors (Eslake, 1998). Since the exchange control announcement, yield spreads on foreign Malaysian bonds have widened by more than 30 per cent, to 1 200 basis points in September (International Monetary Fund, 1998).

The Philippine economy contracted only modestly in 1998 due to its sounder financial system and lower exposure to foreign financial flows. Its exports have held up best of all the ASEANs due to its relatively healthy financial system, which maintained trade finance and lesser reliance on Asian export markets. In addition, most outstanding foreign currency debt was owed to other Filipinos with foreign currency deposits in local banks, reducing the macroeconomic impact of unhedged foreign borrowing as the peso depreciated. The Philippines should resume positive growth during 1999, assuming growth in Europe and the USA continues.

Singapore remains relatively unscathed by the Asian financial crisis due to its strong external position and its well regulated financial system. However, it entered a technical recession in mid 1998 which is expected to continue into mid 1999. Recovery of its economy will depend on improved conditions in its Asian trading partners and the continuing growth in the US and European economies.

While China's economy is slowing, its external position remains strong. Its exports are still growing slowly and the government is committed to financial sector rationalisation and easier monetary and fiscal policy to stimulate growth. Despite the impact of recent floods and slowing exports to contracting Asian markets, China will still achieve about 7 per cent growth in 1998, partly due to increased public investment, particularly in infrastructure.

The major key for the region's recovery lies with Japan, as the prime source of foreign direct investment and bank lending, and a major import market. Assuming financial sector restructuring progresses smoothly, Japan may resume growth in 1999, once fiscal stimulus measures become effective (Courtis, 1998). Continued health of the US economy is another major precondition for regional economic recovery.

The October 1998 appreciation of the Japanese yen against the US dollar has taken considerable depreciation pressure off the Chinese yuan and Hong Kong dollar. Hong Kong's economic position should strengthen with the yen's appreciation. The Korean and Taiwanese economies also will benefit from the higher yen, as their exports compete directly with Japan's.

In summary, the economic effects of the Asian financial crisis are more severe than anticipated. The IMF, World Bank and Asian Development Bank expect negative or slow growth in 1998 and 1999 in the worst affected regional economies of Indonesia, Thailand, the Republic of Korea and Malaysia. Recovery is expected thereafter as financial sector debts are written off and banks are refinanced with public and foreign funds, a process that may take longer in some cases than in others (Asian Development Bank, 1998; International Monetary Fund, 1998; World Bank, 1998b).

Over the next decade, East Asian growth is expected to be down on levels reached in the early 1990s, which were inflated by unsustainable short term capital inflows, but should still approach the long run growth trend of the 1980s. However, the crisis-induced increase in uncertainty, particularly about growth prospects, is expected to quite severely affect infrastructure project planning and investment in the short to medium term.

DEMAND FOR INFRASTRUCTURE

Consistently strong economic growth in Asia over the past two decades has helped accelerate demand for infrastructure. Associated with this economic growth, demand for infrastructure was driven by:

- general population growth, often combined with rapid urbanisation
- improvements in wealth, welfare and the standard of living
- increasing trade and globalisation of economies, with associated demands by the business community for better quality infrastructure services
- infrastructure system bottlenecks often arising from a lack of earlier investment.

Total Infrastructure Investment

Combined public and private sector investment in physical infrastructure[1] in developing countries in Asia probably exceeded 5 per cent of GDP by the mid 1990s,[2] or around US$80 billion per year, up from an average of 4.6 per cent of GDP in the 1980s and 3.6 per cent in the 1970s (World Bank, 1995). In the early 1990s, Malaysia clearly led in terms of public resources devoted to infrastructure (Table 1.2). Private investment possibly added another 0.5 percentage points of GDP (World Bank, 1995).

Table 1.2

Malaysia Led Infrastructure Spending in the Early 1990s

Public Infrastructure Investment, 1990-93

(Per cent of GDP)

Year	China	Indonesia	Republic of Korea	Malaysia	Thailand	Philippines[a]	East Asia[b]	India[c]
1990	4.1	4.9	4.5	4.4	4.1	2.3	4.2	4.1
1991	4.5	4.3	4.7	6.9	4.4	3.0	4.5	4.3
1992	5.1	3.8	4.7	6.0	4.3	2.5	4.7	3.9
1993	na	na	na	na	na	na	na	4.3

Note: a In alternate estimates of national government, government-owned corporations and local government unit investments, the share of infrastructure of GDP is 3.6 per cent for 1990, 3.8 per cent for 1991 and 4.0 per cent for 1992 (Kohli, 1995); b East Asia includes China, Indonesia, the Republic of Korea, Malaysia, Philippines, Thailand and others, including Cambodia, Fiji, Laos, Mongolia and Vietnam; c The financial year began in the year indicated.

Source: Kohli, 1995, p. 23; and Expert Group on the Commercialisation of Infrastructure Projects, 1996, p. 41.

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1 The World Bank definition of infrastructure includes the power, telecommunication, transport, and water and sanitation sectors.

2 Complete data for infrastructure investment in the period beyond 1992 are not available. The World Bank collected the data in Table 1.2 from internal country reports and other sources. The figures quoted are for public sector investment only. Private sector investment became increasingly important after 1990. The lack of published data after 1992 makes it difficult to determine total investment levels, or the relative importance of public and private investment. However, private and public investment probably reached around 5 to 6 per cent of GDP in 1994 (World Bank, 1995).

With infrastructure investment accounting for an increasing proportion of rapidly growing GDP, in many countries, infrastructure stocks doubled or trebled. In the 1990s, particularly rapid growth occurred in the power and telecommunication sectors as services were profitable to supply (Table 1.3).

Table 1.3

Rapid Growth in Available Infrastructure

Growth Rates of Infrastructure Stock and Services, from 1980-95 (Per cent growth over period)

Country	Paved road		Electricity production		Phone main lines		Access to safe water[a]	
	1980-90	1990-95	1980-90	1990-94	1980-90	1990-95	1980-90	1990-95
China	na	4	107	49	64	na	na	18[b]
Indonesia	106	-1	534	53	184	205	11	na
Republic of Korea	120	6	197	53	299	40	18	na
Malaysia	36	7	143	65	301	109	15	3[b]
Thailand	69	76	206	61	262	159	14	3[b]
Philippines	-20[c]	na	46	-2	45	133	36	8
India	na	na	143	34	na	135	na	na
Pakistan	na	4	146	33	na	137	na	9

Note: a Indicates a percentage change in coverage; b 1990-93; c according to the Department of Public Works and Highways' Bureau of Maintenance, the decreased length of road network was due to correction and/or revision in measuring the length.

Source: World Bank, 1998a; Kohli, 1995, p. 22; and Serefacia, 1997.

The Rise of Private Sector Infrastructure Provision

Until recent decades, almost all regional infrastructure investment and operations were publicly owned. However, since the late 1980s, the worldwide trend has been towards more private infrastructure provision and ownership. This trend is facilitated by fiscal constraints on public budgets, increased emphasis on efficiency in public sector operations, technological and policy innovations increasing private sector charging and competition possibilities, and improved contractual structures regulating private participation.

In 1992, the most recent year for which complete data are reported, public East Asian infrastructure investment approached US$55 billion. Private infrastructure investment approximated US$4 billion to $5 billion in that year, so public sector activity outweighed the private sector by more than ten to one[3] (World Bank, 1995).

[3] The private sector has a greater role in India, on average accounting for just under one third of total infrastructure investment in the years 1990-91 to 1994-95 (Expert Group on the Commercialisation of Infrastructure Projects, 1996, p. 41).

In 1995 and 1996, private sector water, transport, telecommunication and energy investment[4] across East Asia boomed, peaking at $36 billion in 1996 (Table 1.4). Key factors contributing to this boom included:

- sustained economic growth
- partial infrastructure market liberalisation, including deregulation and opening up to foreign participants
- new technology allowing previous monopoly infrastructure industries to become competitive, yielding potentially profitable investment opportunities
- government willingness to relinquish some control of state monopolies to attract foreign investment and technology, and realise efficiency gains
- major international enterprises seeking opportunities to service large developing markets in the region.

Table 1.4

1998 Private Activity Less than Half 1996 Peak

Private Sector Infrastructure Investment in East Asia[b], 1995-98[a]

	1995		1996		1997		1998	
	US$ million	Number	US$ million	Number	US$ million	Number	US$ million	Number
Water	70	1	1 659	11	180	2	na	na
Transport	2 168	12	16 031	23	5 045	22	4 858	9
Telecomm-unications	819	8	4 944	24	6 422	23	1 079	6
Energy	5 522	19	13 577	37	5 684	21	8 239	17
Total	8 579	40	36 211	95	17 331	68	14 230	32

Note: a To incorporate the latest available data, the years are to 1 August; b Includes Hong Kong, China, Thailand, Philippines, Taiwan, Republic of Korea, Indonesia, Malaysia and Singapore.

Source: Capital Date Project Financeware, in Asian Development Bank, 1998.

The Impact of the Financial Crisis on Infrastructure Activity

The financial crisis has more than halved the value of private sector infrastructure project closures in 1998 compared to the boom year, 1996 (Table 1.4). The slowdown was most pronounced in telecommunications, reflecting the lack of government guarantees in this sector and hence the allocation of demand risk to the private sector

[4] Table 1.4 and 1.5 report total investment in East Asian infrastructure projects by the private sector, involving non-recourse or limited recourse financing. It captures the value of project financial closures, involving both domestic and internationally sourced investment. Some measured financing may be international full recourse capital raised by domestic investors, then re-invested on a limited recourse basis in infrastructure projects. This full recourse finance, and other domestic capital contributions, accounts for the difference in capital flows measured in this table, and the international flows reported below.

(Asian Development Bank, 1998). Activity in the transport sector also suffered massive falls, down by almost 75 per cent on 1996. Many tollroad projects were already experiencing problems with lower than forecast demand before the crisis. Investments in energy were more resilient in 1998; new projects in the Philippines, Malaysia and Taiwan at an advanced planning stage when the crisis occurred, reduced the effect of major declines elsewhere (Asian Development Bank, 1998).

Overall, private sector activity declined most in Malaysia and Indonesia (Table 1.5). Rapid growth in activity started later in Thailand and its momentum has carried through to 1998. Activity in China recovered in 1998, supported by the success of its BOT program since Laibin B power project and the Chengdu water project, and China's relative insulation from the East Asian crisis. Infrastructure activity in the Philippines also has been resilient, supported by the credibility of its ongoing infrastructure reform program, the relative certainty provided by its BOT law and the milder impact of the crisis on economic prospects. (See Chapter 3 – *Law and Regulation*.) Appendix 1.1 gives a more detailed sectoral break down of country level private infrastructure investment.

The paucity of data on public sector activity in the region precludes a complete picture of the impact of the crisis on infrastructure investment. However, the crisis-induced pressure on public sector budgets in most economies may reduce public sector short term activity. Nevertheless, in the medium term, governments in the worst affected economies could seek to stimulate domestic demand and deal with short term unemployment through increased infrastructure spending.

Table 1.5

Private Activity Falling in Most Economies

Private Sector Infrastructure Investment by Major Economy,[a] 1995-98[b] (US$ billion)

	1995	1996	1997	1998
Indonesia	3 008	7 381	5 121	2 722
Malaysia	1 771	3 131	646	522
Singapore	0	0	1 089	0
Thailand	177	1 513	2 998	2 319
China	1 490	9 037	3 871	4 546
Taiwan	42	0	17	938
Hong Kong	573	13 849	977	1 061
Philippines	1 500	1 241	2 215	2 122
Republic of Korea	18	59	397	0
Total	8 579	36 211	17 331	14 230

Note: a Water, transport, telecommunications and energy sectors only; b To incorporate the latest data, the years are to 1 August.
Source: Capital Data Project Financeware, in Asian Development Bank, 1998.

Outlook for Future Infrastructure Demand

When East Asia's serious financial market problems are resolved, the region's underlying economic strengths should enable it to resume relatively strong growth rates. Increasing infrastructure investment should again be driven by the region's many strong fundamentals, including:

- *continued emphasis on export driven growth*, maintaining and even raising pressure for adequate economic infrastructure to boost competitiveness; exports, facilitated by large real exchange rate depreciations should contribute significantly to recovery
- *high savings rates*, which will re-emerge after the immediate income impact of the crisis; with appropriate capital market reform and development, domestic savings can become an important financing source for infrastructure projects, as in developed countries
- *policies encouraging private sector activity*, parallelled by recognition of its role in infrastructure provision.

However, rapid mid to late 1990s growth rates of 7 to 8 per cent reflected overheating economies and hot money flows rather than long term sustainable growth capacity; they are unlikely to recur. Future regional growth rates are likely to trend towards growth achieved in the 1980s, 5 to 6 per cent per year. Even with these lower growth rates, long term infrastructure requirements remain huge. Prior to the financial crisis, a 5 to 6 per cent average East Asian growth for the decade to 2004 was expected to generate over US$1.3 trillion in infrastructure requirements (Table 1.6) (World Bank, 1995, p. 25). Even if average growth rates fall to 3 to 4 per cent, infrastructure requirements of US$1 trillion are likely. While these projections are indicative only, for every 1 per cent rise in GDP per capita, the stock of infrastructure usually needs to expand by 1 per cent (World Bank, 1994, p. 2). Infrastructure bottlenecks associated with past under-investment also add to demand.

Because of its size, China will dominate Asian infrastructure needs, followed by India and the Republic of Korea (Table 1.6). If vital reforms proceed, China should achieve 6 to 8 per cent growth over the next decade,[5] generating infrastructure demand that underpins total East Asian demand. India also intends to lift investment in energy, transport and telecommunications, announcing plans in its 1998 budget to increase investment in these sectors by 35 per cent. Its investment levels will be second only to China's (Table 1.6).

[5] China could achieve higher growth than the East Asian average because it is starting from a lower base, and so has the advantage of catch-up. It also has high domestic savings, a large workforce still in low productivity agriculture and a large domestic market.

Table 1.6

Infrastructure Requirements Are Massive

East Asia and India's Forecast Demand for Infrastructure, 1995-2004 (Low case scenario – GDP growth of 5 to 6 per cent per year[a])

	Power		Telecommunications		Transport		Water and sanitation[b]		Total	
	US$ billion	Per cent of GDP	US$ billion	Per cent of GDP	US$ billion	Per cent of GDP	US$ billion	Per cent of GDP	US$ billion	Per cent of GDP
China	150	1.7	113	1.3	265	3.0	88	1.0	616	7.0
Indonesia	73	2.9	20	0.8	56	2.2	23	0.9	172	6.8
Republic of Korea	80	1.9	26	0.6	106	2.5	3	0.1	215	5.1
Malaysia	16	1.8	6	0.7	22	2.4	4	0.4	48	5.3
Philippines	16	2.6	5.5	0.9	14	2.3	2	0.3	38	6.1
Thailand	38	2.2	26	1.5	52	2.9	9	0.5	125	7.1
Others[b]	18	2.5	14	1.9	13	1.8	3	0.4	48	6.7
East Asia	391	2.0	211	1.1	528	2.7	132	0.7	1262	6.5
India[c]	115	2.4	45	1.0	105	2.2	60	1.3	325	6.9
Total	506	2.1	256	1.1	633	2.6	192	0.8	1587	6.6

Notes: a Except India, which is based on a projected 7 to 8 per cent growth. Indian estimates use GDP at factor cost growth; both the factor cost measure and this high forecast inflate these infrastructure demand projections. All estimates are in constant 1995 dollars; b includes Cambodia, Fiji, Kiribati, Laos, Burma, Solomon Islands, Tonga, Vanuatu, Vietnam and Western Samoa; c The Indian water and sanitation category includes roads within cities and towns.

Source: World Bank, 1995 p. 25; and Expert Group on the Commercialisation of Infrastructure Projects, 1996, p. 51.

PROSPECTS FOR NEW ASIAN INFRASTRUCTURE INVESTMENT

While Asia's infrastructure requirements still will be enormous in the next decade, the financial crisis has reduced the fiscal capacity of many regional governments to finance new projects from their own resources. Falling taxation revenue due to reduced incomes and falling imports, and the huge demands on public funds for failing banking systems and social safety nets mean many governments are attracted, even more than previously, to private infrastructure provision.

Private Sector Appetite for New Investments

Private infrastructure project sponsors and financiers are likely to be very cautious of committing new funds in the current environment. They are concerned income growth will not reach previously forecast levels, undermining potential projects' demand and profitability projections, increasing commercial risk. The major depreciations experienced also will reduce foreign currency revenue flows from projects, whose earnings are usually in domestic currencies, and currency volatility increases foreign exchange risk. The weakening financial viability of several public infrastructure authorities due to high foreign debt levels and take-or-pay contract obligations in foreign currencies, and questions over the ability of some countries to guarantee foreign exchange for foreign remittances also increase perceptions of sovereign risk. The severe credit contraction in the region also has reduced funding options for project sponsors.

These factors compound concerns private investors already held prior to the crisis regarding sovereign and commercial risk due to inadequate legal safeguards, poor selection procedure transparency, weak regulatory policies and implementation, inappropriate risk allocation and low profitability of many existing projects. The significant gap between government and private investor expectations regarding likely levels of private infrastructure investment requires regional governments to act urgently to address investors' legitimate concerns.

Later chapters examine policy developments necessary to restore investor confidence and build the capacity to pay for infrastructure services.

Incentives for Government to Encourage Private Provision

Constraints on public budgets and tight domestic capital markets are likely to increase significantly the incentives for government to improve investment conditions for private sector infrastructure providers. At least in the early stages of recovery, unsolicited bids are likely to be viewed favourably, particularly where projects conform to government priorities to stimulate economic activity.

As in the past, build own transfer, BOT, type arrangements will provide a less complex method for beneficial, high return projects to proceed.[6] However, while competitive industry restructuring and privatisation can take longer to implement and require strong political commitment by governments, they can yield higher efficiency and financial returns. Furthermore, some sectors, like power in the Philippines and Thailand, have reform plans ready to implement, and Indonesia currently is exploring its options to privatise power on a competitive basis.

Asset unbundling, competition and privatisation significantly increase productivity and new private investment, and revenues raised through privatisation can assist governments to reduce pressing debt problems, thereby boosting market confidence. For example, when the Victorian Government (in Australia) slashed public sector debt with its $21 billion electricity industry privatisation proceeds, this allowed tax cuts and boosted the state's attractiveness to private investors (Victorian Department of Treasury and Finance, 1997).

Infrastructure's Key Role in Recovery

To the extent that governments of economies worst hit by the recent crisis can raise domestic or international capital to finance new projects, public infrastructure investment should play a central role in government efforts to stimulate activity in 1998 and 1999. Infrastructure projects facilitating increased export activity, generating significant employment and offering broad welfare benefits will receive priority, including:

- transport projects, such as ports and associated road and rail projects linking hinterlands to markets, important for export competitiveness and regional development

[6] These arrangements are discussed in detail in Chapter 2 – *Principles*.

- water, sanitation, rural and urban roads and other smaller infrastructure projects, particularly in depressed rural and urban areas.

In mid 1998, Malaysia announced a US$125 million fund to assist ongoing private infrastructure projects having problems securing finance, and increased public infrastructure spending from a RM7 billion supplementary budget. Priorities include bridges and roads, particularly in rural areas, improved water supply and other basic amenities, ports and infrastructure development for the multimedia super corridor. The Republic of Korea is responding to current problems with plans to restructure and privatise most of its state-owned enterprises, including electricity, gas and telecommunications utilities by the end of 2001. In July, the Government included US$370 million of additional public works spending in its International Monetary Fund Letter of Intent (Chon and Lee, 1998).

In early 1998, China announced a significant increase in spending on infrastructure and housing to bolster slowing output growth. China invested around US$62 billion in infrastructure in 1997, but plans to double this level in 1998 (*People's Daily*, 1998). Even prior to the crisis, China's Ninth Five Year Plan (1996-2000) sought private sector funding for 15 to 20 per cent of total new infrastructure projects, expected to cost approximately US$303 billion over the plan period (East Asia Analytical Unit, 1997, pp. 237, 240).

Sectoral Distribution of New Infrastructure

The financial crisis also is likely to affect the sectoral distribution of new infrastructure projects. In forecasts made prior to the crisis, transport and power were expected to dominate spending in the decade to 2004 (Table 1.6). While transport will remain important, the power sector outlook is less certain. Although investment in private power held up quite well in 1998 compared to several other sectors (Table 1.4), power demand is highly sensitive to economic growth. With many regional economies contracting, large increases in generating capacity coming on stream from recent investments and higher tariffs stimulating conservation, supply growth will need to slow over the medium term. Particularly in Indonesia, where significant new independent power producer capacity will come on stream in 2001, supply is likely to outstrip depressed demand, lowering prospects for new activity for several years. New project activity in Malaysia and Thailand also could stall in the medium term (Gray and Schuster, 1998). From 1998 to 2001, the World Bank expects total new East Asian electricity project capacity to decline by as much as 50 per cent (Table 1.7).

Table 1.7

Electricity Capacity Growth Expected to Halve

Forecast Effects of the Crisis on New Power Project Development, 1998-2001
Total new capacity over period (gigawatts)

Country	Pre crisis projections	Low growth scenario	High growth scenario
Indonesia	7.3	3.8	4.0
Malaysia	1.4	0.1	0.5
Philippines	3.6	2.8	3.3
Thailand	3.8	0.2	2.0
Total	16.1	6.9	9.8

Source: Gray and Schuster, 1998, p. 5, quoting Hagler Bailly Knowledge Base.

FINANCE FOR INFRASTRUCTURE

International financing has been a key factor facilitating increased levels of private sector infrastructure provision in the last decade. Faced with relatively underdeveloped domestic capital markets, private sector firms raised capital offshore through foreign portfolio and direct investment, bond issues and loan financing.

International Infrastructure Financing

Internationally-sourced limited and non-recourse private sector finance for infrastructure projects grew rapidly through the 1990s, supplementing domestically raised funds. Total annual limited and non-recourse infrastructure financing raised on international markets by developing countries jumped from just $1.4 billion in 1990 to $32 billion by 1997. Flows to East Asia increased rapidly to 1995, more than matching flows to Latin America (Figure 1.1). However, while flows to Latin America continued to boom, funding for East Asia reached a plateau at around US$10 billion per year from 1995 onwards. Flows to South Asia also levelled off after a sharp jump in 1994.

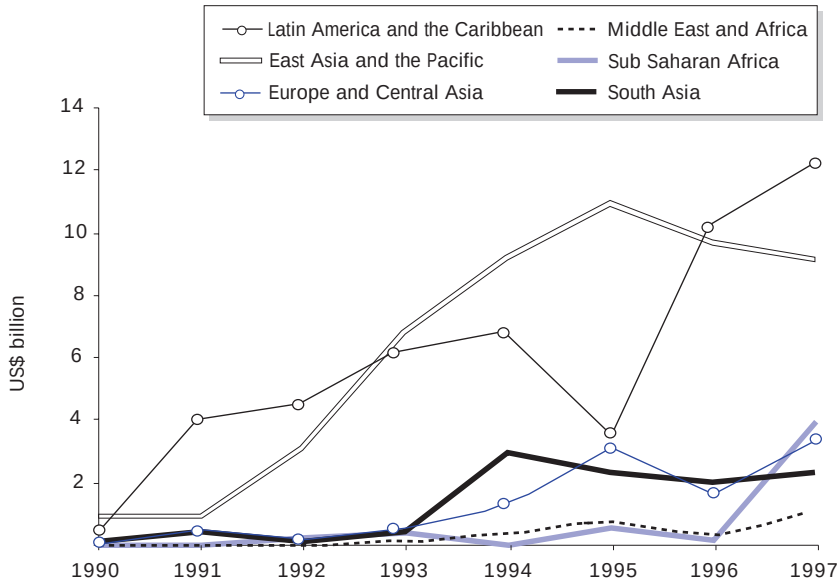
In 1996, the decline in internationally-sourced funds corresponded with the continued boom in East Asian private infrastructure activity, suggesting the increased importance of domestic finance sources. However, the limited development of most regional capital markets means private firms probably originally sourced part of this domestic finance internationally on a full recourse basis, then invested in limited or non-recourse infrastructure projects. This type of borrowing is not captured in the international inflow data in Figure 1.1.[7]

[7] If true, this hypothesis would also account for the difference between the capital flows reported here and the total private (non-recourse) investment reported in Table 1.4. However, data in this area also are obviously difficult to measure accurately, and published figures are probably incomplete.

Figure 1.1

International Infrastructure Financing for Asia Slows from 1995

Private Infrastructure Financing Raised by Developing Countries



Source: Kohli et al, 1997; and World Bank, 1998d.

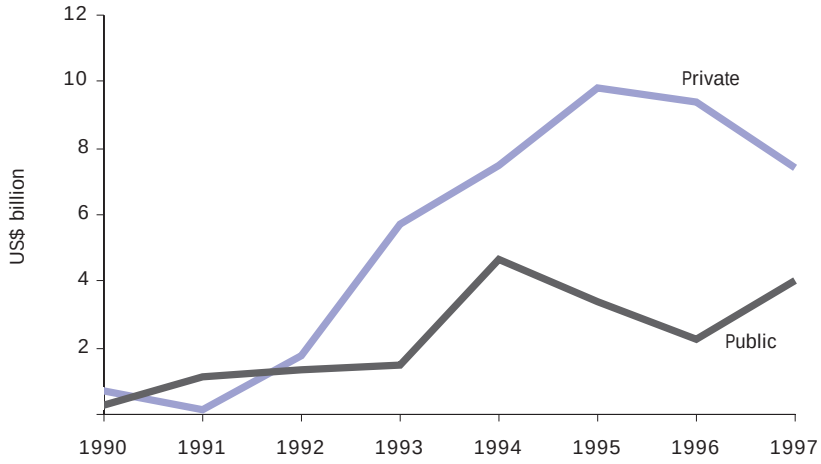
Similarly, increased full recourse international borrowing by domestic firms, public international borrowing, and in economies like Malaysia or the Republic of Korea with developed domestic capital markets, domestic infrastructure financing, could have compensated for the sharp downturn in international flows to private infrastructure after 1995 (Figure 1.2).

Limited and non-recourse international finance for infrastructure investment in East Asia comes predominantly from commercial loans. The proportion of East Asian financing from bond issues is actually lower than the developing country average (Figure 1.3). Heavy reliance on international debt, particularly the rapid increase in short term debt on a full recourse basis, was a key cause of the recent financial crisis in East Asia (Table 1.8). By mid 1997, short term debt reached 67 per cent of total foreign debt in the Republic of Korea, 46 per cent in Thailand and 39 per cent in Malaysia, compared to 25 per cent or less in Latin American countries (World Bank, 1998b, p. 34). Lack of hedging for exchange rate risk and mismatched maturities between loan terms and project revenue in infrastructure and other projects created severe repayment difficulties as the crisis unfolded.

Figure 1.2

International Funds for Public Infrastructure Compensate for Falling Private Flows

International Infrastructure Financing Raised by East Asia and South Asia, Private and Public

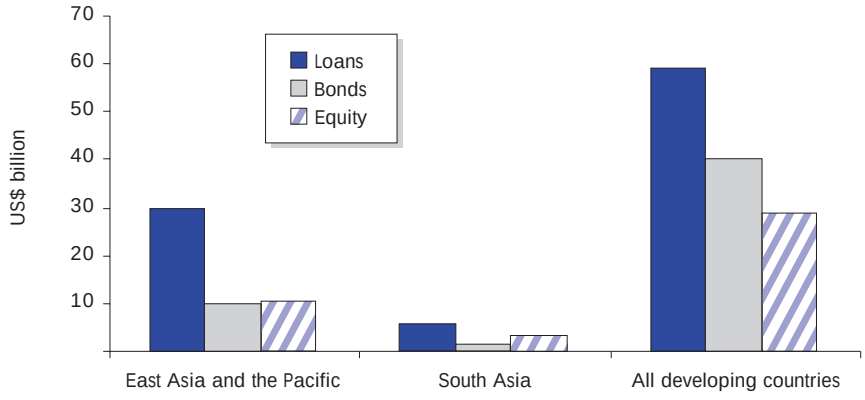


Source: Kohli et al, 1997; and World Bank, 1998d.

Figure 1.3

Loans Dominate East Asia's Infrastructure Finance

International Finance for Infrastructure
1990-97



Source: Kohli, et al 1997; and World Bank 1998d.

Table 1.8

Asian Short Term Debt Levels Jump Sharply in mid 1990s

Short Term Debt Stocks
(US$ billion)

	1994	1995	1996	1997[a]	1994-96 Annual average percentage change
East Asia and the Pacific	80	104	117	124	21
South Asia	7	9	10	10	21
Latin America and the Caribbean	105	111	112	120	3
All developing countries	286	324	346	361	10

Note: a As of June 1997.

Source: World Bank, 1998b, p. 9.

South Asia also makes less use of international bond financing compared to the developing country average; instead, it receives relatively high levels of equity finance (Figure 1.3). While short term debt levels also grew strongly in South Asia, overall levels remained modest. This is one of the reasons South Asia, particularly India, remains relatively unscathed by the financial crisis.

Domestic Financing

Asia still heavily relies on central, state or local government budgets to provide the bulk of infrastructure project finance. While international project finance for public sector infrastructure has increased markedly in recent years (Figure 1.2), domestic sources such as consolidated tax revenue and general sovereign borrowing continue to be key funding sources.

In contrast, domestically sourced financing for private infrastructure activity appears limited; much less than half of the finance for private infrastructure in East Asia comes from domestic sources (Kohli et al, 1997, p. 13). This is surprising as Asian savings rates are among the highest in the world. A considerable proportion of savings is channelled through domestic intermediation to local productive activities, but not to infrastructure. This is because the term structure of domestic savings is short, due to lack of depth in markets for alternative instruments like bonds, pensions and life insurance, and the dominance of demand deposits in banks. Short term finance is unsuited to financing infrastructure. Poor prudential controls of financial markets make investors cautious about undertaking longer term investments. (See Chapter 4 – *Financing and Risk*.)

Even if private domestic financing accounts for 30 to 50 per cent of East Asian infrastructure investment by the first decades of the next century, it would still amount to only 2 to 5 per cent of GDP (Kohli et al, 1997, p. 13). This is a small fraction of private domestic savings, which are typically 30 to 35 per cent of GDP in East Asia.

The Asian bond market developed impressively prior to the 1997 financial crisis, but growth in many cases was from a small base. Further domestic development hinges on financial institutional change, particularly expanding pension-type funds which hold long term assets like bonds, and continuing regulatory reforms encouraging liquid secondary markets for debt instruments. (See Chapter 4 – *Financing and Risk*.)

Domestic equity markets also grew rapidly during the 1990s. Prior to the recent downturn, stock market capitalisation relative to GDP in some cases exceeded major developed countries (Kohli et al, 1997). At the same time, the rise in the share of infrastructure stocks was spectacular, reaching up to 25 per cent of stock market capitalisation in some economies, highlighting the potential of equity financing (International Finance Corporation, 1996, p. 116).

Mobilising more domestic debt and equity funds will be crucial for regional infrastructure development, given investors' strong desire to reduce exposure to foreign exchange risk. (See Chapter 4 – *Financing and Risk*.)

NEED FOR PUBLIC-PRIVATE PARTNERSHIPS

East Asia's enormous projected demand for infrastructure makes traditional public and donor sources of finance and management skills inadequate. Competing demands for scarce government funds including health and education, refinancing of financial systems as a result of the recent financial crisis, poverty alleviation programs and the need to maintain fiscal balance will put regional governments under significant fiscal pressure, particularly in the next three to five years.

In this environment, increased private sector infrastructure participation can stimulate economic activity and promote recovery while meeting shortfalls in infrastructure services and increasing economic competitiveness. However, new private sector activity has dropped significantly since the onset of the currency crisis in mid 1997 and is unlikely to recover until confidence is restored. Subsequent chapters point to the necessary legal and regulatory frameworks, commercial tariff regimes, transparent bidding processes, efficient risk allocation mechanisms, financial market development and best practice competition and privatisation frameworks that would encourage private sector investors back into Asian infrastructure.

Considerable evidence indicates the private sector frequently is better able to:

- assess market needs
- raise necessary resources, including finance, for essential investments
- identify and manage risks
- provide modern management skills and optimise performance
- improve the efficiency and quality of services.

To ensure infrastructure investments optimally contribute to national welfare, government's role is changing rapidly, but not diminishing in importance. Rather than provide infrastructure in all cases, in many sectors government needs to:

- produce a clear policy framework for private sector activity
- develop and implement transparent and coherent planning processes as well as legal and regulatory regimes

- initiate infrastructure sector reform to improve competition and transparency, and mobilise public opinion
- address market failures in a cost effective manner and ensure private sector infrastructure achieves social objectives.

To do this, governments must be aware of the economic principles underlying efficient infrastructure provision and pricing, and use best practice approaches to regulation, risk management and competitive unbundling. These issues are discussed in the next four chapters.

APPENDIX 1.1

PRIVATE NON-RECOURSE AND LIMITED RECOURSE INFRASTRUCTURE INVESTMENT IN EAST ASIA

Appendix Table 1.1

Major Drop in Private Investment since 1996

Private Infrastructure Investment by Sector and Economy, 1995-98[a]

		1995	1996	1997	1998
Indonesia	Water	0	325	0	0
	Transport	0	914	1 146	76
	Telecommunications	359	919	2 761	480
	Energy	2 649	5 223	1 213	2 166
	Subtotal	3 008	7 381	5 121	2 722
Malaysia	Water	0	811	0	0
	Transport	1 654	928	0	147
	Telecommunications	117	1 171	600	0
	Energy	0	220	46	375
	Subtotal	1 771	3 131	646	522
Singapore	Water	0	0	0	0
	Transport	0	0	712	0
	Telecommunications	0	0	282	0
	Energy	0	0	95	0
	Subtotal	0	0	1 089	0
Thailand	Water	0	140	174	0
	Transport	0	0	782	2 129
	Telecommunications	169	272	1 019	191
	Energy	8	1 123	1 023	0
	Subtotal	177	1 513	2 998	2 319
China	Water	70	383	6	0
	Transport	191	2 210	1 126	670
	Telecommunications	132	272	280	0
	Energy	1 097	6 172	2 460	3 876
	Subtotal	1 490	9 037	3 871	4 546
Taiwan	Water	0	0	0	0
	Transport	0	0	0	0
	Telecommunications	42	0	0	328
	Energy	0	0	17	610
	Subtotal	42	0	17	938

Appendix Table 1.1 (Cont.)

		1995	1996	1997	1998
Hong Kong	Water	0	0	0	0
	Transport	323	12 000	727	1 061
	Telecommunications	0	1 849	250	0
	Energy	250	0	0	0
	Subtotal	573	13 849	977	1 061
Philippines	Water	0	0	0	0
	Transport	0	0	185	775
	Telecommunications	0	431	1 200	80
	Energy	1 500	810	830	1 267
	Subtotal	1 500	1 241	2 215	2 122
Republic of Korea	Water	0	0	0	0
	Transport	0	0	367	0
	Telecommunications	0	30	30	0
	Energy	18	29	0	0
	Subtotal	18	59	397	0
Total	Water	70	1 659	180	0
	Transport	2 168	16 031	5 045	4 858
	Telecommunications	819	4 944	6 422	1 079
	Energy	5 522	13 577	5 684	8 293
	Total	8 579	36 211	17 331	14 230

Note: a To incorporate the latest data, the years are to 1 August.

Source: Capital Data Project Financeware, in Asian Development Bank, 1998.

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Chapter 2

PRINCIPLES OF EFFICIENT INFRASTRUCTURE PROVISION

Several basic economic issues underpin efficient infrastructure provision, including:

- understanding infrastructure's monopoly nature
- preventing exploitation of monopoly power via regulation, and wherever possible, introducing competition in and for infrastructure service markets
- recognising and allowing for the public and merit good and externalities, or spillover costs and benefits, of some infrastructure services.[1]

To ensure consumers pay the lowest possible prices and receive the highest standards of service, governments need to determine the appropriate policy and regulatory environment for private infrastructure participation, based on their understanding of these key issues. By discussing the influence of these core characteristics on appropriate policy choices, this chapter provides the basic analytical foundations for the remainder of the report. Subsequent chapters explore practical approaches to infrastructure regulation, project tendering, tariffs, financing, risk allocation and sectoral restructuring in Asia Pacific economies, based on these core principles.

WHY IS INFRASTRUCTURE DIFFERENT?

Major 'economic infrastructure' industries, including telecommunications, electricity, natural gas, water supply, waste water treatment, roads, railways, mass transit, and sea and airports, share distinctive characteristics which warrant a high level of government involvement. Most importantly, infrastructure:

- distribution networks have significant natural monopoly[2] elements; however, services provided using these networks often can be competitively supplied
- services' benefits to the community often exceed both their provision costs and the revenue supplying firms can earn from their sale, due to spillover effects or externalities, and public good characteristics
- industries provide important, often crucial, inputs to produce other goods and services, directly affecting economies' capacity to grow.

Recognising and dealing with infrastructure's monopoly nature is central in ensuring efficient infrastructure provision. In the past, government dealt with infrastructure monopolies through centralised public ownership and operation. In recent years,

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1 This chapter draws, *inter alia*, on five papers, listed in the reference section, provided by Tasman Asia Pacific as a consultancy for the East Asia Analytical Unit and previously produced for The Infrastructure Forum.

2 A monopoly is a sole seller of a product that has no close substitute.

recognition that markets often provide lower cost, higher quality services than governments generated incentives for governments to creatively overcome monopoly control problems so decentralised, market-based, private operators can deliver infrastructure. The enormous fiscal burden on governments to finance new infrastructure also increases emphasis on users paying for infrastructure services wherever possible and governments seeking private infrastructure investment.

Recent Infrastructure Policy Developments

Prospects for increasing private sector participation in infrastructure have improved with recent advances in technology and changes in relative costs that:

- diminish the monopoly network share of costs in many infrastructure sectors
- facilitate the separation of infrastructure industries into their competitive and monopolistic elements
- increase the importance of innovation in infrastructure provision
- improve prospects for cost recovery through user charges
- lower barriers to international trade, increasing pressures for efficient infrastructure provision
- increase the scope for international trade and investment in infrastructure services
- develop financial markets facilitating private financing of infrastructure projects.

Consequently, the global policy shift is towards private sector provision of infrastructure. However, because of its monopoly network, public good and spillover characteristics, and centrality to development, governments must maintain a central role in monitoring and regulating infrastructure delivery. Understanding why, when and how government and the private sector can effectively participate in infrastructure provision is essential to construct an efficient policy environment.

Monopoly Infrastructure Networks

The most critical difference between infrastructure and other industries is infrastructure industries have core networks which are natural monopolies. These monopoly networks can be high voltage electricity wires, telephone lines, water and gas pipes, road and rail grids, or less tangible, regulated connections between transport nodes like ports and airports, such as regulated access to sea lanes or air routes. The ability, for example, to switch to alternative transport modes, or from fixed to mobile phone services can reduce monopoly power, but some monopoly elements remain in virtually all infrastructure sectors.

Infrastructure networks are natural monopolies because:

- they usually supply a product that cannot be traded internationally, so natural monopolies in other countries or regions cannot provide competition

- the most efficient scale of producing the service often equals or exceeds total market demand; thus, the market has room for only one efficient producer[3]
- they usually involve very high initial investment costs but very low costs for extra connections to an existing network, producing steeply falling marginal costs to supply new connections and giving network owners an overwhelming commercial advantage over potential new competitors[4]
- investments in networks are typically 'sunk costs' with little or no re-sale value or alternative use, reducing the ability of hit and run competition to provide a credible threat to incumbent monopolists.[5]

Without government involvement, owners of monopoly infrastructure networks could exploit their monopoly power. An unregulated private monopoly could earn excessive profits by constraining its output below, and pushing its prices above, levels that would hold in a fully competitive market.

In some infrastructure sectors like telecommunications, technological developments including fibre optics, microwave technology, the Internet and mobile phone services reduce the monopoly power of incumbents, allowing many new players to enter markets. Since 'hit and run' entry is feasible, existing telecommunication suppliers, for example, have an incentive to control their prices so that actual entry does not become attractive. However, this threat does not exist for electricity, water or gas suppliers; here monopoly networks like electricity transmission lines and water and reticulated gas pipes are still a major component of industry costs.

Infrastructure and Essential Services, or 'Merit' Goods

While water supply, waste water treatment, transport and energy and telecommunications are essential services, this does not justify public sector provision. Food is at least as essential as these infrastructure services, but given the agricultural failures of centrally-planned economies, few would argue that public sector provision increases food security.

Without public ownership, governments can monitor health and safety standards and ensure competition in infrastructure industries, as they do in food industries. In fact, government can more effectively regulate standards when it *does not* own firms in an industry; remaining an impartial umpire is difficult when also playing in the game. Furthermore, private firms can be sued for damages arising from failure to meet

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3 Although industries like petrochemicals, oil refining and steel demand lumpy, mostly sunk investments, and over a certain output range may have declining marginal costs of production, their products are tradeable. Imports can compete with domestic producers and producers can export production in excess of market demand. By contrast, the products of natural monopoly infrastructure providers are not tradeable, making such industries less contestable.

4 Infrastructure networks are a classic example of increasing returns to scale, with the average cost of providing the infrastructure service falling as the number of customers expands, but profits increase since prices charged to consumers are kept constant.

5 Telecommunications assets such as satellite dishes, microwave towers and switching stations can be resold more easily than water mains and highways. Similarly, passenger aircraft, locomotives or rolling stock all can be sold if new entrants in the business subsequently want to leave the market.

standards, but government firms usually cannot.[6] Hence, an infrastructure's monopoly network aspect determines the need for government involvement, rather than its essential nature.

Nevertheless, many economies regard infrastructure services as essential goods to which users have inherent access rights, with services provided free or at very low prices through public utilities. However, such perceptions are largely politically, historically and culturally determined, bearing little relation to economic realities. Electricity and transport are no more essential than food or clothing, which private firms typically provide at market prices.

However, water may be an exception. In tropical climates, lack of water can lead to dehydration within hours. Polluted drinking water can seriously undermine health, but householders can only measure water quality by taste and smell. Communities therefore require access to at least a minimum life-line amount of clean water at a zero or minimum price, with effective regulatory controls on water quality. However, once this essential need for water is satisfied, additional water supplies should not be zero priced or subsidised, and operators can fully cover costs of supply. Therefore, as long as government requires private operators to meet these social obligations, private investors can provide additional commercial water supply services. Contracts with private water system operators could stipulate limited volumes of free water from communal wells or pumps, but house connections could be provided at the full cost of supply. Cross subsidies from other users or, more transparently, government budget funded subsidies could meet these public service obligations.

Spillover Effects or Externalities

Many infrastructure sectors generate spillover effects or externalities. These are costs and benefits imposed on (or enjoyed by) people who do not directly consume the infrastructure service; therefore, they are not reflected in the infrastructure service's market price. For example, improved road or rail services may produce positive spillovers for local residents and businesses by raising their land values, but private road or rail developers may be unable to capture these values through road tolls or rail fares, as users could use alternative transport modes if charges captured all these benefits.

Where spillover effects occur, private sector evaluations may not measure the true value of a new infrastructure service to society, but only the revenue sponsors can derive from direct users. Thus a project with positive net economic and social benefits may be commercially unviable. This factor may justify direct government provision of transport links or concessional treatment of private projects through tax incentives, subsidised credit or public grants.

Where governments clearly identify spillover effects, they can tax benefiting groups or regions and subsidise project sponsors via cash or land allocations, enabling them to reap some spillover benefits. For example, where private sponsors fund, construct and operate a new highway, government could collect part of the project's costs from local land rates, based on the calculated rise in land values due to the project, and pay this to the project sponsors. Alternatively, if land near the road route is publicly

[6] In a recent statement on damage caused by electrical distribution network failures, the Commonwealth of Australia signalled that this may change in industries where private and government-owned firms compete.

owned, private operators could be given a parcel of land, so they can recover their costs from land sales, the value of which will rise because of the road. Vietnam has used this approach with some success to privately fund local roads. Similarly, the Philippine Government has granted land concessions around stations to private firms developing Manila's light rail projects and paid for part a tollroad that was mainly constructed and totally operated on a build operate transfer, BOT, basis (East Asia Analytical Unit, 1998). However, transparency is an issue in many such subsidy and land transfer transactions, and public scrutiny of the size of subsidies and their justification is important.

Public Good Characteristics of Some Infrastructure

Most goods and services produced and consumed in an economy are 'rival' or private goods, as they can be consumed by only one person. Water, electricity and food are rival goods; once they are consumed by one person, no one else can consume them. However, the services *uncongested* transport networks, gas and water pipelines, telecommunications lines and spectrums and electricity transmission lines provide are non-rival or public goods, as many people can consume them without preventing others from also consuming them. For example, an extra car travelling on an uncongested highway does not reduce the availability of the highway to other users; turning on the television does not prevent someone else receiving the signal.

The other characteristic of a public good is that it is difficult or impossible to exclude people from its use. For example, it is virtually impossible to prevent people from using footpaths, street lighting, small suburban or rural roads, or TV spectrums.

Infrastructure services with strong public good aspects will usually be unattractive for private providers, as it will not be possible to exclude the public from their use or levy charges on consumers. Hence, private ownership is likely to result in under-provision of pure public goods, unless the government subsidises private providers in some way.

Importance of Infrastructure for Growth

Debate on infrastructure's contribution to growth is considerable;[7] however, overcrowded and inadequate infrastructure facilities can add significantly to production and distribution costs, constraining growth in output and living standards. In China, physical infrastructure expanded only 7 to 8 per cent per year over the past decade, while economic growth averaged about 8 to 10 per cent, and

[7] In the past decade, some econometric studies of the relationship between infrastructure investment and economic growth indicate very significant returns to infrastructure investment, suggesting 'super-normal' returns and growth-inducing effects. For example, the increase in output generated by a 1 per cent increase in providing transport may increase economic output by as much as 0.43 per cent in China. However, similar studies for OECD countries with much better infrastructure indicate the productivity of infrastructure investment is much lower, averaging only an 0.07 per cent output growth from a 1 per cent growth in investment.

However, results from these econometric studies increasingly are questioned. Highly aggregated data sets and models based on simple relationships can overlook key variables and fail to discriminate between particular types of infrastructure investment, producing spurious results, leading some analysts to preclude the value of this approach (Australian Bureau of Transport and Communications Economics, 1996, p. 16). Detailed cost-benefit studies of individual projects provide more reliable estimates of the returns to infrastructure investment.

infrastructure use soared 13 to 14 per cent per year. Inadequate transport infrastructure alone depresses China's economic growth rate by 1 percentage point per year (East Asia Analytical Unit, 1997).

Adequate and good quality infrastructure stock is central to developing any economy. Strong infrastructure facilitates economic growth and improves the quality of life by:

- reducing production costs. Reliable, reasonably priced power, water, telecommunications and transport infrastructure must be available to develop competitive industrial production, raise levels of output, profitability, income and employment and improve export competitiveness. They also reduce domestic transactions costs and increase access to market information, raising efficiency gains from market liberalisation
- diversifying production into more productive and higher return activities by facilitating growth of alternative employment and consumption possibilities. For example, rural roads give farmers access to more distant and lucrative markets for cash crops, enabling them to reduce reliance on subsistence farming. Good transport and telecommunications infrastructure is fundamental to an economy adjusting demand and supply to changing price signals, and can link domestic firms into higher return, global production and export networks
- raising the population's standard of living and welfare. Appropriate transport, power and water supply infrastructure reduces time spent on non-productive activities like travel and procuring energy and water, thereby increasing time available for income earning activities. Providing sanitation and clean water also improves people's health status. Good quality infrastructure, like clean efficient power stations, reduces waste of natural resources like coal and oil, and protects the environment, for example from excessive cutting of forests for fuel.

PUBLIC OR PRIVATE PROVISION?

This section examines factors determining whether the private or public sector provides infrastructure services more efficiently. In modern economies, privately-owned businesses operating in competitive markets supply most goods and services because they are perceived as more efficient than publicly-owned firms using non-market resource allocation mechanisms. Separating the roles of regulators and producers adds to the advantage of private infrastructure ownership. However, public ownership of infrastructure assets is desirable in some circumstances, or at least tight regulatory control.

While all countries treat infrastructure differently from most other industries, the form of this treatment differs. In Australia, New Zealand, Western Europe and Japan, government business enterprises dominate infrastructure. In most economies, infrastructure firms were initially privately owned, operated, and funded, but later were nationalised or absorbed into government enterprises (Klein and Roger, 1994) usually to prevent perceived abuse of monopoly power. In the USA, extensive private ownership of infrastructure firms persisted throughout the twentieth century,

although federal and state utility commissions comprehensively regulate gas, water and intrastate telecommunications and transport.[8] In France, private concessions have traditionally supplied water and sewerage.

Incentives to Respond to Market Signals and Reduce Costs

Because private firms' profits and management incomes are closely linked to their performance, they generally respond to price signals and customer demands, minimise costs and innovate in technology and service provision more than state-owned entities.

Information on true economic costs and benefits of production and consumption may be unavailable to bureaucratic planners, if public infrastructure prices are fixed rather than market determined. Even if prices are determined by markets rather than fixed by governments, public sector producers often have weaker incentives to respond to market price signals than commercial managers facing profit goals. Public sector providers often suffer from poorly specified enterprise objectives, wide ranging social and economic goals, political and bureaucratic interference in management, inadequate monitoring of managerial performance and an unclear relationship between managerial performance and rewards.

While both public and private sector managers may be penalised for mistakes, effective public sector managers are less likely to be rewarded than their private sector counterparts for cutting costs or increasing revenue because public enterprises do not keep their profits. Consequently, public managers often invest in excessively secure systems or 'gold plate' investments to ensure they *never* fail, rather than implementing more cost-effective risk management strategies.[9]

As governments often legislate to reduce or eliminate competition with public infrastructure enterprises, their employees and managers often secure tenure, inefficient work practices, and staffing and pay levels impossible in competitive markets. Secure tenure diminishes performance incentives and creates difficulties in shedding surplus labour. Excessive employment costs often receive parliamentary approval if public sector unions threaten strikes in crucial monopoly services or governments want to conceal unemployment.

Lack of incentives to respond to market signals and risk averse behaviour can result in inefficient investment, overstaffing, long delays in providing service connections and high service costs. For example, when a second telecommunications firm, Optus, entered the market to compete with the Australian state-owned monopoly, Telstra, Telstra's long distance and international call rates dropped significantly and its profits rose, mainly because it was forced to shed surplus labour and raise productivity.

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[8] At the federal level, an Interstate Commerce Commission regulates transport, a Federal Communications Commission regulates telecommunications and a Federal Energy Regulatory Commission regulates the natural gas and electricity industries.

[9] While private shareholders do not like highly variable returns, they can reduce their risks through portfolio diversification and demand higher returns for more risky investments. Consequently, private sector managers can pursue more innovative approaches, if high returns are within an acceptable probability range.

Evidence Comparing Efficiency of Public and Private Ownership

Many empirical studies measure the relative performance of privately and publicly owned enterprises in many different industries and economic and political environments.[10] An impressive range of evidence indicates that as long as privatisation, the sale of public assets to private sector participants, occurs in a competitive market, it usually produces lower prices and improved services for consumers.

In one of the biggest studies of this nature, Megginson et al (1994) examined the financial and operating performance of 61 fully or partially privatised firms from 18 countries and 32 industries from 1961 to 1990. In the partial privatisations, the government sold off only a fraction of the shares it owned. The authors distinguished 'control' privatisations, where the new private owners had control of the enterprise, from 'revenue' privatisations where the government simply sold a minority stake to private investors and retained voting control.

The importance of competitive markets

For public enterprises privatised into competitive industries, Megginson et al (1994) showed privatisation of government infrastructure enterprises significantly increased profitability[11] for both fully and partially privatised firms, both control and revenue privatisations and for firms headquartered in both OECD and developing countries. However, increased efficiency was marginal for public enterprises privatised into non-competitive industries.[12] The World Bank's major infrastructure report (1995, p. 37) verifies this, pointing out that the best empirical work on this issue finds that private sector firms perform more efficiently in competitive markets but in uncompetitive markets the results and interpretations are less clear. These results highlight the need to ensure privatisation occurs into competitive markets.[13]

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10 See, for example, Bishop and Kay (1988), Boardman and Vining (1989), Shirley and Nellis (1991), Kikeri et al (1992), Galal et al (1994) and Megginson et al (1994). Authors of a World Bank Report (1995) note the best empirical work compares:

- the performance of publicly-owned enterprises before and after privatisation
- divested enterprises with publicly-owned enterprises; or divested firms with a hypothetical situation in which the same firm is assumed to continue under public ownership.

11 Profitability was measured as both return on sales or return on assets, but Megginson et al (1994) prefer the return on sales measure because of the severe accounting problems associated with measuring asset values (which use of comparative international data exacerbates).

12 However, nine of 14 firms privatised into non-competitive markets did increase returns on their sales. The Meginsson study found privatised firms' returns on sales, calculated as inflation-adjusted sales per employee and net income per employee, increased even though inflation-adjusted sales significantly *increased* following privatisation.

13 Surprisingly, the Megginson study found privatised firms' improved labour productivity was achieved not through reduced employment, as employment increased significantly following privatisation. While average employment fell the year after privatisation as efficiency rose, employment subsequently increased as privatised firms produced more output, although they used fewer employees per unit of output. However, the Megginson study examines firms for only three years before privatisation. In many cases, employment fell substantially in years prior to the beginning of the sample, often to increase efficiency to raise enterprises' sale prices.

Importance of sound regulation if markets are non-competitive

Another study cited by the World Bank (1995, p. 38) found if monopoly regulation allowed private firms to function efficiently and protected consumers, privatisation in both competitive and monopoly markets improved welfare in 11 out of 12 cases examined. Gains came primarily from improved productivity, increased investment and better pricing.

Efficiency of Private Investment Decisions

Most publicly-owned firms are starved of investment funds, depending on government grants, guaranteed loans or bond issues, but benefit from increased investment following privatisation.[14] Their ability to undertake investments often depends on the government's overall fiscal position, rather than the expected economic and financial returns of new investments. Transfers to consumers, employees, suppliers or, in command economies, the government, often dissipate returns to capital, making them unavailable to finance new investments.

Privatised enterprises perform better because they rely on capital markets to determine the viability of new investment rather than government decisions. Capital markets:

- facilitate capital mobilisation for the highest return investment projects
- allocate risks to those willing to bear them
- signal the costs and benefits of investments to firms and savers
- through profits and share prices, provide a constant measure of managerial effectiveness and a means of enforcing better management practices.

Capital market failures

However, inefficient or immature domestic capital markets may reduce the ability of private sector firms to raise capital in local currency. Domestic investment fund managers may be unwilling to take on the long term funding instruments needed for infrastructure investment.

Tackling these problems directly by encouraging development of longer term debt and equity markets usually is the best solution. If there is market failure in the interim, governments can intervene to assist the private sector finance projects on appropriate terms, through for example, sovereign risk guarantees; this need not involve public ownership. (See Chapter 4 – *Financing and Risk*.)

[14] The Megginson study found the ratio of capital expenditure to sales significantly increased following privatisation. In sub-samples, the ratio of capital expenditure to sales significantly increased for those firms privatised into competitive industries, for full and control privatisations and for firms headquartered in OECD countries.

Privatisation and Revenue Maximisation

Government focus on revenue from privatisation rather than efficiency benefits for consumers can obstruct successful privatisation. First and foremost, privatisation should benefit consumers through lower prices and improved services. Assets should not be sold merely to retire government debt, or even worse, finance current expenditure. A low market value for public assets can indicate government has not established a transparent and stable regulatory process or efficient industry structure. However, a very high sale price can indicate the new private owners expect to reap monopoly profits. Certainly, government could maximise the sales revenue of assets by maximising the monopoly power of the privatised entity, but this would significantly raise prices for the enterprise's consumers.

Privatising monopoly assets will not benefit consumers unless a carefully structured regulatory environment maintains competitive pressures on private participants and ensures safety and quality standards are met. Regulation approaches are discussed later in the chapter. Methods of introducing competition in and for infrastructure markets are discussed in 'Unbundle or Integrate'.

Methods of Privatisation

Privatisation can be either through 100 per cent private ownership or, as interim steps, build operate transfer, BOT, contracts or joint ventures with public sector corporations. The Thai and Philippine governments, are moving to fully privatise power and telecommunications after initially experimenting with joint ventures and BOT contracts.

Privatisation can occur either by the sale of shares to the public or to strategic domestic or foreign private sector partners. The former path often is more politically acceptable, but purchase by strategic partners may more efficiently and rapidly introduce new corporate culture and managers from private sector firms. For example, the partial sale of Australia's national airline, Qantas, to the fully privatised British Air resulted in rapidly improved efficiency and service, which may not have occurred if shares had been sold to many individuals. The rest of Qantas was then successfully sold to individual and institutional investors.

When Is Public Ownership Justified?

While public ownership may significantly reduce efficiency, it may provide some benefits, including:

- reducing incentives to exploit infrastructure networks' monopoly power
- providing a source of information for regulators, making regulation easier and cheaper.

The relative costs of public ownership may be low when production processes are simple, a private firm has substantial monopoly power, and the information costs of regulating a private monopoly are very high, such as in managing a wholesale electricity market.

Other situations which justify government infrastructure ownership or subsidy of private infrastructure include where:

- effectively assigning private property rights is impractical, such as water catchment areas
- spillover effects are significant and pure private ownership may result in under-provision, such as tollroads and railways
- infrastructure services have strong public good aspects, making them unattractive to private providers because charges cannot be levied, such as non-toll rural and urban roads.

In some circumstances, public ownership may achieve social objectives at a lower cost. However, in most infrastructure sectors, methods other than public ownership also can achieve these objectives. Frequently, governments maintain public ownership to provide non-transparent subsidies to favoured groups. Transparent subsidies still can be provided in privatised enterprises, via on-budget subsidies linked to community service obligations.

Privatisation versus Corporatisation

If privatisation is not possible for political reasons or because the cost of regulating natural monopolies is too high, corporatising infrastructure service providers often can secure significant benefits. The corporatised public enterprise is re-constituted along commercial lines, with a professionally qualified board of directors responsible for achieving more transparent and focused objectives. Political directives must be explicit and open to public scrutiny, and if they impose a commercial cost on the operator, transparent subsidies must compensate for this. Managerial rewards are closely related to achieving stated objectives.

Many costs of public ownership like poorly specified, contradictory objectives and a weak relationship between managerial performance and rewards apply to the most extreme form where politicians continually and extensively intervene in public enterprises. Corporatisation can eliminate some of these defects.

Nevertheless, corporatised public enterprises often have less incentive to serve customers and minimise costs than private enterprises. Even when corporatised, public corporations often must pursue non-commercial objectives, such as employment creation. They also may have regulatory or oversight roles which they may abuse by limiting competition for customers. When separate organisations perform regulatory and commercial functions, both work better (Hartley, 1986).

As governments retain a financial interest in corporatised firms, they have an incentive to legislate to protect these firms from competition. In addition, publicly-owned corporations may believe government will rescue them from financial distress. While governments can dismiss the management of an underperforming corporatised utility, unlike the private sector, no automatic dismissal mechanism exists; governments therefore may be reluctant to act because of the political costs of admitting their failure in selecting the management.

As private firm shares are traded on share markets or are otherwise sold to the highest bidder, firm managements have an incentive to maximise their shares' market value, providing a continuous and easily observed measure of managerial performance.

When corporate assets are used inefficiently, the firm's market value declines, making it a target for acquisition. Often, managerial compensation is explicitly linked to the market value of the firm, for example, through stock options.[15] Corporatised firms are not subject to this market discipline.

Ownership Choice

The evidence on private sector efficiency advantages makes private ownership an attractive form of infrastructure provision in many circumstances, so long as privatised assets operate in a competitive environment or where government regulation curbs monopoly power. However, public ownership can be preferable when production processes are simple, private operators have substantial monopoly power, and the information costs of regulating a private monopoly would be high. If spillover and public good effects are significant and pure private ownership may result in under-provision, governments may subsidise or if necessary, directly provide infrastructure.

As monopoly networks of infrastructure industries possess substantial monopoly power, they should not be privatised into an unregulated market environment. Unless competition can be introduced, price and quality regulation must be available to restrain the exercise of monopoly power.

UNBUNDLE OR INTEGRATE?

Traditionally, without government intervention to influence industry structure, infrastructure utilities and businesses typically bundle together activities that are potentially competitive with other activities that only a single monopolistic business unit could provide. For example, in most East Asian countries either national or large regional groupings of vertically integrated public utilities provide electricity transmission, generation and distribution services, water supply and telecommunications.

However, while most infrastructure industries have network components, not all parts of large integrated infrastructure enterprises are natural monopolies. Indeed, integrated firms do not have to undertake all the activities they do, as production costs per unit of output of some activities actually can *increase* as output grows, indicating smaller firms could supply such services more cheaply.

Independent analyses confirm large scale vertically or horizontally integrated systems of electricity generators and distributors, airports or many transport providers do not create efficiencies (Asian Development Bank, 1998, p. 12). (See Chapter 5 – *Sectoral Best Practice*.) This makes a persuasive case for the creation of independent power generators, airports and some transport system operations which can operate in competitive markets (Asian Development Bank, 1998). Examples of unbundled infrastructure facilities that are supplied competitively include electricity generating plants, water and sewerage treatment plants, telephone exchanges and gas wells, treatment plants and compressors.

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[15] Capital markets also reveal the required market return on debt in private firms, reflecting the riskiness of income these firms generate; no comparable source of information on the riskiness of corporatised firm investments exists. Another consequence of corporatised firms not having marketed shares is that earnings' risks are not always borne by those most willing to do so. Many taxpayers find the risks they are forced to bear expensive for them.

In addition, as a network operating firm expands, it supplies services over a wider geographical area, so travel costs increase when metering and repairing faults, raising the average cost of service. While the firm can establish regional offices, this increases the number of organisational layers and raises service costs per unit of output. Also services like metering use, repairing equipment, processing bills, and responding to complaints from customers are very labour intensive activities, are often difficult to standardise and usually exhibit increasing average costs as the enterprise's size increases. Consequently, many of these activities can be unbundled and undertaken efficiently by smaller, decentralised firms that either compete for market share or compete for the market by bidding for concessions.

The main barrier to unbundling is that significant savings might be lost or service quality may be seriously compromised when links within a firm are severed. For example, the quality of electricity or telecommunications services includes the time it takes to repair outages. If one firm provides the electricity, but another is responsible for the lines connecting the customer to the main network, the firm supplying electricity has limited control over crucial aspects of product quality. However, consumers still should be allowed to purchase services from a firm that does not own the local distribution network, if they wish to do so.

Benefits of Unbundling

Once competitive business segments are unbundled from monopoly networks, the competitive elements of the industry can be fully privatised. So long as they operate in a competitive environment, privatisation will help pass on the gains from commercial efficiencies and cost savings to customers, without government intervening in pricing or regulating rate of return.

If an infrastructure network is separated out from the industry's competitive components, and network access assured by regulation, to compete potential new entrants need not duplicate an expensive network investment. Instead, as in normal industries, new competitors can enter merely by making new investments in production capacity. Even large investments, like a power station, will not deter new entrants so long as they have network access guarantees. They are not automatically disadvantaged as they do not need to duplicate an existing natural monopoly network. The costs and decision delays associated with managing and operating large firms provide many opportunities for nimble competitors to exploit new technologies and gain market footholds.

When to Unbundle

If infrastructure monopolies are privately owned, the government's sectoral restructuring options may be more limited. The extensive litigation over US telecommunications illustrates how the government had little choice but to prosecute an anti-trust case if it was to fundamentally alter the industry's structure. In the Philippines, government has found it difficult to enforce new competitors' access to the fixed telephone network owned by the private, previous monopoly supplier, the Philippines Long Distance Telephone Company, PLDT.

However, a government with a publicly-owned integrated infrastructure enterprise can significantly influence the future structure and performance of the industry by reallocating activities into different firms. By vertically and geographically separating,

or unbundling, a publicly-owned infrastructure firm *before* it is privatised, government can produce a more efficient and fairer outcome for consumers by increasing competition and allowing a more transparent and stable regulatory regime.

Following the 1997 financial crisis, many regional governments, anxious to obtain revenue from public infrastructure sales, may fail to implement necessary unbundling and regulatory frameworks before privatisation. Ill conceived privatisations threaten to create a major source of inefficiency and reduce competitiveness for the future. Introducing competition prior to privatising infrastructure industries is vital to gain efficiency (World Bank,1995).

ALTERNATIVE APPROACHES TO UNBUNDLING

The central elements of sector specific infrastructure policy are to determine the scope for vertical unbundling and introduce market competition into various parts of the industry.

BEST PRACTICE UNBUNDLING

Best practice approaches to infrastructure policy and regulation vary across sectors but include:

- geographical or horizontal unbundling of integrated monopolies by regions, enabling competition by comparison
- vertical unbundling of infrastructure assets, separating competitive from non-competitive elements, such as electricity generation from transmission networks
- contracting out, or selling unbundled services to competitive suppliers
- leasing public assets to the private sector, creating competition *for* the market via mechanisms such as fixed term concessions, franchises and BOTs where competition *in* the market cannot occur
- removing artificial constraints to access, such as limits on foreign and domestic competition, especially where only a few potentially oligopolistic, local firms can achieve the minimum efficient enterprise size
- employing a staged approach using management contracts before implementing concessions or fully privatising, particularly where use is traditionally free and tariff regimes need reform
- creating an independent regulator where monopoly elements remain, to ensure monopoly assets earn only a normal return and competitive markets remain competitive
- preventing cross ownership of unbundled assets, like transmission and generation facilities if this could compromise competition
- ensuring competitive suppliers have free access to residual monopoly network assets
- ensuring a 'level playing field' by treating competing state and private firms in the same way.

Best practice approaches to promoting competition via unbundling and regulation vary between infrastructure sectors depending on the nature and importance of their monopoly networks, their economies of scale and scope, technical characteristics, spillover costs and benefits and public good, merit good and excludability characteristics. (See Chapter 5 – *Sectoral Best Practice*, summed up in Appendix Tables 5.1 and 5.2.)

For example, in minor, non-toll urban and rural roads, vertical unbundling may be limited to construction and maintenance, because these are pure public goods for which tolls are not viable. However, electricity and water supply have limited public good characteristics, increasing the scope to unbundle and privatise asset ownership and management.

Geographical Unbundling

Geographical unbundling of an integrated monopoly allows private contractors to bid to supply infrastructure services within defined areas. As economies of scale associated with operating many local distribution networks are naturally limited by geography, unbundling along geographical lines should not introduce inefficiency. As repair crews travel longer distances, network repair costs rise. Even if a single firm owns a more extensive network, it will split operation and maintenance into semi-autonomous regional divisions. These divisions often can be run as separate firms without sacrificing economies of scale. For example, several regional electricity distribution networks can be unbundled from an integrated monopoly electricity enterprise. The unbundled network assets can be allocated to separate business units that trade with bulk electricity suppliers, and collect bills from customers. After establishing this structure, the business units may be corporatised, then sold directly or listed on the stock exchange.

Similar approaches can be used for water and gas supply, fixed line telephone and rail services. To ensure the industry remains competitive with a number of unbundled firms, the regulatory framework should prevent the reintegration of separated enterprises.[16]

Examples of geographic unbundling include the Philippine Government's allocation of geographical duopoly status in designated areas to new joint venture telecommunication sector entrants allowing them to supply new fixed line services in competition with the former domestic private monopoly. (See Chapter 5 – *Sectoral Best Practice*.) In Victoria, Australia, the integrated state-owned electricity distribution and retailing monopoly was split into five regional networks and privatised. However, distributors are required to transmit power on their lines for other retailers allowing them to compete for their customers. (See Chapter 5 – *Sectoral Best Practice*.)

If the government does not wish to sell geographically unbundled networks, private sector operators can bid for franchises or licences. Licence contracts can include leasing rights to use existing assets, as well as private sector obligations to construct new assets that are handed back to the government at the end of the licence period. The two private sector water concessions for east and west Manila are an example of this

[16] Regulators will need to ensure that unbundled enterprises are large enough to be efficient. Similar criteria should be used to restrict mergers as in other industries.

approach. (See Chapter 5 – *Sectoral Best Practice*.) The licence contract can specify obligations, ensuring minimum levels of service and price caps. Regulation by individual contract can introduce competition, reduce the need for regulation, but not wholly eliminate the need for ongoing governmental oversight and monitoring.[17]

Where direct competition is impossible, horizontal unbundling of local geographic networks with similar demographic and physical profiles can simplify regulation. The industry regulator compares performance of the separate firms and, if necessary, regulates prices with more transparent information on the relative performance of similar firms to ensure local monopoly operators keep costs under control and do not exploit their monopoly power.[18] This is called competition by comparison. In addition, several firms serving different geographical areas provide many potential competitors to take advantage of rules requiring third party access to distribution networks to supply customers throughout the grid.

Vertical Unbundling

An increasingly popular unbundling approach that can effectively promote competition and improve resource allocation involves splitting the firm into different vertical segments. In a vertically unbundled electricity industry, for example, one firm operates and maintains the high voltage transmission network, a separate firm operates the associated wholesale electricity market, but many competing firms can generate and sell bulk electricity and buy, distribute and retail electricity services to consumers. Competing generators and distributors/retailers need non-discriminatory access to the high voltage transmission network and wholesale market. The wholesale market operator must be independent of any generator or purchaser. Furthermore, as network configuration can influence the operation and competitive positions of suppliers and retail distributors, the wholesale market operator probably should plan network extensions.

Many countries separate the high voltage electricity transmission grid from both generation and local distribution/retailing businesses. Deregulation of US telecommunications split long distance phone business from the local parts of the industry. While regulated regional monopolies still supply local fixed line telephone services, cable TV and cellular phone firms provide real competition. Furthermore, many competing firms supply long distance phone services. Many other countries including Australia, followed the US example by first allowing competition in the long distance telecommunications market, then mobile and international phone service markets. Arguments to retain public ownership of the wholesale electricity market, and even monopoly networks like high voltage electricity transmission systems, are strong. If such monopoly networks are privatised, their operations must be tightly regulated, to ensure all potential suppliers have grid access. The wheeling tariff, the charge incurred to move electricity across the transmission network, is

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17 Negotiated contracts for the right to supply infrastructure services reduce the need for regulation; the contract becomes a regulatory tool. However, as negotiating such contracts can be costly, standard rules of practice and model contracts need to be developed.

18 Although unequal information between the regulator and the regulated firms will tend to limit the effectiveness of such access rules, regional monopolies still are likely to produce a better outcome than monopoly control of the whole distribution business.

Table 2.1

Different Sectors Require Different Models

Institutional Arrangements for Private Infrastructure Provision

Function	Service or management contract	Lease contract	BOT contract	Concession contract	Full privatisation
Asset ownership	Public	Public	Public	Public	Private
Sectoral investment planning and regulating	Public authority	Public authority, negotiated with private operator	Public authority, negotiated with private operator	Public authority, negotiated with private operator	Private owner plans investment, public authority regulates monopoly assets
Capital financing	Government budget or state-owned enterprise funds	Public	Private operator	Private operator	Private
Current financing	Private operator	Private operator	Private operator	Private operator	Private (government may pay for public service obligations)
Operating and maintaining	Private operator	Private operator	Private operator	Private operator	Private owner
Collecting tariff revenues	Private operator in some cases	Private operator	Private operator	Private operator	Private owner
Providing managerial authority	Private operator	Private operator	Private operator	Private operator	Private owner
Bearing commercial operations risk (costs)	Government	Private operator	Private operator	Private operator	Private owner
Bearing commercial demand risk (revenue)	Public	Public	Public for wholesale take-or-pay contract; otherwise private	Private for retail concession	Private owner
Basis of private party compensation	Agreed contract fee	Based on results, the net of fees the operator pays for use of existing assets	Based on results, the net of fees the operator pays for use of existing assets	Based on results, the net of fees the operator pays for use of existing assets	None

Table 2.1 (cont.)

Function	Service or management contract	Lease contract	BOT contract	Concession contract	Full privatisation
Typical duration	5 to10 years	10 to 30 years	10 to 30 years	10 to 30 years	No limit
Sector(s) or development stages in which most appropriate	Sectors where willingness to pay is low; maintenance in most sectors	Sectors where the need for capacity expansion is minimal; ports maintenance in most sectors	Road transport; other sectors as an interim step to privatisation or concessions	Water and sanitation, electricity distribution, rail and ports that are a monopoly	Electricity generation, telecommunications; major ports where competition exists; mobile transport assets such as trains and planes
Some best practice examples:					
• Power			Philippines		Victoria, Australia
• Water	South Australia			Manila	United Kingdom
• Transport		Malaysia (ports)	Malaysia Indonesia (roads)	Chile, Argentina (rail)	Hong Kong (ports)
• Communications					Chile, Philippines

Source: Tasman Asia Pacific, 1997.

usually set at a regulated rate; this provides the grid owner with a normal rate of return on the investment. In Victoria, Australia, the government operates the wholesale market to ensure impartiality, but the transmission network is privately owned and closely regulated. (See Chapter 5 – *Sectoral Best Practice*.)

Contracting Out

Yet another type of unbundling involves contracting out some services integrated infrastructure monopolies formerly provided. For example, a firm operating the high voltage electricity network and planning network expansions could competitively contract out construction, maintenance or data processing, yielding significant efficiency gains. However, while contracting out can increase efficiency, it does not restrain monopoly power and the monopoly enterprise rather than consumers may capture the benefits.

However, while some activities like local line maintenance can be contracted out, they also may be critical elements in the overall service package firms supply. So firms must retain adequate control of these service dimensions, if competition is to result in the best outcome for consumers.

Institutional arrangements vary for each type of private sector participation, suggesting the most efficient models in various sectors (Table 2.1). As a general rule, full privatisation is appropriate in electricity generation and telecommunications, where competition in the market or from close substitutes exists. In water supply and electricity transmission and distribution, where competition in the market is more difficult, concessions appear most appropriate. If the general regulatory framework is weak, regulation by contract becomes a viable and effective alternative. BOTs generally are most applicable to transport or as an interim step to privatisation in other sectors. Service management and lease contracts are useful in transitions to full concessions and privatisation.

Lease Contracts

Under a lease contract, a public utility leases the full operation and maintenance of its facilities within an agreed geographical area to a private operator for a specified period, for example ten years, and grants the operator the right to invoice and collect charges from customers over that time. The public utility owns the assets and remains responsible for major extensions and upgrades. The operator is consulted on all major works, especially those involving continuity of service, and can participate in tender evaluation or submit its own tender for extension projects.

With a lease contract, the private operator takes the full commercial risk on all operations within its lease area; remuneration is directly linked to the charges customers pay. From these revenues, the private operator pays the public utility a rental fee intended to cover capital costs for the assets it employs. Operators holding lease contracts usually finance, prepare, procure, and supervise smaller plant and equipment renewal, as defined in the contract. At the termination of the contract, the public utility compensates the operator for unamortised works financed.

Lease contracts have built-in incentives encouraging private operators to:

- update customer files and implement efficient collection procedures to improve the collection ratio from customers, including government agencies
- implement an aggressive commercial policy to service more customers to increase the revenue base
- reduce operating costs to maximise profits
- undertake regular maintenance to increase the reliability of facilities and postpone their renewal.

BOT, BOO and BOOT Schemes

BOT (build, operate, transfer), BOO (build, own, operate) and BOOT (build, own, operate, transfer) schemes are adaptations of leasing contracts specifically designed to access private capital for new investments. Under these arrangements, the private sector typically designs, constructs and operates new facilities and provides services to municipal or government utilities, or direct to tariff paying customers. Lease contracts for the underlying assets are taken out for a limited period, often 15 to 30 years. Assets then are given or sold back to the government, depending on the lease contract. BOT schemes in the electricity sector often involve new generation capacity to supply power to the existing government-owned transmission and distribution system. Similarly in the water sector, BOTs usually involve supplying treated water to the publicly-owned distribution utility.

In addition to operational risk, BOT contracts allocate most new investment construction risk to private parties rather than governments. They also provide a relatively quick method for mobilising project-based non-recourse finance for new capital investment, particularly in developing countries where capital markets are poorly developed.

BOT and BOOT arrangements are administratively simple; usually they do not involve major sectoral restructuring. In economies with poorly defined regulatory and legal structures and emerging capital markets, such schemes can be implemented quickly and provide important learning experiences. Many BOT schemes act as a useful introduction to private sector discipline, bringing substantial efficiencies in construction costs as well as plant and labour management. They also enable public firms to escape budgetary constraints on mobilising investment funds.

Because of these advantages, BOTs still dominate private sector participation in East Asian infrastructure development. However, effectively implementing BOT contracts requires attention to the design of tender documents and contract conditions, such as uptake prices utilities pay BOT operators. Consequently, BOTs can entail a lengthy bidding process, at least until the government develops a model BOT contract.

DANGERS OF TAKE-OR-PAY CONTRACTS FOR BOTS

Where governments sign take-or-pay contracts or provide guarantees on other commercial risks, BOTs can cost consumers more and leave governments bearing a high proportion of commercial risks. When regional currencies depreciated significantly after mid 1997, electricity authorities like those of the Philippines and Indonesia that signed US dollars denominated power purchasing agreements with BOT power producers, have faced severe financial problems (Gray and Schuster, 1998).

Because the expense of unwinding take-or-pay contracts is considerable, if governments wish to move to competitive markets at a later date, authorities signing new output purchasing contracts with BOTs should foreshadow BOT sponsors' future participation in competitive market structures in their contracts. The Malaysian Government has followed this practice in recent BOT power purchase agreement contracts. The absence of such outlet clauses may seriously hinder the move to competitive, unbundled electricity markets in the Philippines and Indonesia.

Definitions of BOT variants

BOT - Build, operate, transfer

BOOT - Build, own, operate transfer

BOO - Build, own, operate

BOLT - Build, operate, lease, transfer

BT - Build, transfer

BLT - Build, lease, transfer

ROT - Rehabilitate, operate, transfer

ROO - Rehabilitate, own, operate

CAO - Contract, add, operate

DOT - Develop, operate, transfer

Disadvantages of BOTs

By augmenting supply, BOTs and BOOTs may enable public sector utilities to postpone reform of major internal managerial and operational inefficiencies. This may seriously diminish the value of such arrangements. BOT schemes that merely sell bulk water or power to public authorities on take-or-pay contracts generally fail to capture the larger efficiency gains available from drawing private firms into infrastructure industries as competitive, risk taking producers and retailers. Major problems of high unaccounted-for-water losses and low power system load factors can persist.

Consequently, in electricity, water and gas supply, BOTs should be an interim step towards full privatisation or retail concession contracts following sectoral unbundling, further regulatory reform and capital market development. In transport, public good and spillover issues, plus problems of coordinating road network planning, make BOTs a viable final form of private sector participation. (See Chapter 5 – *Sectoral Best Practice*.)

Concessions or Franchises

Concession contracts combine elements of operational leases for existing assets and BOT contracts for new investments, but generally involve the private sector taking on more commercial and operational risks than most leases or BOTs. Under concession contracts, private operators have contractual rights to use infrastructure assets to supply customers directly and obtain the revenue from sales. The operator usually manages and is responsible for all capital extensions and upgrades and normal maintenance. This gives concessionaires more flexibility than BOT operators or lease holders to determine the nature and timing of new investments to achieve supply obligations. New assets are handed over to the government when the concession expires. Concession contracts usually run for longer than lease contracts, often 20 to 30 years, enabling the operator to recover capital and finance costs.

Compared to BOT contracts, concessions provide more incentives to expand the customer base, increase investment, maintain existing assets and, most importantly, reduce technical and non-technical losses within water and electricity distribution networks.

Since the last century, France has widely used concessions to supply municipal water. Private water firms provide bulk water treatment and retail water services employing municipal government-owned assets. Public transport, water supply or electricity utilities may operate several concessions concurrently, allowing them to compare concessionaires' prices, service quality and investment performance in meeting community needs.

Basis of tender selection

Competitive bidding for concession contracts limits the scope for monopoly pricing, thereby avoiding the need for heavy-handed industry regulation. However, scope of work contracts must be thoroughly prepared and negotiated to prevent experienced concessionaires extracting advantageous terms.

Tenders should specify and be selected primarily on:

- prices of supplied services and escalator clauses
- size of the licence fee paid to the franchisor (the government)
- assessment of the tenderers' capacity to comply with contract terms.

WHY ARE CONCESSION CONTRACTS MORE COMMON IN WATER SUPPLY?

The franchise model is used widely in the water industry because water franchisees must maintain concession assets to ensure service quality and maximise sales revenue. It is difficult to achieve high water volume and quality with frequent pipe breakages or dirty pipes. However, towards the end of the franchise contract period, the franchisee may try to save on maintenance expenditure, hoping the next franchisee will bear most of these costs. If the prospect of franchisee continuity is used to mitigate this effect, the competitiveness of the bidding for the second and subsequent rounds could be compromised.

To achieve the appropriate trade-off between licence fees and prices to customers, the franchisor should specify in advance the licence fee which will yield an appropriate rate of return on the franchisor's assets. All bidding then should be based on prices franchisees intend to charge customers, with the lowest bid being successful. Competition amongst management groups for the franchise should limit tendered service prices, providing the franchisee with strong incentives to control costs.[19]

As assets for lease usually are monopoly networks, if the franchisor chooses the franchisee primarily on the fee received, potential franchisees would bid up to the level of monopoly profits they expect to reap from using the system. For consumers, this outcome is the same as having a private monopoly operate the system, even though the franchisee would only earn a competitive rate of return on the licence fee.[20]

COMPETITION THROUGH NETWORK ACCESS

As integrated infrastructure monopolies are unbundled, governments can encourage competition by ensuring private suppliers have access to the monopoly network system on reasonable terms. Such network access regimes form part of a broader framework of competition policy.

Guaranteeing access to 'essential' infrastructure facilities of national significance that cannot be duplicated economically, promotes competition and improves efficiency in providing infrastructure services. Both unbundled and particularly integrated monopoly networks require access rules so competitive suppliers can enter the market. Lack of access to network infrastructure assets like electricity grids or airline terminals can be exploited to impede competition in related upstream or

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19 Like BOT contracts, concession models are useful in developing economies where the institutional, legal, regulatory and financial structures have not developed sufficiently to support full scale privatisation with independent regulation. Nevertheless, if private firms provide risk capital for a genuine concession or BOT, rather than a management contract that leaves risk with government, they should seek:

- clear definitions of the scope of works required
- transparent tendering processes
- security of access to necessary resources such as land, fuel and other inputs
- clear government commitment to enforce the terms of the concession contract
- assurance the private party can collect commercial tariffs
- ability to enforce commercial and customer obligations.

The concession concept is relatively new in East Asia. However, a major example is the selection by competitive bidding of two private water concessionaires to supply east and west Manila in January 1997. In Indonesia, the authorities are negotiating BOT contracts for water treatment plants and a concession contract for bulk water and retail water supplies to Jakarta. Two concession contracts for Jakarta allocated under the Soeharto administration also are being renegotiated. However, by late 1998, no BOT projects or privatisation initiatives had been successfully brought to financial closure in the Indonesian urban water sector.

20 Some of these issues are discussed in Sappington (1991). The bidding process to develop the port at Subic Bay Export Zone near Manila, initially was based on the fee the franchisee was willing to pay the Subic Bay Authority for each standard sized container handled. However, the successful bidder also operated the nearest port, so it bid a high level of rental, which would have translated into high wharfage charges for port users (East Asia Analytical Unit, 1998). The initial bidding process was abandoned, a decision that was challenged in the courts, delaying the tender process (East Asia Analytical Unit, 1998).

ESSENTIAL ELEMENTS OF COMPETITION POLICY

In recognition of the benefits of competition, most developed countries have well established antitrust, competition or trade practices laws. A comprehensive competition policy involves:

- prohibiting anti-competitive conduct using traditional antitrust laws
- ensuring appropriate access to essential facilities, including monopoly infrastructure networks
- reforming inappropriate monopoly structures, especially those created by governments
- removing government regulation that unjustifiably limits competition, such as legislated entry barriers, professional licences, minimum price laws and advertising restrictions
- ensuring a 'level playing field' for all participants, including competitive neutrality for government businesses and an absence of state subsidies that distort competition
- liberalising international trade policies
- freeing movement of all factors of production, including labour and capital across internal borders
- separating industry regulation from industry operations, so dominant firms do not set technical standards for new entrants.

Source: Fels, 1998.

downstream markets, raising costs to consumers. This is particularly significant where the facility owner also competes in associated markets (Cousins, 1996, p. 25). It also has implications for pricing, by conferring market power and the ability to extract monopoly rents.

The most common examples are enforced access to telecommunication networks by rival telephone firms, access to electricity transmission grids by electricity generation and retailing firms and gas pipeline access by competing gas supplying and retailing firms. Enforcing access to facilities that are not natural or legislated monopolies is unnecessary, as competitive firms should be able to install their own facilities if they want to enter an industry. If monopoly networks are privately owned, property right issues must be addressed and adequate incentives to increase investment and adopt new technologies must be offered.

COMPETITION POLICY REFORM IN AUSTRALIA

In 1992, Australian federal, state and territory governments jointly initiated a wide-ranging review of competition policy to ensure that, as far as possible, universal and uniformly applied rules of market conduct applied to all market participants in open and integrated domestic markets for goods and services.

As a result, in 1995 federal, state and territory governments agreed to a package of competition policy reforms, with key measures including a:

- Competition Code that extended coverage of the *Trade Practices Act*, which proscribes anti-competitive behaviour, to all state utilities and other government business enterprises
- Competition Principles Agreement, setting out principles and actions to:
  - oversee government business enterprise conduct and pricing
  - ensure competitive neutrality between the public and private sector, for example in taxes and dividend payment
  - achieve structural reform of public monopolies, including corporatising and separating roles related to regulation and service provision
  - undertake a review of all legislation which might restrict competition
  - guarantee third party access to essential facilities, such as monopoly infrastructure networks
  - apply competition principles to local governments
  - establish a national regulator, the Australian Competition and Consumer Commission and a national advisory body to governments on competition policy, the National Competition Council.

Facilitating Network Access in Australia

Resulting *Trade Practices Act* amendments in Australia create the right for third parties to negotiate access to essential facilities like infrastructure networks. Access seekers can apply to the National Competition Council to have a service 'declared', which then gives the access seeker a legal right to negotiate access. If a service is declared and the access provider and seeker cannot reach agreement on terms and conditions, the Australian Competition and Consumer Commission can arbitrate an outcome (Hannon, 1997).

As a result of this legislation, monopoly characteristics or government ownership no longer prevent efficient competition in infrastructure services. Third party private sector providers can enter the sector wherever it is commercially viable to do so. These crucial competition policy reforms underpin the moves to establish competitive markets in gas, electricity and telecommunications in Australia.

Source: Hilmer et al, 1993.

Potential Problems with Network Access Regimes

Unbundling generation and network assets, and preventing cross ownership produces better outcomes than allowing private firms to both own networks and provide services. Network owners have a natural conflict of interest if they own service providing assets; they may constrain access to their monopoly-owned networks. Stopping anti-competitive behaviour is difficult in these circumstances.

For example, the US Federal Energy Regulatory Commission has problems enforcing access to US electricity grids generators own. Similarly, the Philippine Government has encountered difficulties requiring the vertically integrated private PLDT to provide telecom competitors access to its fixed line phone network (East Asia Analytical Unit, 1998). Regulation is a poor substitute for competition.

Other major problems arising from enforced network access regimes relate to:

- network investment incentives - competitive firms may be less inclined to invest in more marginal new capacity, for example in rural areas, than monopolies. While the additional revenue may cover the marginal costs of a monopoly network owner, it may not cover the costs of a stand alone supplier. If government wants to support energy services in marginal areas, it may have to provide explicit subsidies.[21] Subsidies should be made available on a competitive basis to ensure that the most efficient energy solution is adopted
- incentives to opt for less accessible network technologies, for example radio transmission of telecommunications rather than a wire-based network
- uncertainty about the stability of an access regime may raise the risk of investing in new infrastructure and increase the chances of litigation, raising negotiation costs and delaying entry. However, regimes should be sufficiently flexible to adapt to new circumstances
- regimes must address coordination issues, including scheduling difficulties in the case of congested networks, safety concerns and technical computability of users' facilities
- access pricing regimes to some extent are based on arbitrary cost allocation rules and accounting conventions. If an integrated firm is operating the network, it can attempt to shift costs from other components of its business to network operations to raise wheeling charges
- decisions on regulated wheeling charges can affect significantly the competitiveness of existing service suppliers, influencing the price received for privatised assets. For example, publicly-owned power stations located to use isolated fuel sources may prove uneconomic once a wheeling charge is imposed for transmission, unless capital assets are heavily written down, possibly below the cost of investment. This issue of 'stranded assets' may put political pressure on decisions about appropriate wheeling charges or whether to open monopoly industries to competitive access.[22]

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21 If explicit subsidies are necessary under a competitive access regime, an integrated monopoly still would have paid implicit subsidies out of its monopoly profits (made from non-marginal area consumers).

22 Stranded assets occur where the value of assets in a monopoly market exceeds their value in a competitive market.

In some countries, frameworks for network access are in place in several infrastructure industries, but implementing access is slow because of uncertainty about the goals, potential defects of access regimes and problems with pricing principles. Ideally governments should agree to the unbundling process before deciding access regimes. Regimes are unlikely to be effective where facility owners/operators also act as regulators. Governments also should make community service obligations explicit before inviting private providers into a sector. In some sectors, central government must take the lead to ensure open access regimes throughout an economy.

ENHANCING NETWORK COMPETITION

Although often not feasible, the most effective way to regulate monopoly behaviour is to encourage competition for network services. At the end of the nineteenth century, many US cities had competing local telephone networks serving the same area and using the same technology. Lubbock, Texas still has two competing local electricity distributors with duplicate sets of wires.[23] It is not efficient to duplicate natural monopoly facilities, but new technologies can reduce the natural monopoly characteristics of existing networks.

The main historical examples of entrants producing new networks to partially replace existing ones involve exploiting new technologies:

- in Australia, the upgrade of the existing telecommunications network to optical fibre and prospect of increasing telecommunications traffic into the home - including cable TV and computer communications - made it feasible for Telstra and Optus to build competing telecommunications networks using similar but not identical optical fibre technologies
- new digital technology now allows cable TV operators, including Optus, and electricity distributors to enter the local phone market
- in the US telecommunications market, MCI entered the long distance telephone market by being the first firm to exploit microwave technology in place of landlines
- US Sprint based its entry into the same market by providing an entire network based on optical fibre
- cellular telephones based on satellite and radio technology allow competition in local phone markets previously based only on wire connections
- competitive markets could develop in supplying water in future. As water treatment technologies improve, their costs fall and the cost of exploiting new fresh water sources rises, supplying fresh water by treating and recycling waste water will become increasingly economical. A new entrant could build and own the parts of the network needed to implement the new technology

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[23] Another entry method in many network industries is for new entrants to provide services to a different geographical area. For example, competitors in the early telephone industry in the USA often supplied service to the less densely settled suburban and rural areas that Bell companies had ignored. Similarly, US electricity, rail and gas supply industries comprise a number of separate firms having exclusive distribution rights within given geographic areas.

- in many cities, sewage treatment plants are significant new sources of supply for the gas reticulation network. Firms independent of the local gas supplier usually own these treatment facilities.

These examples imply that to maximise consumer benefits, regulatory regimes should encourage new technologies to cost effectively duplicate or substitute for existing networks. Similarly, regulators should discourage mergers or acquisitions that eliminate competition by combining the activities of established network owners with new entrants exploiting a new network technology.

LIMITING RETURNS TO MONOPOLY POWER

If enhancing network competition for publicly-owned infrastructure monopolies cannot occur before privatisation, these enterprises should not be privatised without implementing regulations to ensure network access, control private monopoly power, or define and enforce quality standards. Complementary approaches to regulating monopoly infrastructure networks include:

- capping the rate of return, revenue or prices of monopoly infrastructure suppliers
- regulating cross ownership of unbundled monopolies, so owners of the core monopoly network cannot own upstream or downstream activities in the sector.

Rate of Return Regulation

This approach seeks to limit the exploitation of a monopoly infrastructure provider's power by capping the rate of return on an investment. Rate of return regulation is used in the USA to limit the exercise of monopoly power by privately-owned electricity and other infrastructure firms. State public utility commissions hold public hearings to determine the capital expenditures included in the rate base and the allowable rates of return on those assets. However, rate of return regulation produces several inefficiencies:

- management has an incentive to excessively expand the capital investment to which the allowed rate of return applies
- management can pass excessive operating costs on to consumers in higher prices thus reducing incentives to control operating costs
- management's superior access to information limits the regulator's ability to prevent inefficient behaviour
- appropriate rates of return on regulated assets may depend on the stage of the investment cycle. Immediately after adding new capacity, the efficient rate of return may be quite low, while higher rates of return at the end of the investment cycle compensate for this
- hearings in the USA to determinate rates increasingly are politicised and expensive. Increased participation of consumer advocate, environmental and other community groups result in costly legal fees.

Price Capping Regulation

Regulators developed price ceiling (CPI - x) rules as a less distorting and wasteful alternative to US rate of return regulations. Price ceiling rules place an upper bound on the allowable increase in a basket of tariffs for a specified period. The allowable upper bound is the increase in a general price index (such as the consumer price index, CPI or an industry specific cost inflation index) minus an amount (x) to allow for technological progress in the industry, or plus an amount (x is negative) to allow for new investment to replace depreciated capital or meet increased demand. Firms can alter individual tariffs within the tariff basket. Firms also can keep increased profits due to cost reductions, at least until the x is changed at a future date. Firms thus retain an incentive to reduce costs over the regulatory period, to increase profits. On the other hand, the x factor gives the regulator scope to ensure that some cost reductions are passed on to customers. The regulator is required to strike a balance between the competing interests.

Unfortunately, firms also can reduce costs by lowering service quality. Thus regulators need to monitor closely service quality. Complications also can arise when two-part tariff pricing systems, encompassing an access charge and a per unit charge, are used rather than a simple per unit price for output. Furthermore, seasonal, or even time of day, cost variations often justify variable tariffs, and legitimate variations in service quality may justify different prices. In these circumstances, the cap on the basket of tariffs needs to reflect estimates of best practice price performance in various circumstances.

Price ceiling regulation also may create a regulatory barrier to making new investments in demand side management or meeting new environmental, health, safety and other standards. Price ceilings reward increased network sales volumes, particularly if marginal costs are declining, but penalise reduced network volume, as might arise from cost effective measures to improve end-use efficiency.

Revenue Capping Regulation

An alternative form of incentive regulation is revenue capping, where total gross revenue is held constant for each regulatory period. As with price capping, the regulator can allow for price level changes (CPI) and efficiency gains (the x factor) in projecting the allowable revenues.

Under revenue capping, utilities have a strong incentive to minimise costs, so as to raise profits. Revenue capping reduces artificial incentives to increase volumes,[24] as occurs with price capping in the presence of declining marginal costs. However, to ensure that efficient increases in volumes are possible, regulators can mix price and revenue caps, reflecting the utility's cost drivers. Introducing a revenue capping element assists regulators by reducing the efficiency penalty associated with incorrect forecasts of future demand (Independent Pricing and Regulatory Tribunal of New South Wales, 1994 and 1998).

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[24] This contrasts with rate of return and price ceiling regulation, which links profits to increased sales. Under these alternatives, the utility only can profit from demand management if net cost savings exceed the reduction in revenue, or if the demand management costs can be passed on. This can increase the complexity of the regulatory process, often requiring assessment of the efficiency of the demand management program.

EFFICIENT ENVIRONMENTAL OUTCOMES FOR NEW SOUTH WALES ELECTRICITY

To align incentives for efficient demand side and supply side investment, to encourage energy conservation, monopoly regional distribution businesses in New South Wales, Australia are regulated by means of a mixed revenue/price cap. The regulated revenue requirement is formulated to reflect the impact on costs of additional customers of varying size, additional load, and the share of gains through a CPI - x factor. Under the current formula, a 10 per cent increase in the volume of electricity sold increases revenues by about 2.5 per cent, more in line with increases in costs. The parameters in the formula reflect previous cost modelling, and were set following consultation with the regulated businesses. The United Kingdom, a number of US states and Ireland also employ variants of the revenue regulation approach (Independent Pricing and Regulatory Tribunal of New South Wales, 1994, p. 19).

By removing artificial incentives to increase volumes, revenue regulation also restores incentives to invest in cheaper demand management options. Bias is removed as lower network throughput from demand management no longer reduces profits. On the contrary, by contributing lower costs, efficient demand management options can increase the network business's profits. In this way, revenue capping regulation can:

- improve incentives for efficient investment in major network assets
- encourage the development of an energy management services industry
- improve environmental outcomes.

Whatever regulatory instrument is adopted, the regulator must assess the invested capital 'rate base' and determine a reasonable return on those assets. In price or revenue regulation, the assessed reasonable return is translated into an allowable relative price or revenue, including a productivity variation (x). As this process revolves around an appropriate return on invested capital, state-of-the-art price or revenue regulation and state-of-the-art rate of return regulation often look similar.

Cross Ownership Regulation

Regulated monopolies are more likely to produce efficient outcomes for consumers if network owners cannot own either upstream or downstream firms using the network. Once access to the independently owned network is regulated, competitive parts of the infrastructure industry can be left unregulated, so the community can maximise benefits from competitive forces.

In the electricity sector, cross ownership regulation requires independent firms generate, transmit and retail electricity. These regulations prevent a conflict of interest, for example, from a transmission network owner giving preference to power purchases from its own generators. Instead, generators bid frequently to sell into a

government-owned wholesale electricity market, so prices paid to electricity generators do not need regulating. Thailand is progressively adopting this model and the Philippines and possibly Indonesia plan to use it.[25]

In telecommunications, cross ownership regulations can require telephone service providers be independent of the fixed telephone grid owner. They then can compete directly for customers, again removing the need for price regulation.

PRICING INFRASTRUCTURE SERVICES

Efficient pricing of infrastructure services ensures consumers obtain maximum benefits from services, but have an incentive to consume only up to a point where benefits they receive equal cost of provision. Service providers should receive sufficient resources to provide new services up to the point where consumers are willing to pay for services supplied. The special nature of some infrastructure services may result in optimal pricing being below the level which would encourage private provision.

Pricing of 'Rival' and Public Goods

Tariffs on uncongested network services with public good characteristics theoretically should cover just the minimal operation and maintenance costs the marginal user imposes; in practice, this often is close to zero. Tariffs set above this minimal level would merely discourage demand, reducing consumer welfare without compensating the supplier for any additional cost incurred in providing the extra service. However, private operators would not provide such services if they had to charge near zero tariffs, as they could not recover capital costs.

If government cannot construct semi-public goods like highways and pay for them from general tax revenue, private sector operators have to be able to charge tariffs above the wear and tear costs of the marginal road user, even though this would inefficiently reduce demand.[26] Time of day congestion charging and two-tier tariffs can help overcome this dilemma, allowing private operators to recover capital costs during peak times.[27] Appropriate pricing issues are discussed in more detail in Chapter 3 – *Law and Regulation*, in the section dealing with tariffs.

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[25] In the south eastern Australia electricity market, distribution network and retail firms may have common ownership, but must 'ring fence' distribution and retail activities, to ensure independent activity and prevent anti-competitive behaviour.

[26] Highways are not pure public goods. Even though uncongested highways produce non-rival services, it is possible to exclude users from highways.

[27] Monopoly infrastructure enterprises can sometimes use Ramsey pricing, charging those with the least elastic demand the highest prices, but this is highly inefficient as it does not reflect the cost of supplying different categories of users, merely the monopoly power of the seller to impose price discrimination. For example, in the past, some Australian state-owned electricity authorities charged commercial and small manufacturing users much higher electricity tariffs per kWh than large, electricity intensive industries. While the latter chose their location on the basis of the power charges they were offered, the former group of customers have very little flexibility to relocate. This policy was very expensive for taxpayers and other electricity consumers, as it left states subsidising these large power consumers through long term contracts for cheap power.

Excludability, Monitoring and Enforcement

In principle, people can be excluded from most infrastructure services except the electromagnetic spectrum of radio and television transmission, minor urban, suburban and rural roads, footpaths, street lighting and groundwater. Tollgates can be built on motorways and pipelines and transmission lines monitored for illegal use. Users can be disconnected from water supply, telephone and electricity services, if they fail to pay. The ability to exclude users is a necessary pre-condition to being able to charge for use and provides an incentive for private sector participation in service provision.

However, monitoring and enforcing access is easier in some infrastructure services, like electricity and telecommunications, than others, like water. Electricity supply losses can be detected to some extent by examining variations in expected current and voltage across transmission wires. Identifying illegal water supply connections requires physical inspection, often at an underground source; it therefore is difficult and expensive.

Sophisticated and relatively inexpensive electricity meters also enable time of day pricing of households. In contrast, traditional water meters that measure physical rather than electronic flows are more prone to tampering and breakdowns, and less suited to time of day charging. This increases the difficulty of reducing unaccounted-for-water losses and introducing economically efficient pricing. However, more sophisticated meters now are available; these increase opportunities for efficient water pricing. (See Chapter 3 – *Law and Regulation*.)

COUNTRY CIRCUMSTANCES AND THE 'BEST PRAGMATIC' APPROACH

Several characteristics set developing East Asian economies apart from more mature industrialised countries and affect adoption of best practice models for private sector participation. 'Best pragmatic' policies for infrastructure development in East Asia vary from country to country and sector to sector depending on:

- the extent of rural and urban poverty, impeding imposition of fully commercial tariffs that may increase income inequality and threaten social cohesion
- the backlog of unmet infrastructure service demand; poor planning may necessitate emergency expansion of infrastructure services at higher cost
- levels of institutional development and regulatory capability
- legal or constitutional constraints on ownership
- the level of government responsible for the sector (central, provincial or local)
- other factors, such as development of domestic capital markets, credibility of the government with institutional investors and security issues.

Likely Future Developments

Both in western and increasingly in East Asian countries, technological and theoretical developments challenge the dated model of integrated public monopolies providing infrastructure. In many sectors, best practice involves unbundling integrated enterprises into competitive components, privatising them in a competitive market while maintaining regulatory control or public ownership of monopoly networks. Consumers benefit significantly from the improved efficiency of private, competitively provided infrastructure services within an appropriate regulatory framework. In many infrastructure sectors, best practice approaches to unbundling and encouraging private competition are evolving and attracting increasing interest from East Asian governments. (See Chapter 5 – *Sectoral Best Practice*.)

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Chapter 3

BEST PRACTICE LEGAL, REGULATORY AND POLICY ENVIRONMENT

The commitment of East Asian governments to attract private sector investors to infrastructure development has strengthened in the past decade. Since the onset of the financial crisis, weakened government fiscal capacity and balance of payments positions have further increased interest. However, the number of private infrastructure projects being implemented is small compared to estimated needs and government and private sector expectations. As the financial crisis deepens, investor caution exacerbates existing constraints. Furthermore, very few private sector infrastructure projects are developed using the best practice principles outlined in Chapter 2 – *Principles*.

This chapter and the next two chapters highlight major issues East Asian governments must resolve to encourage more private sector infrastructure participation and best practice approaches they must adopt to maximise consumer benefits. In many regional economies, institutional and regulatory development lag behind government's push for increased private sector involvement. East Asian governments often focus on raising finance and gaining direct consulting, design and construction benefits from the investment phase rather than building a transparent contractual framework to encourage quality service provision and competitive commercial discipline over the project's life. Private projects are less likely to operate profitably and consumers to benefit from private sector infrastructure involvement in economies with unclear or non-existent legal, institutional, regulatory and policy frameworks.

In addition to weak legal frameworks, other constraints to private sector participation include:

- lack of transparency or open competition in selecting private contractors raising the costs of services to consumers
- low skill levels in developing appropriate institutional and regulatory arrangements
- poorly developed capital markets limiting potential involvement by local investors and savers, and exposing project sponsors to foreign exchange risk
- differing perceptions of project risk and institutional and/or contractual arrangements failing to allocate risk efficiently between private and public parties
- inadequate attention in project design to social issues such as poverty, ethnicity and environmental impact.

This chapter and Chapter 4 – *Financing and Risk* identify how current practices and policies constrain private sector infrastructure provision in East Asia. They draw conclusions on best practice approaches available and identify strategies to achieve best practice infrastructure outcomes in regional economies.

Developing the Institutional and Regulatory Framework

Because many Asia Pacific economies fail to undertake broader reforms in their regulatory and competitive frameworks, this can lead to early disenchantment with what they initially perceived as a private sector panacea. While broader sectoral and institutional reforms can take time to implement, economies must deal with institutional constraints if they are to sustain public and investor commitment to private sector infrastructure investment. The financial crisis could well re-focus East Asian governments on institutional and regulatory reform and the appropriate role of governments in providing infrastructure.

The emerging view is government's proper role in infrastructure is to 'steer, not row'. Government should provide rules, guidance and principles for community services, including infrastructure services (World Bank, 1996), then allow the private sector to provide services through efficient management, investment and operational structures.

THE OVERALL LEGAL ENVIRONMENT

A country's legal environment, including private property protection, laws governing land and infrastructure ownership by foreigners, environmental standards and dispute resolution mechanisms, is central to potential private infrastructure project sponsorship and investment. In recent years, several East Asian economies have introduced specific legislation, most notably BOT laws, to promote and regulate private sector infrastructure.

Land Laws and Foreign Ownership

Different economic, historical and cultural backgrounds mean Asian countries have a range of approaches to private property, land and infrastructure ownership for nationals and foreigners; these significantly influence infrastructure project development. In contrast to Latin America, many Asian economies retain legal limits to foreign involvement in particular sectors such as telecommunications (Table 3.1).

In some cases, these limits reflect generic legal restrictions on foreign involvement, for example, the Philippine constitution limits foreign equity in most infrastructure to 40 per cent, except BOT power projects. This limit determines joint venture structures in new infrastructure utilities in both the water and telecommunication sectors.

Malaysia

In Malaysia, foreign investment in property is subject to approval from the Malaysian Foreign Investment Committee. This requirement for approval extends also to residential property purchases, regardless of their value. Conditional Foreign Investment Committee approval for initial foreign residential purchases usually is forthcoming. Subsequent residential or commercial/industrial property purchases normally are contingent on the purchase being made through a Malaysian firm comprising not less than 70 per cent Malaysian ownership, at least 30 per cent of which is Malaysian indigenous, or *Bumiputra* ownership. Under the *National Land Code 1965*, the relevant state level authority also must approve non-citizens' purchases of property, except industrial property, or acquisitions are void.

Table 3.1

Asia Limits Foreign Ownership of Telecoms

Commitments Made under the WTO Telecommunications Agreement, Selected Asian and Latin American Countries

Asia Pacific	Foreign ownership limitation (per cent)	Latin America	Foreign ownership limitation (per cent)
Hong Kong	No limit	Argentina	No limit
India	49	Bolivia	No limit
Indonesia	35	Brazil	49 direct and indirect investment in voting capital
Korea, Republic of	33, 49 from 2001 20 in Korea Telecom, 33 from 2001	Chile	No limit
Malaysia	49	Dominican Republic	No limit
Pakistan	No limit	Ecuador	No limit
Philippines	40	Guatemala	No limit
Singapore	49	Mexico	49
Sri Lanka	35 in Sri Lankan Telecom	Peru	No limit
Thailand	20	Venezuela	No limit

Source: International Telecommunications Union, 1997.

These provisions present administrative obstacles to foreign investors, including private infrastructure providers, as approving foreign ownership or investment in property is not centralised, and the Foreign Investment Committee and state authorities have separate approval processes. For some time, the Government has considered reforms to streamline this process; if implemented, these would increase efficiency and clarity for foreigners developing infrastructure in Malaysia.

Malaysia's approach to privatisation and infrastructure development aims to complement the objectives of the New Economic Policy, increasing corporate sector opportunities for *Bumiputera* (Economic Planning Unit, 1993). Foreign investment is limited to 25 per cent and allowed only where necessary expertise is not available locally, where foreign investment is needed to promote export markets, where local capital is insufficient, or where the business requires global links.

Consequently, foreign equity is the exception rather than the rule. The privatisation of Port Klang, for example, began with a minority investment from P&O Ports, but this was soon sold down to local interests. Concessions granted in electricity generation, water treatment and waste water collection, and tollroads were granted to wholly owned Malaysian firms.

Since the financial crisis began, foreign ownership levels have been revisited. In April 1998, the Malaysian Government announced it would consider, case by case, applications from foreign investors to raise foreign equity holdings in telecommunication firms to a maximum of 61 per cent (up from 49 per cent). Funds must be sourced outside Malaysia and holdings must be reduced to 49 per cent within

five years. The Government also indicated it would consider allowing concession holders to sell minority stakes in their projects to foreigners who would inject capital to complete stalled projects. However, recently introduced capital controls make such capital injections less likely.

Singapore

Singapore has a dual title registration system, currently incorporating both the *Land Titles Act 1959* (based on the Australian system of Torrens Title registration) and the older Common Law Deeds System which is being phased out. Foreign ownership of occupied, non-residential land and vacant land zoned industrial or commercial is free of restrictions. Consequently, land ownership laws do not restrict foreign private sector infrastructure providers. Singapore's land ownership laws and implementation systems are one of the best in the Asia Pacific, with those of Hong Kong, Australia and New Zealand.

Vietnam

According to Vietnam's constitution, land is owned by the entire population, and managed by the state.[1] Individuals or entities can acquire land use rights via government issued certificates; holders may pay rent on these. Land use rights are transferred by leasing or inheriting them. Foreign invested enterprises may rent, but not own land use rights, and leases cannot exceed the period of the project and are subject to approval under the foreign investment law.

Foreign investment in Vietnam's infrastructure is governed by the BOT law first promulgated in 1993, and revised in August 1998. An infrastructure project either may have 100 per cent foreign capital or be a joint venture between foreign and Vietnamese capital.[2] In joint venture arrangements, state-owned enterprises typically contribute equity in the form of land.

As a general rule, projects dealt with under Vietnam's BOT law requires foreign investors to establish a Vietnamese firm which enters supply contracts with the Vietnamese government. Although the Government has begun the process of transforming state-owned enterprises into joint-stock companies, the state is expected to hold prevailing or special shares in large scale power generation, transmission and distribution, post and telecommunication services, air and sea transport enterprises.[3] Individual organisations, including foreign companies, will be limited to 10 per cent of the total shares of these former state-owned enterprises. This regulation will restrict wholesale privatisation of state-owned utility enterprises.

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1 See Article 17 of the 1992 constitution. The *1995 Civil Code* stipulates that 'land belongs to the people's ownership and is comprehensively managed by the State' (Article 690).

2 See Article 55 of Decree 87-CP.

3 Decree No. 44/1998/ND-CP.

Table 3.2

Power Plants Dominate Approvals

Board of Investment Promoted BOT Infrastructure Projects in Thailand

Activity	Number of projects	Investment (million baht)
Electricity generation	49	250 000
Water supply	3	4 000
Roads	4	72 000
Mass transit	1	33 000
Telecommunication	4	16 000
Industrial zones	70	81 000
Waste disposal	10	4 100

Source: Thailand Board of Investment, May 1998.

Thailand

At present, the *Thai Land Act* prohibits foreign individuals and firms from owning land unless they receive priority project status under the *Investment Promotion Act* from the Board of Investment[4] or the land is in a Thai government industrial estate. However, a foreign firm may enter into a long term property lease and build on leased land.

In the wake of the crisis, the Thai Government is attempting to boost the ailing property sector and is reviewing foreign ownership restrictions, including the Alien Business Law, and foreclosure laws. Thailand imposes a ceiling on foreign ownership in most activities. However, as infrastructure sectors are included in Board of Investment strategic industries, infrastructure projects can be 100 per cent foreign owned. Most BOT and BOO concessions, including expressways and railways, are likely to be eligible for status as Board of Investment promoted projects (Table 3.2).

China

As in Vietnam, in China private citizens cannot directly own land, as the state owns all land. However, foreigners and Chinese nationals can obtain effective title to land through land use rights. Foreigners can obtain land use rights through:

- a Chinese party contributing in-kind capital to a joint venture (the most common method)
- the state providing a grant for a fixed time
- an existing land use right holder transferring this right to a foreign party
- an existing land use right holder offering a lease.

[4] The Board of Investment can permit foreign investment projects to own land for residential and business purposes. See *Investment Promotion Act* BE 2520 (1977), as amended by the *Investment Promotion Act* (No. 2) BE 2534 (1991).

The distinction between allocating and granting land use rights is important. Holders of granted land use rights can mortgage, lease or transfer their title to third parties. The title of allocated land use rights remains with the state, so holders cannot transfer it to others. Verification of land title can be problematic and records of land right sales often are incomplete, leading to uncertainty about whether or not a Chinese entity has title to a parcel of land and the right to transfer it to a joint venture (Economist Intelligence Unit, 1997).

Since 1996, China has allowed 100 per cent foreign ownership of infrastructure concessions on an experimental basis.[5] High priority projects and ones forming part of the medium or long term state plan can be submitted to the State Development Planning Commission for evaluation and approval of 100 per cent foreign investment. In such cases, concessionaire selection is by competitive tender (Wang et al, 1998). Without State Development Planning Commission approval, the joint venture is the typical vehicle for foreign equity and expertise.

The Philippines

While only Filipinos or corporations that are at least 60 per cent Filipino-owned can own land,[6] foreign investors can lease commercial land for 50 years, then renew the lease for a further 50 years. Leases can be granted to foreigners to establish industrial estates, factories, processing plants and agribusinesses, and develop land for industrial and commercial use, tourism and other priority investments (Citibank, 1996; and East Asia Analytical Unit, 1998).[7]

Except for exemptions under the BOT law, the Philippine constitution also requires infrastructure projects to be at least 60 per cent Filipino owned (East Asia Analytical Unit, 1998). The requirement for foreign firms to form a 60 per cent owned Philippine joint venture to own land and non-BOT infrastructure assets may constrain foreign investment in infrastructure. Power projects, however, can be 100 per cent foreign owned under the emergency legislation passed to overcome Manila's brownouts in the 1990s.[8]

Dispute Resolution

Certainty regarding dispute resolution is particularly important for private investors in infrastructure projects, influencing risk analysis and financing. Most projects involve large long term investments, with investors relying on a predictable income stream over twenty or thirty years to repay financiers, maintain the value of equity and obtain returns.

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5 Regulations for Foreign Investment Concession Projects, jointly issued by the State Development Planning Commission, Ministry of Planning and Ministry of Communications, 1996.

6 For ownership of private lands see Article XII, Section 7 of the constitution; Chapter 5, Section 22 of *Commonwealth Act No. 141*.

7 Land lease contracts must conform to the Comprehensive Agrarian Reform Law and the Local Government Code. Projects converting land use require permits from the Housing and Land Use Regulatory Board, National Housing Authority and Department of Agrarian Reform (Philippines Board of Investment, 1998).

8 *1991 Foreign Investment Act* (Republic Act 7042).

Several features are central to creating a conducive environment for risk-averse infrastructure investors. Firstly, the domestic legal system should recognise foreign judgments or awards. This can be promoted appropriately through a country being a party to the New York Convention on the Recognition and Enforcement of Foreign Arbitral Awards, and introduction of appropriate domestic legislation to implement the convention.[9] Governments which are not yet party to the New York Convention should do so, if they wish to attract infrastructure investment.

Secondly, domestic judicial or arbitral forums should be in place and have a track record of predicable and fair decision making, to reduce the risk associated with projects, and hence project costs.

Infrastructure project investors can try to minimise the risk associated with projects by seeking to incorporate effective dispute resolution methods into project documentation. Complementing this, parties can agree in advance that an established international commercial jurisdiction (usually the USA or the United Kingdom) will be the governing law and stipulate in relevant agreements that disputes will be arbitrated internationally under an established arbitral system in a recognised international centre. However, unless local parties have substantial offshore assets to which the litigant can lay claim under foreign law, private investors should recognise dispute resolution usually requires domestic courts to enforce foreign arbitral or judicial decisions.

For example, while Indonesia ratified the 1958 New York Convention on the Recognition and Enforcement of Foreign Arbitral Awards, the Government has not introduced the required implementing regulations. Hence foreign judgments are not directly enforceable, so disputing parties must institute local legal proceedings to resolve disputes. While local arbitrators like the Indonesian National Board of Arbitration, the most prominent non-court dispute resolution body, can settle disputes, outcomes may be less predictable than international arbitration. In addition, Indonesia is a civil law jurisdiction similar to the Netherlands, so many common law principles, such as equitable principles, are not recognised. If recourse to Indonesian courts is necessary , uncertain commercial laws and lack of a precedent system introduce uncertainty into outcomes. Lengthy delays in obtaining judgments can exacerbate uncertainty.

In the Philippines, parties involved in arbitration have more flexibility and can draft their own rules of procedure or employ the International Centre for the Settlement of Investment Disputes or private international arbitrators. The Philippines has both ratified and implemented the New York Convention on the Recognition and Enforcement of Foreign Arbitral Awards. However, a Philippine court may not automatically enforce a foreign judgment. Foreign judgments may be set aside due to lack of jurisdiction or lack of notice to affected parties.

The judicial systems of Hong Kong, Singapore and Japan are similar to those in western countries. Singapore and Hong Kong commonly are used for arbitration, as their impartial arbitrators are firmly grounded in British common law. Both

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[9] At 30 June, 1998, the list of contracting parties to the New York Convention on the Recognition and Enforcement of Foreign Arbitral Awards included Australia, Bangladesh, Brunei, Cambodia, China (including Hong Kong), India, Indonesia, Japan, the Republic of Korea, Laos, Malaysia, New Zealand, Philippines, Pakistan, Thailand, Singapore and Vietnam.

jurisdictions have adopted uniform international commercial arbitration law, increasing certainty for international investors. The number of arbitration cases in Hong Kong, for example, increased from 54 to 185, two years after it adopted the Model Law (*Asia Law*, 1995, p. 28).[10]

Vietnam has included dispute resolution provisions for infrastructure projects in its recently revised BOT legislation.[11] The law stipulates disputes between a BOT enterprise and foreign organisations can be resolved through international arbitration. However, disputes with Vietnamese organisations must be resolved through local arbitration, a significant shortcoming of the law. Disputes between the BOT project company and the state body which granted the concession can be resolved according to procedures agreed and specified in the concession contract.

Accounting Standards

Many Asian economies' accounting standards fall below international standards, causing problems for foreign investors, particularly if they enter joint ventures with established enterprises or take over privatised assets. Singapore, Malaysia, Hong Kong and the Philippines have adopted international standards with only occasional additions or omissions. Japan, the Republic of Korea, China, Indonesia, Thailand and other developing countries in the region now are strengthening standards to international levels but are less advanced (Table 3.3).

Many economies in the region do not consider professional accounting bodies can enforce standards, although they do in most developed countries, including Singapore and Hong Kong. Therefore local ministries of finance usually are responsible for enforcement, but may have limited tools to ensure compliance. Adopting international accountancy standards, prosecuting some well publicised cases and bolstering the ethical oversight of accounting profession bodies are essential future developments.

Environmental Standards and Legislation

Inadequate or unclear environmental standards can increase uncertainty for many infrastructure projects, particularly those involving dam construction and vegetation clearance (Boer et al, 1998). While Asian environmental legislation is developing rapidly, legislation and enforcement standards vary significantly across the region and in most economies, they still lag behind Europe and North America. Until recently, environmental controls on projects were limited, due to lack of appropriate legislation and enforcement problems. Even where legislation exists, institutional capacity to monitor compliance and prosecute breaches is lacking.

[10] The Model Law gives the parties freedom to submit disputes to arbitration and determine their own procedure, including the number of arbitrators and place and language of arbitration. However, certain overriding principles ensure fairness and due process. Court intervention is restricted to limited circumstances, such as challenging the jurisdiction and appointment of the arbitral tribunal.

[11] Decree No. 62, 15 August 1998, replaces Decree 87 dated 23 November 1993.

Table 3.3

Widely Varying Accounting Standards

Accounting Standards in Selected East Asian Countries

	Financial reporting requirements	Required accounting year	Source of standards, language and monetary denomination requirements	Filing of records
Singapore	Under the *Companies Act*, directors must produce annually profit and loss accounts, balance sheets and director's reports. Branches of foreign firms must prepare profit and loss accounts, and statements of assets used and liabilities arising from Singapore operations.	None. In practice financial statements are prepared annually and records must be kept for seven years.	Generally accepted standards are contained in Statements of Accountants' Standards. These are substantially identical to international accounting standards published by IASC. Accounts must be in English. Statutory statements must be in Singapore dollars.	Annual accounts must be filed with the Registry of Companies. Branches of foreign companies must file annual company accounts and audited branch accounts.
Malaysia	Under the *Companies Act*, directors must produce audited financial statements showing a 'true and fair view'.	None. In practice financial statements are prepared annually and records must be kept for seven years.	Approved Accounting Standards are codified, based on international standards. English can be used but is not required. Statements must be in Malaysian dollars.	Annual accounts must be filed with Registry of Companies. Branches of foreign companies must file certified copies of annual financial statements within two months of annual general meetings.
Hong Kong	Under the *Companies Act*, directors must produce financial statements showing a 'true and fair view'.	None. In practice financial statements are prepared annually and records must be kept for seven years.	Hong Kong Society of Accountants issues Statements of Standard Accounting Practice largely based on UK statements. Any language can be used, but usually it is English. Amounts may be in any currency.	Only public companies must file financial statements with the Companies Registry. Branches of foreign corporations must file a copy of annual financial statements.
China	All enterprises must submit financial statements in a prescribed format to a number of bodies.	Quarterly and annual audited statements must be submitted.	Accounting Standards issued by Ministry of Finance are considered legally binding. Generally, they accord with international standards but lack clarity and contain some ambiguity. One set of records must be in Chinese with amounts converted to renminbi.	na

Table 3.3 (cont.)

	Financial reporting requirements	Required accounting year	Source of standards, language and monetary denomination requirements	Filing of records
Indonesia	Under the Commercial Code, directors must produce financial statements showing a 'true and fair view'.	None. In practice, financial statements are prepared annually and records must be kept for 30 years.	Generally accepted standards are in Indonesian Accounting Principles. Compliance with IASC is not mandatory. Indonesian or a language approved by the Ministry of Finance must be used. Statements must be in rupiah.	No requirement exists to lodge financial statements for registration. Foreign invested companies must file audited statements with Bank of Indonesia and Capital Investment Coordinating Board.
The Philippines	Under the Corporations Code, management must produce financial statements showing a 'true and fair view' and obtain an independent opinion from a certified public accountant.	Based on the calendar or fiscal year end. Records must be kept for ten years.	Generally accepted standards are in Statements of Financial Accounting Standards and based on international standards. Records usually are in English and pesos.	Companies with authorised or paid up capital of P50 000 or more must file audited financial statements with the Securities and Exchange Commission.

Source: Tasman Asia Pacific, 1997.

SINGAPORE'S ENVIRONMENTAL LAWS AND ENFORCEMENT SHOW BEST PRACTICE

Singapore's environmental laws and enforcement regime are an example of best practice in encouraging infrastructure development. Policy making is highly consistent and centralised principally in the Ministry of Environment and, in the case of urban planning, the Urban Development Authority.

A significant feature of Singapore's regime are Master and Concept Plans. These are prepared under the *1959 Planning Act* to guide public and private infrastructure investment in roads, airports, ports, industrial estates and large scale residential and recreational area development. The Concept Plan provides investors with a clear understanding of government infrastructure development and support priorities.

A feature of Singapore's environmental laws is that approval procedures in key areas such as planning, pollution control, heritage conservation and nature conservation are, in general, relatively open and predictable. Designated authorities are clearly responsible for approvals, so potential investors can be confident development will not be subject to unanticipated and arbitrary costs or delays.

However, Singaporean environmental and planning law does not formally require environmental impact assessments. Notwithstanding many Asian countries adopting these requirements, Singapore has resisted, principally because the Government believes such procedures could delay developments and increase costs. However, the detailed information from these assessments can assist investors and financiers in more fully understanding a project's impact and consequences.

Hong Kong and Singapore possess environmental regulatory systems similar to those of OECD countries. While Malaysia, Indonesia, the Philippines and Thailand have numerous pieces of environmental legislation and seek to improve implementation, enforcement is often limited or at best uneven. By contrast, Vietnam and Cambodia still are attempting to develop a detailed body of environmental law. In project planning, erratic enforcement introduces uncertainty about the level of compliance required, particularly where financing drawdown arrangements are conditional on projects providing evidence of compliance with environmental requirements.

SPECIFIC INFRASTRUCTURE REGULATION, INCLUDING BOT LAWS

To provide incentives for private sector infrastructure development and overcome gaps in their regulatory and legal environments, the Philippines, Vietnam, Thailand, Taiwan and China have introduced specific legislation to encourage private sector infrastructure development via long term BOT concessions. The Philippines was a regional path breaker, passing its BOT law in 1990 (East Asia Analytical Unit, 1998, Chapter 6) while China is a more recent entrant, introducing its Regulations for

Foreign Investment Concessions Project (BOT law) in 1996.[12] These BOT laws incorporate key features that support private sector participation to develop infrastructure, including:

- relaxing restrictions on foreign ownership of infrastructure projects
- providing a core set of legal rules and regulatory procedures to promote predicable and consistent treatment of projects
- stipulating terms and conditions of standard private sector sponsorship, leasing, concession and ownership arrangements, including BOT, BOOT, BOO and BOLT[13]
- providing standardised procurement and tendering procedures, bidding eligibility and documents, and transparent bidding and selection procedures
- outlining dispute resolution provisions.

Focussed legal and regulatory structures governing the development of infrastructure projects usually reduce the time needed to obtain government approvals, particularly after governments develop model approaches to BOT projects in key sectors.

The United Nations Commission on International Trade Law, UNCITRAL, will assist in the development of best practice legal frameworks through the preparation of a legislative guide on build, operate and transfer (BOT) projects. The legislative guide will address issues relating to ownership and use of infrastructure, investment protection, property rights, rules and procedures on expropriation, protection of intellectual property, taxation and environment protection issues, and the settlement of disputes.

The Philippines

The Philippine BOT law, (*Republic Act Number 6957*) is regarded as best practice among developing Asia Pacific economies. It recognises the right of a sponsor to operate the facility for up to 50 years and to impose tolls, fees or rentals to recover construction, operating and maintenance costs and earn a return on investment. This law authorises the private sector to finance, construct, operate and maintain infrastructure projects in ports, roads, airports, water supply, telecommunications, rail, industrial estates and many other sectors (East Asia Analytical Unit, 1998). In addition to BOT contracts, the law permits a range of other contractual structures including BOO, BTO, BT, BLT, ROT, ROO, CAO and DOT structures.[14]

Significantly the BOT law restricts the constitutional requirement of 60 per cent Filipino ownership of infrastructure to specified public utilities; consequently, it allows 100 per cent foreign ownership of BOT companies involved in a wide range of other infrastructure projects. The law also overrides the usual legal requirement for

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12 The first concession under China's BOT regulations was awarded in late 1996 by competitive tendering to a French Consortium to construct and operate the 700 MW Laibin B Power Plant Project in Guangxi province.

13 BOT is build, operate, transfer; BOOT is build, own, operate, transfer; BOO is build, own, operate; and BOLT is build, operate, lease, transfer. See box in Chapter 2 – *Principles* for wider range of concession options.

14 BT is build, transfer; BLT is build, lease, transfer; ROT is rehabilitate, operate, transfer; ROO is rehabilitate, own, operate; CAO is contract, add, operate; and DOT is develop, operate, transfer.

private sector construction contracts undertaken in the Philippines to be awarded to at least 60 per cent Filipino-owned firms. However, the BOT law allows the services of either a foreign and/or Filipino contractor to be retained for construction. Before private investors can obtain BOT law benefits, they must meet several eligibility requirements, including financial capacity and previous development and construction experience.

Changes introduced to the BOT law in 1994 provide additional financial and non-financial incentives, including allowing foreign aid money to be used as a source of funds for up to 25 per cent of BOT project costs, streamlining approval processes and giving BOT projects larger than 1 billion pesos (US$230 million) entitlement to incentives under the Omnibus Investments Code. To improve risk identification and management, the BOT law revisions recognise sponsors may be responsible for overall implementation, contractors for construction and equipment supply, and operators for operation and maintenance functions. The 1994 changes also lessen centralised control of projects, with government agencies able to consider unsolicited projects and engage in direct negotiations.

In 1993, with USAID financial support, the Philippine Government established the BOT Center to encourage BOT investors, and coordinate and monitor BOT projects. It provides technical assistance and training to government agencies on structuring BOT projects and on request, sits on their BOT bidding committees in a non-voting capacity. It also assists with unsolicited bid proposals, and helps negotiations between sponsors and agencies, at the request of agencies. A major strength of the BOT law is that its Implementing Rules and Regulation Committee can reinterpret the law as circumstances change, so the law stays ‘evergreen’ and relevant (Briones, 1998).

Since the BOT program started, 31 projects have been completed, valued at US$4.7 billion. A further 23 projects valued at US$14.9 billion are being constructed or have been awarded. In total, over 80 projects are in various phases of project development, implementation, or operation, with an estimated capital cost of over US$25 billion (Table 3.4).

Table 3.4

BOTs Reach US$25 Billion

Philippines' National Infrastructure Projects, 1998

		Energy	Light rail	Railways	Highways	Air transport	Water and sanitation	Information technology	Other[a]	All sectors
Completed projects	Cost US$ million	4 715	0	0	0	0	0	0	0	4 715
	Number	31	0	0	0	0	0	0	0	31
Projects awarded or	Cost US$ million	5 494	1 016	0	323	440	7 175	55	424	14 927
being constructed	Number	11	2	0	2	1	3	1	3	23
Projects under public	Cost US$ million	1 085	0	0	0	0	0	20	0	1 105
bidding	Number	9	0	0	0	0	0	1	0	10
Unsolicited proposals	Cost US$ million	300	960	500	1 306	0	619	0	38	3 723
being evaluated	Number	1	1	1	3	0	4	0	1	11
Projects being prepared	Cost US$ million	0	0	0	607	2	0	40	189	838
for public bidding	Number	0	0	0	1	1	0	1	4	7
All projects	Cost US$ million	11 594	1 976	500	2 236	442	7 794	115	651	25 308
	Number	52	3	1	6	2	7	3	8	82

Note: a Others include projects in tourism, government buildings, housing.

Source: Philippine BOT Center, 1998.

Vietnam

Vietnam recently overhauled its BOT regulations, updating earlier legislation with Decree 62, introduced in August 1998. Specific legislative provisions dealing with BOT projects were first introduced by amending the foreign investment law in December 1992. Implementing rules and regulations were introduced in 1993 and 1994.[15] However, the first BOT concession was only signed in 1996.

The new decree provides protection for foreign invested capital and assets, and gives significant preferential treatment to BOT enterprises and their subcontractors. Company incomes of BOTs are tax exempt for the first four years of profitability, and taxed at only 5 per cent for years four to eight, and 10 per cent thereafter. Imported equipment, fuel and materials are exempt from import duties. Other provisions exempt BOT enterprises from land rental and authorise the mortgage of assets and land.[16]

The State Bank of Vietnam assures currency convertibility for repayments of interest and loans and remittance of profits and capital from BOT projects. The new decree also provides for government guarantees, on a case-by-case basis, for Vietnamese enterprises performing their obligations regarding purchase of output and supply of fuel or materials.

The major concerns of foreign investors in BOT projects in Vietnam are currency convertibility, government guarantees and dispute resolution mechanisms. Investors still are concerned about whether sufficient foreign currency will be available to meet their requirements, due to an overall shortage of foreign exchange. Government guarantees may not convince investors the central government will stand behind the undertakings of state-owned entities. Probably, the efficient implementation of the new law over several years will be required to reassure investors on these issues.

While the BOT law allows for competitive tendering or direct negotiation with select, preferred contractors, most BOT contracts presently being considered are directly negotiated with a preferred tenderer selected by the Vietnamese Government. As yet, responsible government authorities are relatively unfamiliar with competitive tendering processes. Direct negotiations are proving very slow, as the government tries to ensure it extracts the best possible conditions. Competitive tendering could produce a more timely and predictably advantageous result. Experience with a number of projects in ports and energy raised concerns that contracts may be subject to re-negotiation after closure. While predicting all circumstances or covering all eventualities in a contract is impossible, greater clarity, perhaps on a contract-by-contract basis, is needed about the conditions that will lead to contract re-negotiation.

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15 Regulations for implementing the law have been circulated in government decrees and circulars. The key components of the regulatory structure for infrastructure projects are provided by Decree No. 18 - Regulations Governing in Detail the Implementation of the Law on Foreign Investment in Vietnam, 16 April 1993; Decree No. 87- CP - Regulations on Build-Own-Operate-Transfer Contracts, 23 November 1993 and the Circular No. 333/UB-LXT on Guiding Implementation of the Regulations on Investment in the Form of Build-Own-Operate-Transfer Contracts, 28 February 1994.

16 The mortgage of land is based on the value of land use rights, rather than the title to land, as all land in Vietnam is owned by the state. (See Land Laws and Foreign Ownership - Vietnam, above.)

PHU MY 2.2 PROJECT

Six international consortiums bid for a BOT to construct and operate the 700 MW Phu My 2-2 gas-fired thermal power plant in Vung Tau, near Ho Chi Minh City, near another gas-fired power plant being constructed by Finland's Wartsila NSD Company.

The World Bank is backing the project with a $75 million guarantee for political risk cover. The International Finance Corporation arranged $95 million in loans, and helped to design and tender the project. In 1996, the World Bank brought in US engineering consultancy firm, KNM, to work out the contractual framework for the project, including a proposed power purchase agreement. A request for proposals was issued in late 1997; questions were accepted from bidders; then clarifications provided.

When bids were opened in April 1998, they included some of the lowest proposed power tariffs in the world, starting at about 3 cents per kilowatt hour in the early years, rising to a peak of just more than 4 cents for the rest of the 20-year term. This is much lower than bids for other projects being negotiated directly with project sponsors, which typically are around 5 cents per kilowatt hour.

Source: *Asiamoney*, 1998; and *Far Eastern Economic Review*, 1998.

The Vietnamese Government's commitment to BOT projects will be apparent if actual projects reach closure. An important signal will be the closing of power deals which have been negotiated for several years. This includes the Phu My 2.2 power project supported by the World Bank and the $360 million, 300 MW power plant in Quang Ninh province which US power firm, Oxbow, was selected to develop in 1996. Although pricing agreements were reached for Quang Ninh by mid 1998, Oxbow had not received a licence for the project by then.

Taiwan

Taiwan's new BOT law, Law for Facilitation of Private Participation in Public Infrastructure Projects, is expected to be passed late in 1998. It is based on two main principles, maximum private participation and greatest government prudence, and allows for projects in transport, power plants, water and sewage systems, incinerators, industrial parks, theme parks, education and health facilities. Government can provide support through tax incentives, subsidies and preferential loans. Private participation includes BOT, BT, BLT, BOO, BTO, ROT, and ROO.

The level of foreign ownership for projects undertaken under the new BOT law is unrestricted, although foreign investment is restricted in certain public utility sectors included on the Negative List.[17] However, the Executive Yuan (Cabinet) can lift these foreign investment restrictions under other laws if it deems this appropriate. The law also provides assistance in obtaining access to government land through

[17] Issued pursuant to the Statute for Investment by Foreign Nationals.

TAIWAN'S BOTS

With almost no private involvement at the start of the 1990s, private participation in Taiwan's infrastructure has accelerated as a number of private projects have come on stream. Many more projects are planned. The legislative revamp to facilitate private projects includes the Encouragement Statute for transport projects, revisions to the electricity law to deregulate the power industry, and the recently passed BOT law. Private projects include eleven IPP power projects with installed capacity of 9 700 MW to be completed by 2002, the US$8.6 billion Taiwan High Speed Rail Project and the Taipei-CKS Airport Rail Link Project.

The total amount of capital raised for infrastructure via initial and secondary public offerings rose from NT$138 billion (US$4.48 billion) in 1996 to NT$208 billion (US$7.17 billion) in 1997 and NT$50.3 billion (US$1.5 billion) in the first quarter of 1998.

Source: Chang, 1998.

sale, lease, trust or equity contribution in kind. The new law will make projects more bankable by removing legal obstacles under current banking and securities laws that inhibit large scale financing of BOT projects.[18]

Taxation incentives include a five-year tax holiday, 5 to 20 per cent investment credits, duty exemption or reductions, and exemption or reductions of land, building and deed taxes. The law also allows the government agency responsible for the project to bear certain risks, by signing take-or-pay contracts or providing guarantees of minimum revenue on a case-by-case basis. It also provides a clear basis for lenders' step-in rights, authorising lenders to take over a project before the government terminates the concession. Finally, it gives the government a right to compulsorily purchase operating assets if the concession agreement is terminated early.

COMPETITION AND TRANSPARENCY

A carefully implemented competitive bidding process is extremely important to promote welfare enhancing private sector infrastructure participation and government asset privatisations (Guislain, 1997, pp.124-32, 251-55). Perceptions of corrupt selection processes significantly deter reputable multinationals from making cost-effective infrastructure project bids, ultimately increasing costs to local consumers.

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18 These relevant provisions in the new BOT law include:

- exempting BOT loans provided by financial institutions from financing restrictions, such as the current banking law's lending term and lending quotas
- entitling participating foreign financial institutions to arrange loans for BOTs, even if they do not have a branch office in Taiwan
- allowing public offering firms to issue corporate bonds for BOT projects without being subject to profitability requirements under company laws
- allowing BOT project companies to offer their shares to the public without being subject to the profitability and net-worth restrictions under company laws.

The apparent complexity of competitive bidding processes and the costs of responding to requests for expressions of interest and tendering have led some private contractors and public sector agencies in East Asian economies to favour direct appointment of pre-qualified consortiums. However, if competitive bidding is not used, lengthy negotiations are required to determine fair and sustainable tariffs, bulk supply fees or tariffs, take-or-pay agreements, agreed investment obligations, duration of leases, franchise or concession details, and coverage and service quality issues. While some details usually must be finalised after tenders have been awarded through competitive bidding, government can significantly reduce the number of unresolved issues.

Competitive processes involve either competitive bidding or competitive negotiations. Competitive bidding is an open process with the winning bid selected on the basis of prescribed objectives and selection criteria. Competitive bidding increases the level of transparency in the contract award and tends to expose lower costs. It is easiest to design and implement when the product or service required is fairly standard, the technical parameters can be defined with reasonable certainty in the bidding documents, and the operator has limited scope for innovation and creativity (Kerf et al, 1998, p. 68). If these criteria are not met, then transactions costs are likely to escalate.

Competitive negotiations combine the benefits of competitive bidding with the flexibility and creativity direct negotiations allow. Variants include simultaneous negotiations with a few shortlisted parties and competitive selection of a single preferred bid, followed by negotiation to finalise contract parameters, as occurred with Australia's Melbourne City Link project.

The Manila water supply and waste water treatment concession let in 1997 with World Bank assistance is best practice in competitive infrastructure concession tendering and selection (East Asia Analytical Unit, 1998). The Melbourne City Link tollroad project is another example with a number of best practice features in transparent and efficient bidding.

Private developers may be less willing to spend time and money identifying prospective projects and submitting bids if their intellectual property is diminished or lost through competitive bidding. Ensuring strict confidentiality of competing bids can reduce this problem, but does not always occur. Non-transparent official behaviour ultimately raises project costs and tariffs for consumers.

The Philippines has attempted to marry the benefits of competition and innovation by accepting unsolicited proposals. Where a firm submits an unsolicited proposal, competitors have up to 60 days to submit a proposal of their own. If a cheaper proposal is submitted, the originator of the project has the opportunity to match the competing bid. However, this scheme has elicited an avalanche of unsolicited bids and their evaluation requires large amounts of scarce, skilled bureaucratic resources (East Asia Analytical Unit, 1998). Some officials complain this diverts personnel from developing solicited projects, which would produce more coherent infrastructure planning (Reinoso, 1998). Consequently, regional governments must strike a balance between solicited and unsolicited bids, and develop broad concept plans, like those developed in Singapore, so unsolicited bids can comply with these.

MELBOURNE'S CITY LINK COMPETITIVE TENDERING PROCESS

In the early 1990s, Victoria, Australia, chose the private sector to build and manage a new freeway project to link major arterial roads and bypass the centre of Melbourne. The $2.0 billion project is Australia's largest urban infrastructure development. The process to select the winning bidder had a number of best practice features.

Expressions of interest to build, own and operate the project were called for and five proposals were received. Subsequent shortlisting was based on the capacity of sponsoring organisations to finance and successfully complete design and construction. Two consortiums, Transurban and CHART Roads, were chosen. Choice of three consortiums was considered but rejected, to reduce transaction costs associated with the bid process. In addition, two consortiums and the scale of the project absorbed a major share of the construction, legal and financial resources available in Australia.

In 1992, the new State Government reviewed the project, undertaking financial analysis and identifying options. As a result, it specified clearly the project would be a BOOT structure, financed by electronic tolls, with government contributing for limited specified project enhancements.

In 1994, the government established a statutory authority, the Melbourne City Link Authority to develop and manage government interaction with the project bidders. The authority issued a project brief, specifying functional and performance requirements but maximising scope for private sector innovation (Victorian Auditor-General's Office, 1996). It evaluated project submissions, negotiated with shortlisted consortiums, and recommended the preferred consortium.

The private sector bears substantial commercial risk as risks are allocated to the party best able to control them.

Bids were received in January 1995. Following this, a formal process of 'bid clarification' occurred with each consortium, finetuning the bids to overcome identified gaps and deficiencies, and developing each bid to the highest possible standard. Throughout this exercise and the final decision process, an independent private 'probity auditor' ensured probity and transparency. The probity auditor subsequently vouched bid assessment was fair and equitable in terms of agreed criteria.

Transurban was nominated as the preferred consortium in May 1995. Following this, the CHART Roads consortium was placed on active reserve. In October 1995, the Government and Transurban agreed the contract in the form of a Concession Deed. As in all stages, project documentation was subject to State Parliament scrutiny. This process culminated in December 1995 with the passing of the *Melbourne City Link Act 1995*, which incorporated the Concession Deed, giving the Melbourne City Link Authority powers, such as to acquire land.

In recognition of the size, scope and complexity of the bidding process the State Government contributed $3 million towards the costs of the unsuccessful bidder, CHART Roads; however, it is likely bid costs far exceeded this amount. The nature of the project makes much of the development work associated with each bid inapplicable to other projects. Nevertheless, some elements, for example financial innovations, carry over to other projects.

Source: Edwards, 1998; Parker, 1998; and Victorian Auditor-General's Office, 1996.

MALAYSIAN PRIVATISATION – RESTRICTED TENDERING AND DIRECT NEGOTIATION

The public sector usually initiates private sector infrastructure projects in Malaysia, based on the relevant ministry's feasibility studies. The Privatisation Unit in the Prime Minister's Department is tasked with selecting a private firm to implement projects. Selection can be through restricted tender where a few selected firms submit technical and financial proposals to the Financial and Technical Committees for evaluation. Alternatively, the Government may nominate just one firm for direct negotiation. Choice of approach and private firm is made at senior political levels.

If an unsolicited private sector proposal initiates a project and an initial government evaluation finds the proposal has merit, the firm receives a letter of intent and status as 'preferred concessionaire'. The process is essentially equivalent to 'first-come, first-served' because the firm submitting the proposal then obtains an exclusive right to undertake the project, providing agreement terms, such as length of concession period, fees, service quality and level of government subsidy can be negotiated.

Malaysia's privatisation experience has been criticised by some commentators for its lack of open competitive bidding to select infrastructure providers. However, supporters of restricted tendering and direct negotiation claim these approaches keep transactions costs to a minimum and enable more project agreements to be reached in a given period. The process of open competitive bidding is certainly time consuming and expensive for bidders and government. However, relying on unsolicited proposals and direct negotiation can lead to public concerns and raise costs for consumers.

Source: Yaacob and Naidu, 1997.

A major shortcoming of the private infrastructure development process in Indonesia is the slow introduction of competitive tendering in BOTs and concession contracts. Initially, private Indonesian tollroads and power projects were directly negotiated with one or two preferred contractors. While the Indonesian Government increasingly puts out tollroad and power generation contracts to competitive tendering, it has been slower in water concessions.[19] In contrast to the power and transport sectors, provincial and local governments are mainly responsible for urban water supply, with local governments responsible for detailed planning and implementation. Developing competitive tendering processes for urban water supply in Indonesia will require considerable capacity building within central, provincial and local government water sector institutions.

[19] In mid 1998, the Indonesian Government announced all public projects would be let by open competitive bidding.

SOCIAL AND ENVIRONMENTAL ISSUES

Societal awareness of environmental costs of transport, water and electricity projects, and greater government regulation of environmental concerns over the past two decades mean that environmental issues now are a core consideration in designing, constructing and operating infrastructure projects in many East Asian economies. They also present a significant risk for project sponsors and financiers. Social considerations such as the effects of infrastructure development on social equity and particular income and ethnic groups require detailed analysis and proper planning by government and private sector sponsors, if projects are to be successful.

Infrastructure projects can significantly affect the environment, often requiring large tracts of land, which may include fragile ecosystems. The choice of sites for ports or highways may be a sensitive issue. Hydroelectric power, an alternative to polluting fossil fuels, requires dams that environmental groups may criticise for their effects on ecosystems and the livelihood of local people who rely on farming, fish or timber resources.

The early stages of infrastructure development and project design should address many of these issues, through coordinated network planning such as through the AusAID funded Masterplan for the Southern Economic Focal Zone in Vietnam and environmental impact statements. Such network plans should identify:

- interactions between ports, bridges, roads and industrial zones to help reduce the spillover costs of urban congestion and highly polluting industry
- future transport and transmission line corridors to minimise later costs of expropriating land
- location of water supply intakes, to anticipate and prevent future saline water and pollution flows in water supply sources.

Network planning also is essential for urban transport to ensure proposed tollroads and mass transit systems form a viable integrated whole, without overlap, gaps or leakage potential. Network plans should be integrated with a consistent set of urban planning regulations giving clear guidelines on standards applying to power stations, road construction, and water supply and waste treatment plans. Such a process reduces uncertainty and lowers risk perceptions, even if it raises the initial capital costs of private sector projects complying to required standards.

Project developers also should receive clear messages about social and service quality obligations in tender and contractual documents, such as possible limits on tariffs and the need to supply rural areas. Technical assistance in the initial study and design of projects can help identify areas of social concern and formulate guidelines for meeting social obligations that contractual documents can itemise.

International financial institutions increasingly recognise how environmental issues affect their activities and seek to ensure environmental risks are appropriately addressed. The World Bank and Asian Development Bank require environmental impact assessments be carried out before granting loans and more recently, have worked with national governments to develop programs to integrate environmental issues into national economic development planning. However, environmental modelling studies often are under-funded and inadequate, leading to a dearth of relevant data on which to base analyses (Vernon, 1997). In such circumstances, sponsors should budget extra resources for environment assessments or chose less enviromentally risky projects.

ENVIRONMENTALLY SOUND INFRASTRUCTURE IN THE ELECTRICITY SECTOR

A recent study identifies five general principles characterising good environmental practices in the electricity sector that also apply to other infrastructure sectors. They are:

- efficiency: opportunities to improve efficiency in electricity generation, transmission, distribution and consumption, including cost-based pricing, should be fully exploited to reduce environmental impact
- transparency: environmental requirements should be defined clearly and information on standards, compliance demonstration and treatment of non-compliance should be readily available
- predictability: risk associated with changing environmental standards and granting approvals should be minimised. Timelines and measurable criteria for approval processes should improve predictably. Changes should evolve predictably, providing early warning
- consistency: environmental requirements should be applied consistently and fairly to all producers during independent power producer, IPP, proposal evaluations, approval processes and operations. A level playing field is increasingly important as regional economies move towards more competitive market structures
- cost effectiveness: environmental requirements should be designed for cost effectiveness, for example by providing flexibility to producers to meet environmental objectives using the most cost effective compliance strategy.

These principles should apply to energy efficiency, environmental approval processes, environmental standards, use of market-based instruments, monitoring and enforcement, and use of IPP processes.

Source: APEC Energy Working Group, 1997.

Evaluating environmental issues at an early stage in a project, allows them to be managed to reduce costs or delays and risks which may threaten projects' economic viability. Project sponsors and financiers thus ensure appropriate risk mitigation measures are built in from the start.

The financial impact of environmental issues on projects include:

- rising project costs due to changing environmental specifications or the need for additional environmental studies
- delays in project commencement or completion
- unanticipated costs, such as cleaning up past pollution or ongoing liabilities in relation to future clean up requirements or compensating for health effects.

These impacts can increase direct project costs, making it more difficult and costly to obtain financing. Environmental risk mitigation methods include redesigning projects to reduce negative environmental effects, developing management systems to minimise the risk of unforeseen problems and arranging contracts to spread environmental risk across parties.

Firms increasingly adopt green policies and report their environmental performance to shareholders. Some adopt policies of applying the same environmental standards worldwide, regardless of local regulations. ICI, which operates plants throughout Asia, requires all its new plants to be built to standards applying in the most demanding economy in which it operates that process (Vernon, 1997).

TARIFF POLICIES

The economic level of tariffs is fundamental in encouraging private infrastructure investment in many East Asian economies. (See Chapter 2 – *Principles*.) For water and electricity, governments often instruct public utilities to keep tariffs low so low income households can afford them. However, often in larger urban areas, only households on relatively high incomes are connected to such utilities, so low tariffs disproportionately benefit middle and high income users. Frequently low tariffs leave water and electricity utilities with inadequate internal funds to maintain existing assets, invest in new assets, collect revenue or extend services to smaller towns and rural areas where incomes are lower. While most large East Asian cities use water metering, often tariffs are too low even to cover operating costs. Electricity tariffs also often cross-subsidise households, but fail to provide a reasonable return on capital so utilities can fund expansion. Railways also typically run at a loss.

Pilferage and unaccounted-for-water, electricity and revenue losses characterise many East Asian utilities (Table 3.5). In water, the capacity to dig wells cheaply allows people to obtain a 'private' water supply at low rates. Competition from shallow wells often limits the willingness of utilities to charge economic tariffs. Competition from road transport imposes similar constraints on rail tariffs.

However, the shortage of safe and secure utility services, such as water, electricity and rail transport, raises the costs of living and undermines the viability of households and businesses. Households spend considerable time and money carting water or buying it from vendors, and many businesses are forced to install expensive individual power generators. The health, time and output loss costs of poor water and energy supplies, far outweigh the benefits to households and businesses of low tariffs as these result in low investment and supply quality.

The same efficient tariff principles apply in transport, where failing to charge economic tariffs, or congestion-based tariffs, may actually increase travel costs above a full cost recovery user charge, once the cost of delays and pollution is factored in. Similarly in telecommunications, the costs of poorly funded services may be greater than a system with full cost recovery tariffs, once consumers pay the implicit costs of delays in securing house connections, dialling repeatedly and waiting for slow and unreliable postal systems. Many East Asian consumers purchase expensive mobile phone services to avoid long connection queues, supporting this view. However, the principle of cost recovery has exceptions, for example for basic, survival levels of clean water for low income people. (See Chapter 2 – *Principles*.)

Table 3.5

Low Cost Recovery and High Unmetered Water

Water Tariff Method and Revenue Recovery in East Asian Cities

Economy	City surveyed	Method of household payment for water	Operating ratio (operating costs / revenue)	Unaccounted for water (per cent)
Burma	Mandalay	Metered use	0.22	60
	Yangon	Combination	0.27	60
China	Beijing	Metered use	1.30	8
	Shanghai	Metered use	1.19	14
	Tianjin	Metered use	1.05	11
	Hong Kong	Flat rate	1.63	36
Indonesia	Bandung	Metered use	0.96	43
	Jakarta	Metered use	0.98	53
	Medan	Metered use	1.20	27
Korea, Republic of	Seoul	Metered use	0.84	34
Laos	Vientiane	Metered use	0.95	33
Malaysia	Johor Bahru	Metered use	0.61	21
	Kuala Lumpur	Metered use	0.60	36
	Penang	Metered use	0.74	20
Philippines	Cebu	Metered use	0.55	38
	Davao	Metered use	0.83	31
	Manila	Metered use	0.65	44
Singapore		Metered use	0.60	6
Taiwan	Taipei	Metered use	0.69	26
Thailand	Bangkok	Metered use	0.89	38
	Chiang Mai	Metered use	0.49	35
	Chonburi	Metered use	0.34	37
Vietnam	Hanoi	Combination	0.79	63
	Ho Chi Minh City	Metered use	0.96	34

Source: Asian Development Bank, 1997.

Affordability

Many households in Cambodia, Laos, Vietnam, Burma and many rural areas earn incomes in the range of US$20 to $50 per month per household. This leaves little surplus for utility costs after basic food and shelter. Major currency depreciations caused by the Asian crisis have raised the local currency value of foreign debts many utilities have incurred. Eventually this will force them to raise tariffs. On the other hand, recession and rising unemployment reduce the incomes of many utility consumers throughout the region, increasing non-payment problems.

To address affordability problems, affluent households and commercial industrial users which account for the vast majority of viable water and electricity connections can be charged full price for quality services while basic services to low income consumers can be subsidised. If low income consumers get reliable services, they can be more efficient members of the labour market, earn more adequate incomes and eventually graduate from subsidies. Such subsidies are best provided transparently, direct from the government budget where taxation systems operate effectively, but this often is not the case in developing economies. Tariff cross subsidies are a second best solution but may be unavoidable if fiscal subsidies are unfundable. (See the section on Service and Connection Subsidies later in the chapter.)

Local utilities find it difficult and cumbersome to secure reliable household income data on which to base subsidies, so a more reliable strategy is to subsidise low quality services, like stand pumps and low electricity consumption households. For example, in Indonesia, households drawing power equivalent to a few light bulbs pay the lowest connection charges and per kilowatt tariffs, while high use households and commercial premises pay the highest connection and charges.

Time of Day and Two-Part Tariffs

The public good nature of some infrastructure networks, like uncongested roads, means that tariffs ideally should be set close to zero, because of the low marginal cost of delivery (Chapter 2 – *Principles*.) However, zero charging will obviously prevent full cost recovery and can result in under-provision if governments cannot raise taxation revenue to pay for infrastructure. Time-of-day congestion charging and two-part tariffs assist in recovering investment and operating costs from infrastructure projects, while optimising use and therefore maximising community benefits from installed infrastructure. For example, peak load tariffs can recover capital costs, while off peak tariffs merely cover marginal maintenance and operating costs.

Peak load tariffs also make infrastructure use more efficient. Tariffs on congested electricity, transport, telecoms and possibly gas networks should be set so they ration network use to a level where it continues to offer a reasonable service. For example, road tariffs should be set at sufficiently high levels to prevent traffic gridlocks or lengthy travel delays. Peak load electricity charges can discourage use at peak times by enabling customers to make substantial savings by altering their power use to off-peak times, thereby preventing brownouts and delaying new investments in generation and transmission capacity. For example, Victoria, Australia has 48 half-hour time periods per day for electricity pricing, designed to smooth electricity demand.

In some regional economies, peak load charges for water also could be economical. By lowering peak demand, they can reduce the need to expand pipeline diameters as the demand for water services expands. Time-based water metering is in its infancy but becoming viable as micro-processors and solid state metering are introduced. In developed countries, peak fire fighting needs usually determine the capacity of water pipes, rather than normal domestic peak demand, making peak time water pricing less relevant.

In transport, higher peak time charges on congested bridges, tollroads, buses and trains encourage travel at off peak times, thereby reducing congestion and spreading network use over the day. Singapore is taking the lead in developing such charging systems in Asia. Such an approach is an increasingly attractive option in congested cities like Bangkok, Jakarta, Hong Kong, Manila and Seoul.

PEAK TIME CHARGING FOR ROADS IN SINGAPORE

For twenty years, drivers entering Singapore's seven square kilometre central zone have purchased a special licence. The licence is valid during daytime hours on weekdays but higher charges are levied for morning and evening rush hour use. A similar licence must be displayed on the windscreens of cars travelling along the city's three expressways. The system limits inner city congestion, particularly at peak times.

During 1998, the licence system was replaced with an Electronic Road Pricing System, employing an in-vehicle unit fixed in the windscreen and overhead gantries to charge vehicles for road use on a per-pass basis. The system makes Singapore the largest road pricing system in the world. Each time the vehicle enters the central zone, or travels on the expressway, the system uses a radio frequency to debit the driver's stored value cash card with the toll amount. Road users without a valid in-vehicle unit sufficiently charged cash card are caught by camera and fined. Tariffs are charged according to vehicle type and time of day. The system allows tariffs to be broken down into shorter periods than possible using the licence or permit method. For example, car tariffs on the East Coast Parkway are $1 between 7.30 am and 8.00 am, $2 between 8.00 am and 9.00 am and $1 between 9.00 am and 9.30 am. Experience with the new system has been positive, with high acceptance rates, low violations, reduced traffic during peak hours and spreading of traffic to take advantage of lower charges between 7.30 and 8.00 am and 9.00 and 9.30 am.

Source: *The Economist*, 6, December 1997 p. 20; and Singapore Land Transport Authority, 1998.

If time of day pricing does not recover capital costs, water supply, electricity, gas and telecommunication services can use two-part tariffs involving an access and user charge. Access charges like telephone, electricity and water connection fees, should aim to recover the fixed or capital costs of providing the service. User charges, tariffs per cubic meter or kWh used or trip taken, should cover the operating, fuel, pumping or treatment costs of providing the next unit of water or electricity, including external costs, such as environmental or congestion costs. Combining the fixed charge and variable use-based charge should deliver total revenue that provides an economic return to the utility and is less than or equal to the benefits accruing to the consumer. Two part tariffs maximise use while recovering capital costs. Because such tariff reforms allow utilities to act more commercially and recover costs more efficiently, they are a useful precursor to private sector participation in these sectors.

Until recently, for transport networks like highways, the only efficient charges were congestion pricing through tollroads at peak times and almost zero charging at all other times. Scope to introduce fixed charges was limited because the user population was mobile and not 'permanently connected' as with water supply and electricity. However, chip technology enables authorities to levy fixed charges on regular road users. In return for access to priority lanes, regular users could pay for an electronic chip that automatically records and bills their road usage. Fixed levies can be incorporated in the price of the chip.

Without the capacity to levy fixed charges, privately operated tollroads must depart from 'optimal efficiency' rules and set tolls above marginal provision costs to ensure

an adequate return on capital. Such tariffs, combined with competition from unpriced neighbouring routes and low willingness to pay, cause the incongruous sight in Mexico and lately Thailand, of almost vacant tollroads operating alongside highly congested public access roads. Therefore private road operators must be given the regulatory flexibility to apply time-of-day and congestion pricing, and to increase demand by offering discount tolls when roads are uncongested.

Relevance of Tariff Strategies to Privatisation

A culture of subsidised utility charges causes wasteful consumption as well as infrastructure under-provision and shortages. Accordingly, the case for moving towards efficient, economic tariff structures is powerful. This policy informs commercial investors that customers will pay for quality services and are used to doing so. Because many East Asian economies tolerate non-payment for utilities and are reluctant to turn off access for defaulting customers, many potential investors are wary of private sector provision and sales direct to consumers. Instead, they seek government guarantees, including take-or-pay contracts to supply bulk water or electricity to government distributors. This restricts efficiency gains from private sector investment and management to bulk supply. Given the main inefficiencies in East Asian infrastructure sectors are in distribution systems, BOT and bulk supply schemes with their take-or-pay characteristic leave most inefficiencies and risks in the government sector. (See Chapter 2 – *Principles*.) Consequently, to the extent tariff reform can facilitate private sector investment in water, electricity, transport distribution and customer billing systems, it is fundamental to improving efficiency in utilities and creating better economic outcomes for the community.

Service and Connection Subsidies

Public utilities, particularly in the electricity and telecommunications sectors, often subsidise services to rural users, for example through rural electrification and connection programs. Regulations cross subsidising rural consumers can hinder the scope for privatisation. Private firms with subsidised service obligations find it difficult to recover adequate rates of return, except by raising charges for other consumers. Thus competing with other service providers who do not have community service obligations can be difficult.

Removing rural cross subsidies can be politically difficult for many Asian governments. Most East Asian countries tend to have large rural populations and government authorities often draw their political power base from rural areas. However, if private sector participation is to become a viable option, governments need to explicitly fund obligations for rural connections. Alternatively, the rural urban customer mix and subsidy obligations of competing privatised firms must be standardised prior to divestiture.

The Philippines adopted the latter approach when it broke up the telecommunications market into 11 fixed line service areas defined by the National Telecommunications Commission. Existing and new private operators had to build a predefined mix of rural and urban lines in these service regions. Cellular licensees are required to install 400 000 lines within five years and international licensees are required to install 300 000 lines within three years. The service regions and licences are designed to eliminate cross subsidies between regions and ensure competing

firms are equably treated, while maintaining a level of cross subsidy within each region (East Asia Analytical Unit, 1998). Similarly, the service obligations embodied in the two new Manila Water concessions involve some cross subsidies to low income urban consumers, as all consumers must be connected within ten years. This requirement was clearly specified before bids were made and does not undermine the concessions' viability.

Another alternative is for public agencies, independent of urban utilities and service providers, to provide rural electrification services (International Energy Agency, 1997). Separating the social obligations of rural electrification would make it easier to privatise urban electricity supply authorities, as private buyers would not have to support uneconomic rural activities. This approach also applies to telecommunications. In the Philippines for example, government is installing the main high capacity telecommunications spine but leaving distribution and individual connections to private operators.

FUTURE PROSPECTS

Many regional economies recognise the need to reform their legal and policy environments to encourage private infrastructure. Most progress has been made in enacting special purpose BOT legislation, designed to fast-track this form of private sector participation. However, many economies lag in reforming land tenure and infrastructure sector entry and upgrading accounting and environmental standards. Economies like Singapore provide best practice examples in these areas. Similarly, transparency and efficiency in implementing BOT laws and other business regulations, as well as project bidding and selection processes varies across the region. Some economies, like the Philippines are successfully tackling these issues, but more work needs to be done. Finally, tariff reform is progressing in many economies, but faces natural constraints due to the need to assist large numbers of low income urban and rural consumers. The crisis exacerbates these problems. Nevertheless, models for time-of-day and two tier pricing and cross subsidies from affluent consumers receiving higher quality services are employed successfully throughout the region.

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Chapter 4

FINANCING AND RISK MANAGEMENT

The failure to develop domestic capital markets with long term instruments to finance infrastructure investments has forced many regional economies to rely heavily on foreign capital to finance infrastructure, exposing project sponsors to foreign exchange risk. The 'liquidity crunch' of 1997 and 1998 will make developing such markets more difficult in the short term, reduce project sponsors' willingness to take on unhedged foreign currency debt and financiers' willingness to extend such loans. Consequently, regional economies must urgently develop debt and equity facilities able to finance large, long term infrastructure investments that generate domestic currency revenue streams.

Many East Asian governments encourage private sector infrastructure investment in order to overcome public sector funding shortfalls. However, by taking on the commercial risk in contracts with private sector providers, they may actually expose their budgets to significant contingent liabilities, making their objective illusive. For example, electricity authorities in Indonesia and the Philippines face massive financial obligations to meet take-or-pay power purchase agreements denominated in US dollars now their currencies have depreciated significantly. On the other hand, relatively few private infrastructure projects have reached closure, partly because private investors and lenders believe the risks they bear are unacceptably high. Recent developments in the region reinforce investor caution; for example, whether governments will be able to honour their assurances to independent power producers.

This chapter analyses major factors inhibiting project financing and the mechanisms for unbundling, allocating and managing risk, a vital process in successfully mobilising capital.

FINANCIAL SECTOR DEVELOPMENT

The inability of most local financial markets to raise sufficient capital for large, long term projects significantly constrains Asia's infrastructure development. This problem is due partly to inadequate domestic finance, despite high savings rates in many East Asian economies, as viable manufacturing, service and infrastructure projects demand large investments. For example, in 1997, the Philippine Minister of Finance estimated that over the following three to five years, Philippine infrastructure requirements would be from US$8 billion to $13 billion per year, while total Philippine savings in 1996 were only US$12 billion (East Asia Analytical Unit, 1998).

In addition, slow progress in regulatory, prudential and institutional reform also impedes the development of many financial products and funding sources, including insurance and pension funds, and security and bond markets. In most East Asian economies the great majority of savings are held in short term bank deposits and are ill suited to financing long term infrastructure investment.

Limited recourse or non-recourse financing for once-off build, operate and transfer (BOT) or build, own and operate (BOO) schemes still represent the bulk of new private sector infrastructure investment. Recent developments in private infrastructure financing include:

- infrastructure financing businesses
- infrastructure investment funds
- public equity listings
- corporate bond issues and securitisation.

Increasingly these funds supplement more traditional financing sources:

- private domestic and foreign equity investment
- long term loans syndicated through domestic and foreign commercial banks
- equity and conditional guarantees by multilateral banks, World Bank and the Asian Development Bank, and bilateral development agencies
- credits from equipment suppliers during construction and early operation phases of projects, often via foreign government export credit agencies
- government contributions through guarantees, including of input availability and output purchases, equity and contributions in kind, including project land. (See the section on Risk Identification and Allocation later in the chapter.)

Deepening and broadening all these funding sources, by removing inappropriate constraints, developing legal structures and strengthening regulatory oversight is essential to reinvigorate private sector infrastructure provision in the region. The following discussion analyses recent developments and major issues regarding each of these funding sources, particularly since the onset of the financial crisis.

Infrastructure Businesses

The number of specialised infrastructure businesses has grown significantly in the last decade. The traditional infrastructure businesses include European and US water and power utilities, and more recently privatised utilities from the United Kingdom and Australia. In recent years a number of Asian firms have grown to be major players in the region's infrastructure development. Hong Kong is the base for a number of firms investing in concessions in China and the region (Table 4.1).

Some infrastructure companies with a credible track record in developing economies have accessed international capital markets through both equity and bond issues. Compania de Telefonos de Chile, for example, issued equity on the New York Stock Exchange while the Subic Bay power plant in the Philippines, 50 per cent owned by Enron, issued bonds in the USA worth US$105 million. The AES Corporation (USA) and Hopewell Holdings (Hong Kong) raised equity through public offerings through subsidiaries to invest in Asian power markets (Anayiotos, 1994).

Table 4.1

Asian Firms Major Players in Infrastructure

Examples of Infrastructure Businesses

Economy	Business
Hong Kong and China	AES (China) Generating Company
	Cheung Kong Infrastructure Limited
	The China Water Company Limited
	CITIC Pacific
	Henderson / Hong Kong China Gas
	Hopewell
	Huaneng International
	Hong Kong International Terminals
	Road King Infrastructure Limited
	New China Hong Kong Group
	New World Infrastructure
	Pacific Century Group
	Pacific Ports Company
Malaysia	Puncak Niaga
	Renong / PLUS
	Sikap
	YTL
Indonesia	Bukaka Technik
	Citra Bimantara
Thailand	Bangkok Expressway Public Company Limited
	Charkarn Chang Group / Bangkok Expressway
	Charoen Pokphand / Telecom Asia
	Kumagai-Thai Consortium / Bangkok Second Stage Expressway
	Shinawatra Telecommunications
	Tanyong Group / Bangkok Transit
Philippines	Ayala / Manila Water Company (East)
	Benpress / Manila Water Services (West)
	California Energy / CE Casecnan Water and Energy Corporation
	CEPA / Philippine Power Company
	Meralco
	San Miguel / International Container Terminals
Australia	Transfield Pty Ltd
	Transurban
	Hills Motorway Group
	P&O Ports
	BHP Power
	Energy Equity
	Lend Lease
	Leighton Holdings

Source: Ferrigno, 1996, updated by East Asia Analytical Unit.

Since 1994, several local and foreign sponsored infrastructure businesses in China have used international equity listings to raise finance. These include for the Guangdong Provincial Expressway (1996) and the Chengdu-Mianyiang Expressway (1994). A number of Chinese and Hong Kong firms have managed successful international equity issues on the New York and Hong Kong Stock Exchanges (Table 4.2).

Since the onset of the Asian financial crisis, several infrastructure businesses have postponed major projects and their shares have suffered in volatile share markets. For example, Hopewell has pulled out of its planned urban transit project in Bangkok and its shares on the Hong Kong Stock Exchange have fallen significantly. Red chip Chinese infrastructure businesses listed on the Hong Kong Exchange have also suffered heavy write downs. Several infrastructure companies have been placed on negative credit watches by credit agencies. These developments may indicate investors are reassessing negatively the risks of long term infrastructure investments in Asia. Investors may well require higher returns on their equity in future, raising the cost of financing private infrastructure projects, unless governments can act decisively to reduce investors' risk perceptions.

Table 4.2

China Taps Private Funding for Major Infrastructure Projects

International Equity Issues by Chinese Infrastructure Businesses

Year	Company	Listing	Amount (estimate)
1994	Shandong Huaneng Power Development	New York	US$333 million
	Huaneng Power International	New York	US$625 million
	Chengdu Telecommunications Cable	Hong Kong	US$58 million
1996	Guangshen Railway	New York,	US$473 million
	Road King Infrastructure	Hong Kong	US$152 million
	Guangdong Provincial Expressway Development Company	Shenzen	US$62 million
	Anhui Expressway Company	Hong Kong	US$100 million
1997	Shenzen Expressway Company	Hong Kong	US$150 million

Source: Kumar et al, 1997.

THE ASIAN INFRASTRUCTURE FUND

The Asian Infrastructure Fund, a US$779.5 million equity fund, invests in high-growth private utility companies throughout Asia. Initial closing of the fund was on 10 November 1994, second closing was on 10 November 1995 and final closing was on 31 January 1996.

The fund's initial investors were AMP Asset Management, Frank Russell Company of the USA, the International Finance Corporation, the private sector investment arm of the World Bank group, the Asian Development Bank and the Asian Infrastructure Development Fund, a member of the Quantum Group of Funds which Soros Fund Management advise. Subsequent investors were the Williams Company, Lend Lease, and Hyder. Both small and large firms invest, with their investment ranging from US$5 million to $75 million. Funds are sourced from insurance companies, pension funds, banking institutions, utilities companies and other investment funds.

The fund engages in strategic partnerships as a minority financial partner with leading local and international investors, aiming to develop businesses into locally or internationally listed utility companies. The fund focuses on opportunities where, in addition to its equity contribution, it can add significant value to its portfolio companies by advising ventures in which the fund invests, raising loan capital, bringing in additional risk capital and introducing network partners to local ventures to give them regional scope.

By 1998, the Asian Infrastructure Fund had thirteen infrastructure investments in China, Hong Kong, Philippines, Indonesia, India and Pakistan. Of these, two are in power (15 per cent of investments), four in transport (39 per cent) and seven in telecommunications (46 per cent). Investments are primarily start-up projects but include some existing firms.

Source: Asian Infrastructure Fund Advisers Limited, 1998.

Infrastructure Equity Funds

Infrastructure equity funds are a relatively new development, encouraging international and domestic institutional investors to invest in long term infrastructure portfolios by diversifying and reducing risk, and reducing due diligence costs. Risk pooling and providing long term capital to private firms are two key features characterising the increasing number of Asian infrastructure equity funds (Table 4.3). The funds are usually set up as limited partnerships or trust companies. The two largest funds are the AIG Asian Infrastructure Fund and the Asian Infrastructure Fund.

Like infrastructure businesses, the value of Asian infrastructure investment funds' units have suffered heavily since the onset of the crisis. While this in part reflects general sharemarket volatility, some more fundamental reassessment of risks may also explain these falls. Once again, the long run outcome is likely to be higher costs to implement future infrastructure projects, unless governments seriously tackle the legal, regulatory, and transparency issues which are raising investors risk perceptions.

Table 4.3

Spreading Risk and Capital

Selection of International Infrastructure Investment Funds Investing in Asian Economies

Fund (manager)	Core investors		Investment targets
AIG Asian Infrastructure Fund (AIG Asian Infrastructure Management Company Limited)	American International Group, Government of Singapore Investment Corporation, Bechtel Enterprises	Region Sectors Size	Asia Pacific (35 to 50 per cent in China) Power, telecommunications and transport Fund I - US$1.5 - $2 billion Fund II - US$1.5 - $2 billion
The Asian Infrastructure Fund (Asia Infrastructure Fund Management Company Limited)	Soros Fund Management, Frank Russell Company, International Finance Corporation	Region Sectors Size	Asia (40 per cent in China) Power, telecommunications, transport, natural resources, environmental services and petrochemicals Fund I - US$1 - $1.2 billion
Global Power Investments Company, LP (Global Power Investments)	Asian Development Bank, GE Capital Corporation, Soros Fund Management	Region Sectors Size	Global emerging markets Power US$0.5 - $2 billion
Asian Infrastructure Development Company (AIDEC)	Asian Development Bank, Overseas Economic Cooperation Fund (Japan), Jexim (Japan), Government of Singapore Investment Company, a number of Japanese life insurance companies, banks and conglomerates	Region Sectors Size	Asia na US$400 million
Asian Mezzanine Infrastructure Fund	Credit Lyonnaise, Caisse des Depots et Consignations, IFC, US pension fund TIAA-CREF and Mitsui Trust and Banking Company	Region Sectors Size	Asia na US$450 million (targeted)
Asia Equity Infrastructure Fund	Caisse de Depot et Placement du Quebec, Asian Development Bank	Region Sectors Size	Asia Ports, power, telecommunications, water, waste water, roads, rail US$400 million (targeted)
Australian Infrastructure Fund (Hastings Funds Management)	Colonial Mutual, Development Australia Superannuation Fund	Region Sectors Size	Australia, New Zealand All infrastructure sectors, current investments in airports, tollroads, light rail, telecommunications, power and gas. $290 million

Table 4.3 (Cont.)

Fund (manager)	Core investors		Investment targets
Utilities Trust of Australia (Hastings Funds Management)	Australian superannuation funds	Region Sectors Size	Australia All infrastructure sectors, current investments in airports, tollroads, light rail, telecommunications and power $265 million
Infratil Australia Limited (HRL Morrison and Co (Australia) Pty Ltd)	Queensland Investment Corporation, National Australia Bank, Mercantile Mutual	Region Sectors Size	Australia All infrastructure sectors, current investments in airports, electricity, ports, gas, rail and tollroads $330 million
Infrastructure Trust of Australia (Macquarie Bank)	Australian banks and life insurance companies.	Region Sectors Size	Australia, offshore (limited to 20 per cent) All infrastructure sectors, current investments in roads and power $600 million

Source: Anayiotos, 1994; and Ferrigno, 1996, updated by East Asia Analytical Unit.

Public Equity Markets

Traditionally, the perceived risks associated with infrastructure projects and extended time required for returns on investments meant infrastructure project companies were not listed on stock exchanges. However, Malaysia, Singapore, Thailand, the Philippines and Hong Kong responded to the need for infrastructure funding by allowing infrastructure companies to more easily list on public equity markets. Prior to the financial crisis, project sponsors were increasingly using this avenue to raise capital. Examples included New World Infrastructure Limited and Road King Infrastructure Limited listing on the Hong Kong Stock Exchange and Powertek Berhad listing on the Malaysian Stock Exchange. By 1997, ten infrastructure projects were listed on the Philippine stock exchange (Yulo, 1997).

Stock exchange listing rules in Malaysia, Singapore, Thailand and Hong Kong

Because they are regional financial centres, Hong Kong and Singapore have neutral listing rules on project ownership and location, imposing no minimum requirement for nationals to hold shares. In Malaysia and Thailand, residents must hold a prescribed minimum of the project company's paid up capital, 51 per cent in Malaysia and variable levels depending on foreign ownership requirements in Thailand. (See Chapter 3 – *Law and Regulation.*)

The listing rules of all four economies require minimum concession periods remain on infrastructure projects at the time of listing; 20 years in Thailand, 18 years in Malaysia and 15 years in Singapore and Hong Kong, although Singapore and Malaysia permit shorter periods in certain circumstances. In Singapore and Malaysia project sponsors must retain a specified minimum ownership until certain profit requirements are met. The listing rules of all four economies impose minimum capital and project cost requirements (Table 4.4).

Table 4.4

Meeting Minimum Capital Requirements

Capital and Project Cost Requirements for Public Listing by Economy

	Singapore	Hong Kong	Malaysia	Thailand
Minimum capital	S$30 million	'substantial size'	RM40 million	Bt750 million
Minimum project costs	S$300 million	HK$1 billion	RM500 million	Bt2 billion - 10 billion
US dollar equivalent	$184 million	$128 million	$131 million	$53 million - $265 million

Source: Dyer and Harvey-Samuel, 1997.

Equity markets in other East Asian economies

In September 1997, Indonesia lifted the limit on foreign ownership of new stock market listings from 49 per cent to 100 per cent. Similarly, the Republic of Korea removed all limits on foreign ownership of stock (previously the limit was 26 per cent) and removed the prohibition on hostile foreign takeovers.

The Philippine Stock Exchange has created a special board for infrastructure on which foreign or local sponsors of infrastructure projects can list (Yulo, 1997). In 1998, it amended the rules for infrastructure project public listings; companies with at least three years of profitable trading and experience in handling build, operate and transfer contracts with the government can list. Firms must have cumulative consolidated pre-tax profits of at least P50 million (US$1.16 million) or a minimum pre-tax profit of P10 million (US$232 000) for each of those three years (*Asian Infrastructure Monthly*, July 1998).

New initial public offers for infrastructure and other projects have slowed significantly since the onset of the crisis. To ensure investors return to infrastructure shares after the crisis, it will be important for governments to strengthen prudential controls to prevent insider trading and increase companies' accountability to shareholders.

LISTING INFRASTRUCTURE PROJECT COMPANIES ON THE KUALA LUMPUR STOCK EXCHANGE

The domestic capital market is a major funding source for Malaysian infrastructure. Publicly listed infrastructure companies can raise funds from the Kuala Lumpur Stock Exchange by rights issues. To encourage capital market participation in financing infrastructure projects, the Securities Commission Act allows infrastructure companies to list on the Kuala Lumpur Exchange without meeting the usual requirements of a track record which apply to initial public offerings. Key provisions relating to infrastructure project companies are:

- a qualifying company must guide and/or operate infrastructure projects with a total investment of at least RM500 million
- the company must have strong cashflow projections to generate returns to shareholders
- the company must have a concession awarded by the government or state government agencies
- the company must have at least 18 years left on its concession.

Source: Naidu, 1997.

Corporate Bond Markets

Institutional investors prefer to invest in infrastructure through bond issues rather than direct debt. In developed economies, the major source of debt finance for infrastructure is from institutional investors purchasing municipal bonds in infrastructure projects, then trading them in secondary capital markets. Bonds also can be traded in international secondary markets, so investors can deal flexibly with volatile capital market trends. In future, integrating infrastructure based debt instruments with retail capital markets and institutional investors should provide the main source of reliable financial resources for new Asian infrastructure developments.

In the mid 1990s, Asian bond markets grew rapidly, although from a low base. They offered infrastructure projects opportunities for debt finance to replace or supplement international or domestic commercial bank borrowing. Until mid 1997, the number and value of Malaysian, Thai and Indonesian corporate bond issues for infrastructure projects increased dramatically. At the end of 1997, Malaysia had more than RM8 billion (US$2 billion) of outstanding infrastructure bonds, RM3.3 billion of which was for the new Kuala Lumpur International Airport (*Project Finance International*, 25 March 1998).

However, in developed and developing markets, retail corporate bond market development usually lags behind that of equity markets. In the USA, 45 per cent of company funds now come from the corporate bond market, while in developing Asia, less than 1 per cent come from bond issues (Expert Group on the Commercialisation of Infrastructure Projects, 1996).

Where local corporate bond markets exist, they typically have only a few players and therefore are very thin. Markets may be little more than telephone markets, where settlement is carried out physically. Often no single system or agency obtains

information on all trades. For example, in India the first formal debt trading system, NSE, was not established until June 1994. Vietnam has neither a market for shares nor bonds, although its stock exchange is scheduled to open in early 1999.

Lack of investor confidence in financial market prudential controls and corporate accounting practices constrain the development of long term corporate bond markets and equity markets in East Asia (East Asia Analytical Unit, forthcoming). This creates a bias towards short term savings vehicles, particularly bank call deposits, where capital is implicitly or explicitly government guaranteed. Local pension fund and life insurance company investment in corporate bonds is limited by regulation in several economies, particularly Vietnam and China. This restriction reflects official recognition that such markets are still very risky, mainly because of inadequate disclosure and regulation.

Other constraints on bond market development include the lack of liquid secondary markets and benchmark bonds, such as long term government securities, due to generally tight fiscal policies in many countries. Most developing economies also lack a large institutional investor base to buy corporate bonds and suffer from uncertainty about the outlook for inflation.

Before the financial crisis, infrastructure project sponsors often could issue infrastructure bonds on international markets, which generally were liquid and well able to support new bond issues. However, overseas financing exposes projects to foreign exchange risk so this source should complement, rather than replace, local capital markets. Generally, foreign exchange financing should be matched by foreign exchange revenue flows, either from international sales (of electricity or telecoms services), by foreign exchange hedging or government take-or-pay contracts in foreign currency.

Since late 1997, steep increases in interest rates and numerous local currency bond defaults have meant domestic and international investors only consider bonds issued with explicit government guarantees as creditworthy, and even some of these have slipped below investment grade. New corporate bond issues have almost completely halted and many projects have been deferred until financing conditions improve. However, state-owned enterprises such as Thailand's electricity generating authority, EGAT, and the Metropolitan Rapid Transit Authority have successfully issued bonds with Thai Ministry of Finance guarantees. Investor 'flight to quality' and in some cases, limited ability of government to honour guarantees will result in only highly prospective infrastructure projects having access to bond financing in the near term. Confidence may not return to bond markets without government efforts to strengthen financial market prudential controls and corporate accounting practices, inter alia.

Institutional Investors

Because of its longer term nature, infrastructure debt best suits institutional investors such as pension funds and life insurance companies. Savings in these institutions have longer maturities and their funds do not need to be as liquid as term deposit funds. However, institutional investors are highly risk averse. As such, institutional investors require the most stringent guarantees and contractual obligations in project financing. Involving these lenders tends to increase project success rates but lengthens negotiation processes. (See Chapter 1 – *Infrastructure Needs*.)

Development of pension and insurance markets has lagged in many developing Asian markets but average incomes in developing East Asia are now reaching levels where many households wish to obtain life and other insurance cover. Pension and insurance market development, including foreign participation, is also receiving greater official priority. Large international companies provide the extensive capital backing and expertise necessary to increase households' confidence in these savings products, at least until credible, experienced local firms emerge. For example, the Philippines has removed most restrictions on foreign participation in its insurance sector, although firms must import P100 million to P300 million (US$2.3 million to $7 million) in capital to commence operations (MacKay, 1998). China has now issued licences to seven foreign insurance companies and Thailand has many new joint venture insurance companies. Further encouragement of long term saving vehicles through institutional investors is crucial to private infrastructure financing.

Securitisation

Securitisation is a promising financial technique for Asian infrastructure finance, involving the repackaging of receivables that have a predictable and regular cash flow into tradeable securities. Securitisation allows infrastructure businesses to raise funds by selling the rights to the future revenue stream from projects they own. The technique provides access to new sources of capital because the obligation to pay is backed by receivables and not aggregated with the general market risk of the company. As a result, the security can receive a higher credit rating than the company offering it, an important feature during the financial crisis. This funding source also is well matched to infrastructure investments, providing long term funding for long term assets and receivables.

THE ZHUHAI HIGHWAY PROJECT – ASIA'S FIRST INFRASTRUCTURE SECURITISATION

In August 1996, the Zhuhai Highway Company completed a US$200 million bond offering to fund railways, highways and bridge projects in the southern Chinese city of Zhuhai. The bonds were China's first high-yield bond issue and Asia's first example of securitisation. Zhuhai Highway Company has rights to operate and manage the Zhuhai highway, completed in 1993. It levies a toll on the highway and also collects a portion of annual fees on registered cars in the city, reducing the risk that lower than forecast user numbers would undermine the tollroad's viability. This contracted revenue stream underpinned the bond issue.

Daily revenue receipts are deposited in a designated escrow style trust account, from which periodical payments are made offshore in US dollars to repay principal and interest on the bond issues. Zhuhai Highway Company cannot withdraw funds from the trust account until the balance covers debt and other reserve obligations. Consistent with its recent policy stance, the Chinese Government and the local authority have not guaranteed debt repayment. Usage fees and tolls are automatically adjusted through a contract formula, taking account of devaluation. The bond issues were assigned credit ratings by Standard & Poor's and Moody's.

Securitisation has been used for some time in the USA and Europe but only recently has been employed in Asia. This is because securitisation requires sophisticated systems and information technology capabilities to manage the portfolio of receivables and at least three to five years of historical performance data. High transactions costs make it efficient only for large projects. In Asia, securitisation has been used for Philippines Airlines ticket receivables, Bank Internasional Indonesia's international credit card settlements and in China with the issue of US$200 million worth of international bonds to finance urban transport investments in the southern Chinese city of Zhuhai.

Direct Foreign Investment

Local equity participation and foreign direct investment are traditional forms of private infrastructure financing. Developing economies often have relatively undeveloped capital markets and a shortage of accessible domestic savings. In these circumstances, foreign direct investment in infrastructure equity by multinationals, in addition to loans from international infrastructure funds and commercial banks, provide an important source of finance and increase risk diversification. Foreign direct investment in infrastructure also facilitates transfer of financial, managerial and technical skills, and provides impetus to develop local private infrastructure companies and local capital markets.

However, some East Asian economies have legal and constitutional restrictions on foreign direct investment in all or selected infrastructure sectors and land, which inhibit investment flows. (See Chapter 3 – *Law and Regulation*.) This may constrain infrastructure development, as few domestic firms may be large enough to undertake major projects.

Long Term Bank Lending

Debt finance is the major source of funding for infrastructure projects, and typically accounts for two thirds of total capital contributions to a project. Lack of long term debt imposes a significant constraint on private sector infrastructure provision (World Bank, 1995, p. 15).

Commercial banks generally cannot provide all finance required by large infrastructure projects because of restrictions on their allowable exposure to individual borrowers. Syndicated loans with a number of banks providing loan facilities for a single project can overcome these restrictions, although such syndications are complex and time consuming to negotiate.

A further difficulty with direct lending to infrastructure projects from commercial banks is the long term nature of investments, often 15 years or more. Because of their deposit structures, banks find it difficult to lend to unsecured projects for longer than 12 years. The longest international commercial bank loans are seven to 12 years; in developing economies, terms are usually shorter. For example, in India term debt is five to seven years (Expert Group on the Commercialisation of Infrastructure Projects, 1996, p. 68). Multilateral bank credit guarantees on the latter part of long term loans help overcome this problem, by increasing bank willingness to extend longer term loans. (See discussion of risk guarantees in following section.)

Multilateral Development Banks

The World Bank Group[1] and the Asian Development Bank, ADB, for many years have played a prominent role in assisting the financing of Asian infrastructure projects. One goal of the World Bank is to maximise the amount of private sector financing which accompanies bank involvement in projects. To this end, the World Bank Group has underwritten political and even commercial risk in infrastructure projects, particularly in less developed Asian economies.

The World Bank and ADB also play a key role in assisting Asian economies to improve their regulatory environment to promote private infrastructure development. For example, for over five years the World Bank has seconded staff and consultants to assist the Philippine Government develop and implement laws to promote private investment in Philippine infrastructure.

To harness the dynamism of private capital, the World Bank has established various institutions and programs to facilitate private sector financing in member economies, including the International Finance Corporation and Multilateral Investment Guarantee Agency. These contribute equity in private projects and provide sovereign and commercial risk guarantees. The innovative risk guarantee mechanisms these institutions employ to mobilise private capital for infrastructure development are discussed in the section, Mechanisms to Reduce and Spread Risk.

One of the primary mechanisms employed by the ADB to encourage private sector involvement in infrastructure financing, construction and operations[2] is Asian Finance and Investment Corporation. Established in 1989, the corporation supports private sector development in infrastructure and other sectors with underwriting, syndication and other merchant banking services normally outside the ADB's scope. The ADB's Private Sector Group oversees several private sector infrastructure investment funds and helps to syndicate lenders. The Private Sector Group and its World Bank equivalent help mitigate private lenders' risk perceptions by taking equity positions in major infrastructure projects including BOO and BOT projects. The presence of international financial institutions reduces lenders' concerns regarding sovereign risk, as they consider governments are unlikely to unilaterally change conditions applying to these projects.

Export Credit Agencies

Infrastructure projects often require imported capital equipment so trade credits or loan guarantees from export credit agencies have played an important part in many project finance packages. Export credit agencies provide direct credit and credit enhancement products. In return they charge premiums or guarantee fees to compensate for potential losses. Guarantees may be for commercial risk, political risk or both. Often political

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1 The World Bank Group includes the International Bank for Reconstruction and Development, IBRD, the International Development Agency, IDA, and the bank's commercial arm, the International Finance Corporation, IFC.

2 The ADB's new approach to private sector involvement in infrastructure development is summarised in *Private Sector Development: Strategy, Policies, Modalities (*www.asiandevbank.org/private/private.html).

THE INTERNATIONAL FINANCIAL CORPORATION, IFC

Today the IFC is the largest multilateral source of loan and equity financing for private sector projects in the developing world. The IFC finances and provides advice for private sector ventures and projects in developing economies in partnership with private investors. Through its advisory work it helps governments create conditions that stimulate the flow of both domestic and foreign private savings and investment. It focuses on promoting economic development by encouraging the growth of productive enterprises and efficient capital markets in its member economies. The IFC participates in projects only when its contribution complements the role of market operators. It also acts as a catalyst, stimulating and mobilising private investment in developing economies by demonstrating that investments there can be profitable. Since its founding in 1956, the IFC has provided more than $18.8 billion in financing for 1 706 companies in 125 developing economies.

The IFC coordinates its activities with the other institutions in the World Bank Group — the International Bank for Reconstruction and Development, the International Development Association and the Multilateral Investment Guarantee Agency. However, it is legally and financially independent, with its own Articles of Agreement, shareholders, financial structure, management and staff. Its 172 member economies provide share capital and collectively determine its policies and activities. Strong shareholder support and a substantial paid-in capital base allow the IFC to raise most funds for its lending activities through its triple-A rated bond issues in international financial markets.

Source: International Finance Corporation, 1998.

risks are offset by sovereign counter-guarantees requested from the host country. Most agencies now have set up project finance departments to handle the increase in the number of project finance deals which they are asked to support.

When infrastructure development resumes in Asia, capital markets and commercial sources of funding, which had been at the forefront of financing in the mid 1990s, will, at least initially, approach projects in Asia with a degree of caution. Country and project limits will be lower, the term of loans shorter, and pricing higher. In the interim, new projects will have more support from export credit agencies.

Other Financial Market Issues

A broad and complex range of policy issues must be tackled by developing regional economies to further develop their local capital markets, including better enforcement of prudential controls and corporate accountability (East Asia Analytical Unit, forthcoming). Two issues of particular importance to private infrastructure financing are the role of credit rating agencies and taxation policies.

Credit rating agencies

A prerequisite to developing long term debt instruments to fund infrastructure projects is improving the credit rating capabilities of developing economies. Credible credit rating agencies provide lenders with a consistent basis for assessing project risk, and can improve project liquidity and financing efficiency. Bonds cannot be issued in major capital markets without such ratings.

Internationally recognised agencies, Standard & Poor's and Moody's, both began operating in Asia in 1994. However, ratings in the Asian region are affected substantially by close links between business and political interests, generally lower levels of disclosure compared to many western economies and often highly complex inter-linkages within business structures. These factors make it difficult to assess accurately the cost of credit and determine the value of ratings. In addition, the availability of political risk cover may affect the cost of credit.

Prior to the Asian financial crisis, some regional commentators compared the performance of Asian economies and double-A rated western economies, and criticised Standard & Poor's and Moody's for emphasising political risk factors in the Asian region. However, events post July 1997 have refocussed investor attention on political and exchange rate risks.

Several East Asian economies have established domestic rating agencies, including the Thai Rating and Information Services, the Philippine Credit Information Bureau Inc. and PEFINDO in Indonesia. However, these agencies are relatively new and will require several years of credible performance before they gain recognition for their expertise.

Taxation incentives

In a globally competitive economy, high rates of sales tax on equipment and income tax on profits can reduce investment levels, particularly foreign investment. Foreign investors in infrastructure projects often face complex domestic tax laws that generate high effective tax rates on otherwise lucrative projects. For example, in Indonesia, taxation costs in infrastructure projects may escalate due to VAT exposure because investors cannot recoup VAT as a tax deduction.

Since the 1980s, regional governments have attracted foreign investors to export-oriented industries by providing tax holidays from complex and onerous tax regimes (World Bank, 1993, p. 140). More recently, similar waivers have been granted in infrastructure sectors such as power (Table 4.5).

Specific legislation may grant tax and financial incentives for all approved private infrastructure projects. For example, the Vietnam BOT law provides for preferential tax treatment; the right to open a bank account in a foreign country, subject to the approval of the State Bank of Vietnam; and the ability to convert income received by the BOT company into foreign currency.[3]

[3] Decree No. 62-1998-ND-CP, August 1998.

Table 4.5

Infrastructure Receives Major Tax Breaks

Income Tax and Tariff Incentives for Investors in Private Power in Selected East Asian Economies

	Indonesia	Philippines	Thailand
Income tax	No special treatment, except for geothermal projects	6 year tax holiday	3 to 5 year tax holiday (8 years in special cases); accelerated depreciation
Import duties on capital equipment	Total exemption; VAT and sales taxes deferred until plant operational	Total exemption; simplified import procedures; tax exemption also applies to spare parts and supplies	50 per cent exemption, 100 per cent in some areas

Source: International Energy Agency, 1997.

However, in some economies, complex rules on exemptions can make the process of applying for investment licences difficult and increase opportunities for official corruption. For example, in Indonesia, companies investing in infrastructure sectors like telecommunications may be exempt from import duties, but regulations regarding exempt entities are not clear cut and must be approved project by project. Local tax advisers usually need to clarify each case, delaying the implementation of projects.[4]

To avoid problems inherent in firm-specific incentives, the Thai Government moved towards more automatic sectorally based incentives for export-oriented industries in the mid 1980s, after advice from a UNDP — World Bank Technical Assistance Project (World Bank, 1993, p. 141). The Thai Board of Investment grants generous tax holidays and duty exemptions on imported equipment to priority projects, including infrastructure projects. Similarly, the BOT law in the Philippines makes eligibility for tax and customs exemptions in infrastructure sectors more automatic and sectorally based. This approach could usefully be applied to infrastructure investment incentives in other economies.

Future Prospects for Financial Market Development

In the long term, developing East Asian economies will have to rely more on domestic capital markets and less on international bond issues and borrowing to fund local infrastructure investments. Most private infrastructure investment in developed economies comes from domestic markets and developing and deepening long term domestic markets should be a high priority, medium to long term goal of

[4] Exemptions are granted through a Master List of equipment to be imported, compiled by project sponsors and approved by the Capital Investment Board, SKPM, and their consultants, Sucofindo. Sucofindo has stringent requirements regarding the form and content of lists, which must be in place before any imports come into the country and are difficult to amend once approved.

developing regional economies. Payments for infrastructure services are made in local currencies and, except electricity and telecommunications, output generally is not traded across borders. Therefore, financiers depending on international capital markets are exposed to foreign exchange, sovereign and capital repatriation risk. For their part, governments will be less willing to provide tariff formulas linked to foreign currency movements, because of contingent liabilities incurred and for investors, the political risks of governments wishing to re-negotiate tariff agreements are considerable if exchange rates shift dramatically. The Asian financial crisis has contracted markedly the liquidity of domestic debt markets, forcing the deferral of many infrastructure projects.

Australian legal, financial and infrastructure firms consulted in the course of this study stressed Asian economies need to concentrate more on developing their own capital markets. While saving rates are typically high in East Asian economies, finance generally is not available on long term maturities. Achieving a deeper market for local finance requires more domestic savings be channelled through trusted institutions, and this in turn requires improving legal and prudential requirements and guidelines for local institutions to protect and build the confidence of local savers. A total package is needed, including improved institutional skills, appropriate regulatory structures and more credible implementation of prudential controls.

RISK IDENTIFICATION AND ALLOCATION

Gaps in perceptions about risks and who should bear them are a key reason for delays in mobilising private sponsorship and funding infrastructure investments (World Bank, 1995). Often government utilities inadequately perceive and understand the commercial and sovereign risks involved in private sector projects. Private sector sponsors usually reject projects with a marginal 10 to 12 per cent rate of return, yet public utilities consider these viable. Because private sponsors factor in potential delays, bidding and negotiation costs, foreign exchange risks and uncertainties about demand and government regulations, they require rates of return of 20 to 30 per cent or more to ensure they receive a 10 to 15 per cent return, after tax. To reduce the high rates of return private sponsors require, governments need to reduce risks over which they have control (Table 4.6).

For their part, private sector investors and particular institutional lenders also need reasonable expectations. In the long term, they cannot expect governments to bear an unacceptable share of commercial risks, by guaranteeing input and output prices and purchase volumes. In approving tariffs, governments must assess what charges are associated with a legitimate level of return and what are simply a negotiating ploy. However, this is especially difficult when officials are unfamiliar with competitive tendering processes and poorly understand project risk profiles, capital market processes and market pricing.

Risk Matrices

Sound project design requires an expert team to carefully analyse all risks and then design contracts that allocate risk burdens, identify regulatory requirements and define required scopes of works *before* competitive tendering begins. If risk is not clearly allocated, bids will either be unrealistic and subject to later renegotiation or involve unnecessarily high bid prices.

Allocating risks according to the comparative advantage of the different contract parties, government authorities and project sponsors, minimises and manages risks. For example, in the water supply sector, the private sector has a proven advantage in managing construction, water loss, water treatment volume and most commercial risks, while government agencies typically best manage sovereign, bulk supply, upstream discharge and environmental risks.

Risk matrices allocate risks in private sector government contractual partnerships (Table 4.6). Private sector risks are shared among:

- the project company or sponsor
- design and construction contractors
- operations and maintenance contractors
- insurers
- investor shareholders
- banks
- institutional lenders.

By contrast, in a public sector model typically involving a vertically integrated public utility, government bears most specified risks.

Many East Asian governments are not fully aware of the need for credible risk sharing models that will expose private sponsors to risks commensurate with expected returns. Failure to address this issue has delayed or prevented closure of many infrastructure projects.

For example, as most infrastructure user charges are denominated in domestic currency, exchange rate risks are high for foreign financed infrastructure projects. Perceptions of such risk increased dramatically after regional currencies devalued significantly in mid 1997. Hedging foreign currency loans usually is not an option for foreign investors in infrastructure, due to the long term nature of infrastructure borrowing requirements. Only a few infrastructure projects, like international telecommunication sales, electricity sold across borders and possibly wharfage charges, will generate foreign revenue that creates a natural hedge for foreign borrowing.[5] Hence, private sponsors need to develop risk mitigation strategies to make projects bankable.

[5] However, the appropriate governmental response to increased foreign exchange risk is to develop regulatory frameworks that promote domestic financing sources for infrastructure, rather than impose restrictions on foreign capital movements.

Table 4.6

Private Sector Bears Most Risks under Its Control

Model of Risk Allocation for New Private-Public Cooperation Infrastructure Investments

Type of risk	Source of risk	Risk taken by
Design/development risk	Fault in tender specifications	Government
	Contractor design fault	Design contractor
Construction risk		
Cost overrun	Inefficient work practices and wastage of materials	Construction contractor
	Changes in law, delays in approval etc	Project company/investors
Delay in completion	Lack of coordination of contractors, failure to obtain standard planning approvals	Construction contractor
	Insured force majeure events	Insurer
	Failure to grant contractual landuse rights or rights of way	Government
Failure to meet performance criteria	Quality shortfall/defects in construction	Construction contractor
Operating risk		
Operating cost overrun	Project company request for change in practice	Project company/investors
	Industrial relations, repairs, occupational health and safety, maintenance, other costs	Operator
	Government change to licence conditions	Government
Delays or interruption in operation	Operator fault	Operator
	Government delays in granting or renewing approvals, providing contracted inputs	Government
Shortfall in service quality	Operator fault	Operator
	Project company fault	Project company/investors
Revenue risk		
Increase in input prices	Contractual violations by government-owned monopoly supplier	Government
	Contractual violations by private supplier	Private supplier
	Other	Project company/investors
Changes in tariffs	Fall in revenue	Project company/investors
Demand for output	Decreased demand	Project company/investors

Table 4.6 (Cont.)

Type of risk	Source of risk	Risk taken by
Financial risks		
Exchange rates	Devaluation with insufficient hedging	Project company/investors
Foreign exchange	Non-convertibility of profits and loan payments	Government
Interest rates	Fluctuations with insufficient hedging	Project company/investors
Force majeure	Floods, earthquake, riots, strikes	Shared
Political risks		
Changes in law	Construction period	Construction contractor
	Operating period	Project company with government compensation as per contract
Political interference	Breach/cancellation of licence	Government
	Expropriation	Insurer, project company/investor
	Failure to renew approvals, discriminatory taxes, import restrictions, revocation of visas	Government
Environmental risks	Site redemption, pollution/discharge, obtaining permits, community liaison	Operating company
	Pre-existing liability	Government
Project default		Equity investors followed by banks, bond holders and institutional lenders

Source: Based on best practice models and reported examples (World Bank, 1997; and APEC Economic Committee, 1996).

Each infrastructure sector restructuring and/or privatisation has unique characteristics because of the nature of assets and differences in histories, political climate, regulatory frameworks, environmental factors and capital market situations. This usually means that while 'in principle' agreements on the appropriate framework for restructuring, private sector participation and risk allocation are useful, each contracting or tendering process has unique factors. This means that different projects require different mixes of risk mitigation strategies.

MECHANISMS TO REDUCE AND SPREAD RISK

In recent decades, governments, international development agencies, and local and foreign financial institutions have worked to develop credible mechanisms to lower infrastructure project risks including:

- structured project finance and credit from specialised financial institutions
- credit enhancement, including escrow accounts and debt subordination
- government guarantees

- multilateral development bank guarantees and equity contributions
- public-private partnerships through direct government equity support.

Structured Project Finance

Structured project financing provides a vehicle for mobilising equity and debt in infrastructure projects. Traditional approaches to investment finance often are inadequate in managing the risk characteristics and cash flow profiles of infrastructure projects. Usually, corporate investment is funded from a mixture of a company's own equity contributions and direct debt from commercial banks. If the company defaults on payments, lenders can recover their funds from the sale of company assets. The company's balance sheet provides loan security. In most instances, this cannot be the case with infrastructure investments. As the required investments are large and long term, companies usually are unwilling or unable to provide security through their own balance sheets. At the same time, project assets are frequently location, site and jurisdiction specific and have a high proportion of sunk costs irrevocably committed to the project. Lenders therefore have very limited security in the project assets.

To overcome these problems, investment banks have developed complex project financing structures for private sector infrastructure projects.[6] Under these structured financing arrangements, a project sponsor typically contributes equity of 15 to 30 per cent of the project's capital costs to a single purpose project company, often called a special purpose vehicle, set up solely to implement the project. A variety of debt instruments provide the remaining capital through loans to the project company. The sponsor's equity in the project company provides the buffer from which variations in project returns can be paid to meet fixed debt obligations. The project sponsor's exposure to development risk and equity contribution ensures commitment to the project's success.

By lending to the special purpose vehicle, lenders obtain security over the assets of the project and its potential future income stream, rather than the sponsor's balance sheet. This non-recourse financing contrasts with on-balance sheet financing where lenders have full recourse to the entire balance sheet of the sponsor, beyond its involvement in the project. Non-recourse project financing requires much closer attention to project financial forecasts and risk profiles than balance sheet financing. To increase lender confidence in the project, all cash flows are identified carefully and the finance package is structured to ensure debt obligations can be met at each project stage.

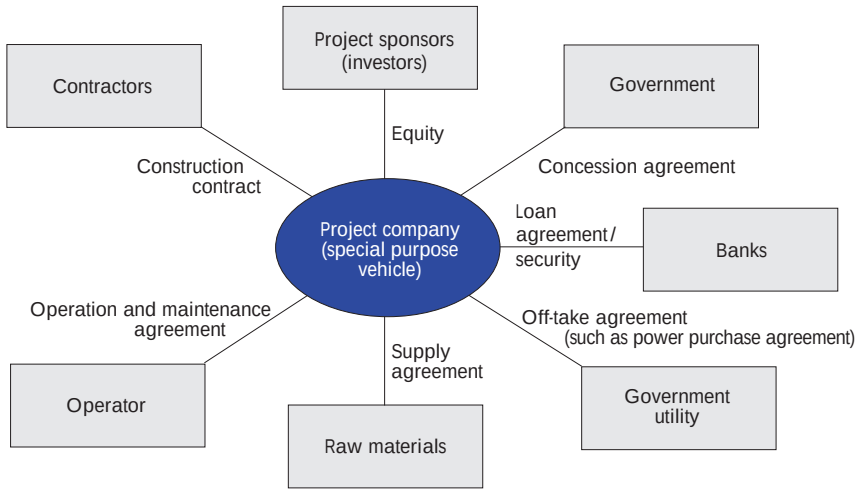
Because of the non-recourse nature of infrastructure project finance, various parties in the project must negotiate complex contracts, subcontracts and guarantees to reduce risks for lenders and provide alternative means of redress, if the project fails. These contractual arrangements carefully identify and allocate responsibilities to manage and bear project risks. The various parties can include the project sponsor, the project company or special purpose vehicle, the construction company, the eventual project operator, direct commercial and syndicated lenders, other equity holders, and the government and state-owned utility contracting with the project service provider (Figure 4.1).

[6] For more detailed descriptions of project financing structures for developing economies, see Expert Group on the Commercialisation of Infrastructure Projects, 1996, pp. 67-78.

Figure 4.1

Identifying and Allocating Responsibilities

Contractual Arrangements in a Typical Project Financing Package



Source: Tasman Asia Pacific, 1997.

Financial contracts and guarantee arrangements usually are set up after a government has selected a project sponsor, but prior to construction starting. The long time between signing a private sector infrastructure contract with the government and eventual financial closure when financing arrangements are set in place, often causes major delays to project implementation and raises project costs. Many issues must be addressed reflecting the particular circumstances of the project, its risk profile and the regulatory environment of the economy where it is located.

For large infrastructure projects, project financing transaction costs, including bid preparation and establishing financial arrangements, can range from US$5 million to $10 million (World Bank, 1995, p. 15). The financial sectors of developing East Asian economies often lack the specialised skills to establish these financing packages but specialised investment banks can provide these services, thereby reducing costs and delays.[7]

Developing country governments are responding to the need for specialist skills in arranging tenders and negotiating with bidders by hiring legal, technical and financial advisers of the same calibre as those project sponsors and lenders retain. In China, for example, provincial governments retain 'BOT project agencies' to represent them in negotiations with bidders and manage the tender process. Currently, three agencies perform this role, the Bridge of Trust Infrastructure Investment Consulting Company (agent for the Laibin B power project), Beijing BOT Investment and Development Company (agent for the Beijing-Tongxian

[7] Australian banks providing these services include Macquarie and ANZ.

expressway), and BOT International Project Development Company (agent for the Wangcheng power project). For Laibin B, the Chinese Government also hired foreign advisers; French law firm, Gide Loyrette Nouel worked on the legal requirements for the tender documents and SBC Warburg of Hong Kong was the financial adviser to Bridge of Trust (Wang et al, 1998). The Philippine Government also hired several international legal and engineering consultants to advise it on the Manila light rail project and concessions for Manila.

LAIBIN B POWER PROJECT

The US$517 million project financing for the Laibin B power project was signed in January 1998. The concession to construct and operate a 2x350 MW coal fired power plant in Guangxi province China was awarded in late 1996 to Electricité de France (60 per cent) and GEC-Alsthom (40 per cent) over five other shortlisted bidders.

The project represented several firsts. It was China's first competitively bid BOT project and its first 100 per cent foreign-owned BOT project.

Laibin B broke the mould of past project financing in China which involved considerable delays awaiting regulatory approvals from Chinese government agencies and support from export credit agencies. Financing was signed within 14 months of selecting the preferred bidder, with loan syndication taking a further three months. Financing for the project was typical non-recourse financing, with equity from project sponsors and debt from export credit agencies, multilateral development organisations and international commercial banks. *Project Finance International* rated the project 'Power deal of the year - 1997'.

Operation of the power station and associated risks lie with the project company. Fuel supply risks are shared; micro-level risks, such as over or under commitment due to dispatch and ordering breakdowns and inefficiencies, reside with project company, macro-level risks regarding availability of transport, with the Chinese authorities. The Laibin BOT charges for power under a two-part tariff: the first tier is for making a given amount of generating capacity available and covers the fixed cost of the project; the second tier is an offtake payment for electricity delivered. The tariff, although paid in yuan, is partly linked to the US dollar and ensures adequate foreign exchange cover for external fixed costs, and debt and dividend repayments. The tariff allows for future inflation and increases in fuel costs, and starts at less than US 5 cents per kwh.

Coface, the French Export Credit Agency, provided political and commercial risk cover for $300 million of the $500 million construction cost.

The return on the project is described as 'adequate, but not fantastic'. Now that the laws in China are becoming clearer and more transparent, competition is likely to be more intense and margins narrower.

Source: *Project Finance International*, 17 December 1998; *Asiamoney*, April 1998; and *Projects and Infrastructure Finance in Asia*, 1996.

Credit Enhancement Mechanisms

Banks and other commercial lending institutions active in infrastructure finance have developed a range of credit enhancement mechanisms to help reduce project risks and enhance lender confidence, including debt subordination facilities and escrow accounts. Debt subordination facilities, also known as mezzanine finance, provide different levels of return on debt in exchange for taking on different preference ordering in paying out liabilities from defaulting companies. Debt is classified into senior and junior levels. Junior level debt receives higher returns in exchange for absorbing the first losses.

The long construction periods of infrastructure projects can make debt repayments difficult in projects' early stages. In these cases, mezzanine financing packages a mixture of financing instruments, so the terms of the project's total financing change as the project develops. For example, in the construction period, project sponsors may bear a portion of project debt obligations from their equity contributions and only move to full non-recourse financing after operations, and revenue flows, commence.

MEZZANINE FINANCE

Mezzanine finance refers to hybrid financing instruments that fall between senior debt and equity, often combining economic aspects of both. Mezzanine describes the level lying between the ground floor of a building (equity) and the first floor (senior debt). It also refers to financing raised after early start-up funding from investors, but prior to funding from listing on the stock exchange after the venture has an operating track record. Thus, mezzanine may refer to the structure of the financing, the timing, or both. Mezzanine capital therefore adds a third layer of capital, complementing the traditional two tier debt and equity capital structure of a project.

Mezzanine finance:

- has a differing priority of claim to cashflow and assets in the event of liquidation – lower priority than senior debt, higher than equity
- often has an option for the holder to transform the instrument from one form, such as debt to another, such as equity
- is most attractive where the spread is significant between expected senior debt and equity returns.

Mezzanine capital suits Asian infrastructure finance. Typically, the spread between required equity returns (usually 18 to 25 per cent) and senior debt returns (typically 9 to 11 per cent) is wide. Commercial banks provide most Asian limited recourse financing senior debt. As export credit agencies require repayment within eight to ten years, inserting a longer term tranche of mezzanine finance can reduce the amount of senior debt required and extend the term of finance. The four principal types of mezzanine capital are subordinated debt, convertible debt, preferred equity, and equity warrants.

Source: *Project Finance International*, 18 December 1996.

Escrow accounts

Escrow accounts provide lenders with priority access to the cash flow receipts of project companies. Revenue flows from projects are pooled into separate escrow bank accounts managed by trustees and all debt service obligations must be paid before cash is released for other company obligations.

Government Guarantees

To encourage private sector participation, national governments may provide, in some circumstances, guarantees to lenders against certain policy risks. For example, the Thai government has set up the Thai Guaranty Facility to guarantee loans private financial institutions make to municipalities and private operators of urban environmental infrastructure (World Bank, 1994, p. 100). The Indian Government also plans to establish such a system (Expert Group on the Commercialisation of Infrastructure Projects, 1996). In the short term, if a government has no track record of credible reform and private sector participation in infrastructure, it may need to offer such guarantees to attract private sector investors. Where these guarantees are limited to contractual obligations of government and their utilities, for example power and water purchases or fuel supply by state-owned monopolies, they can be a useful transitional means to promote private sector investment in infrastructure providing necessary comfort to investors and lenders. For example, in 1992-93, the Philippines needed extensive guarantees to attract immediate private sector investment in generation capacity and avert a power crisis. Similarly, to build up private investor confidence in infrastructure investment, the Indonesian Government retained most retail demand risk in private sector water and electricity production projects by providing take-or-pay contracts with guaranteed government take-ups.

However, government guarantees and take-or-pay contracts should not become long term alternatives to sectoral reform in power, water and other infrastructure sectors that eventually would enable private providers to take appropriate customer, investment and management risks. Where guarantee arrangements commit governments to providing a certain rate of return, 'privatisations' and BOT projects allow the private sector to provide infrastructure services but leave major risks with government. If private operators are required, or allowed, to take on demand risk associated with infrastructure service supply and distribution, they have a revenue-based incentive to minimise their output losses and reduce operational inefficiencies.

Historically, government guarantees covering commercial risk encouraged project mismanagement and severely affected government finances when commercial infrastructure enterprises became bankrupt (World Bank, 1994, pp. 94, 100-01). Most governments do not account for the contingent liabilities such guarantees incur on their fiscal balance sheets, as budgets are prepared on a cash basis. Thus when defaults occur, they create unexpected liabilities that blow out government deficits. As mentioned previously, the collapse of the Indonesian rupiah in 1997-98 has led to the possibility PLN, the Indonesian electricity authority, may be unable to honour its guaranteed US dollars denominated take-or-pay contracts with independent power producers. Likewise, the Philippine national power authority also faces a serious erosion of its financial viability after the peso's depreciation.

In the long term, a secure revenue stream for the investor based on agreed commercial tariffs and indexation formulas, within a stable regulatory environment,

substantially reduces the need for government guarantees. Most infrastructure services have a monopoly element and are essential, which can be used to underpin a sound and bankable income stream with minimal guarantees.

However, until a government builds up a track record as a reliable partner of private sector infrastructure providers and maintains a stable regulatory environment, and commercial demand is demonstrated, governments initially may need to offer some take-or-pay purchasing agreements, as in the Philippines and Indonesia. Ideally, these agreements should provide for guarantees falling away as the project and sovereign debt reach pre-determined credit ratings, as is now the case in the Philippines (East Asia Analytical Unit, 1998).

PHILIPPINE GUARANTEE ARRANGEMENTS CHANGE

The lack of a track record in private sector infrastructure investment in the Philippines in the early 1990s meant private sector investors perceived risks as high. Consequently, the government provided extensive credit guarantees to infrastructure project investors, particularly in power. For example, lenders to electricity generation BOTs received credit guarantees against the contractual obligations of the National Power Corporation. The downside of such guarantees was that government still bore commercial risk on the project; this would have been better allocated to the private sector. However, since establishing a track record of honouring payments, government now can reduce its guarantee obligations. In 1995, the Government designed a policy initiative to:

- unbundle commercial from sovereign risk
- reduce guarantee obligations to 75 to 80 per cent of contractual payments
- introduce guarantees that fall away under specified conditions, such as achieving an improved credit rating
- review more carefully guarantee pricing and budgeting.

These initiatives have had some success. For example, foreign exchange risk guarantees provided under new BOT agreements fall away if the Republic of the Philippines sovereign debt achieves an investment grade rating (BAA or higher) from an international credit agency, such as Moody's. Project specific guarantees fall away if public infrastructure corporations which are buying bulk supply, reach investment grade. In tollroads and railways projects, commercial risks now are either shared by or fully shifted to the private sector. The principal sovereign guarantee still provided is that government will adhere to contractually agreed adjustment mechanisms for tariffs and where political pressures intervene, the private party will be compensated.

The Department of Finance now charges for guarantees, and sponsors are asked to indicate what guarantees they require and how much they will pay for such guarantees as part of the bidding process. Government then decides if it will provide such guarantees at the price offered, as part of the total bidding package. Previously, guarantees often were negotiated after bids were won, but as other bidders may have bid more if they had similar guarantees, the bidding process' value was undermined.

Source: East Asia Analytical Unit,1998, p. 191; Kohli et al, 1997, p. 6; and Reyes, 1997.

Government risk guarantee institutions

If governments do offer private sector sponsors guarantees, the finance ministry or a special purpose public financial institution should explicitly value such guarantees and set aside funds to cover these contingent liabilities. The guarantee valuation process also builds public transparency and signals whether guarantees should be given. As in the Philippines, these guarantees can be sold to project sponsors to augment the resources of risk guarantee institutions and provide for contingent liabilities.

Some economies create specialised financial institutions to provide infrastructure finance and bridge the gap between limited long term debt finance supply and infrastructure sponsors' demand for such finance. Such institutions can reduce the transaction costs of evaluating and processing infrastructure projects.

For example, in 1997, India established a specialist financial institution, the Infrastructure Development Finance Corporation, to promote infrastructure development. Established with paid-up capital of US$400 million, the corporation began lending to infrastructure projects in mid 1998. It does not compete with existing financial institutions but focuses on enhancing the credit quality of debt issuers, so instruments can be issued at lower costs, maturities extended and the Indian bond market developed as a source of finance for infrastructure development. Its role is catalytic, and should decline over time as the Indian capital market deepens and matures (Expert Group on the Commercialisation of Infrastructure Projects, 1996, pp. 2 and 68; and Mohan, 1998).

Multilateral Development Bank Guarantees

Partial guarantee mechanisms developed by multilateral development banks such as the World Bank and the ADB can be extremely effective in addressing sovereign risks faced by private sector infrastructure providers. Rather than directly lending funds to infrastructure projects involving private sector partnerships, the multilateral development banks provide guarantees to the financiers of private project sponsors against host government defaults on the terms of project contracts. Because they are significant lenders, multilateral development banks can pressure governments if they fail to abide by contract conditions; this knowledge gives private sector participants comfort in projects with high levels of sovereign risk. World Bank and ADB guarantees are also counter-guaranteed by the host government, so ultimately the government is financially liable if it defaults on sovereign undertakings. Multilateral development banks particularly provide guarantees to projects in developing economies which lack strong track records in major private sector projects.

The World Bank offers two guarantee products; partial sovereign risk guarantees and partial credit guarantees.

WORLD BANK GROUP GUARANTEES FOR SOVEREIGN RISK

The World Bank Group includes three areas which provide guarantees to private sector investors, the International Bank of Reconstruction and Development, IBRD, the Multilateral Guarantee Agency, MIGA, and the International Finance Corporation, IFC.

International Bank of Reconstruction and Development, IBRD Guarantees

An IBRD guarantee provides a commitment to a third party lending funds to a borrower in a World Bank member country that the bank will repay the guaranteed portion of the obligation if, under specified conditions, the borrower does not meet its obligations. The borrower may be the member country or a company in that country. The two guarantee products are a partial risk guarantee and a partial credit guarantee.

Partial risk guarantees cover sovereign risk, that is the specific obligations government must perform as spelt out in contracts with the project sponsor. They guarantee payment if debt service defaults of private sector projects result from governments or their agencies not performing contractual obligations. Partial risk guarantees also cover risks associated with the ability of project sponsors to transfer foreign exchange to pay obligations. They are particularly relevant to the growing need for private financing for infrastructure.

Partial credit guarantees cover all events of non-payment of covered project debt for a designated period of financing, usually over the later years of the project. Such credit guarantees help extend loan maturity periods, which often are important for obtaining longer term financing for large scale infrastructure projects.

The IBRD's Articles of Agreement require IBRD guarantees to receive a counter-guarantee from the national government. If the borrower cannot repay the debt and the bank guarantee is called by the third party, the World Bank will pay under the terms of the guarantee and a new sovereign obligation to repay the World Bank is created between the member country national government and the World Bank.

Multilateral Investment Guarantee Agency, MIGA and IFC Guarantee Instruments

MIGA provides non-commercial risk insurance guaranteeing equity and related debt investments against specific sovereign risks such as currency repatriation, war, civil disturbance and expropriation. These have a maximum dollar limit per project and per country. MIGA has issued 348 guarantee contracts since its inception, facilitating an estimated US$25 billion in foreign direct investment in 62 developing and transition economies.

IFC provides equity and debt financing on its own account and debt financing from commercial sources under its B-loan syndication, which provides coverage against transfer risks but not against expropriation.

Source: World Bank, 1998; International Finance Corporation, 1998; and Multilateral Investment Guarantee Agency, 1998.

The IBRD guarantee has developed steadily over the past decade, in response to strong demand by both governments and the private sector. Since 1990, 12 guarantee operations valued at US$1.44 billion achieved financial closure (Table 4.7) and a further ten are in process. The privately financed Hub power project in Pakistan received the largest guarantee instrument in 1995.[8] The IBRD's partial risk guarantee for the Hub power project covers specified political risks, such as loan payment default resulting from the Pakistani Government failing to pay under the terms of the Power Purchase Agreement (Project Finance Group, 1995).

Table 4.7

IBRD Guarantee Develops Steadily

Completed World Bank (IBRD) Guarantee Operations (1990-98)

Closure date	Country	Project	Instrument	Guaranteed amount (US$ million)	Total project cost (US$ million)
July 1990	Hungary	St. Dev. Inst.	US$200 million Eurobond	200	1 300
May 1994	China	Yangzhou Power	US$120 million syndicated loan	59	1 100
July 1994	Philippines	Leyte-Luzon Power	US$100 million Euro/144a bond	100	1 300
January 1995	Pakistan	Hub Power	multi-currency (US$360 million) syndicated loan	240	1 800
March 1995	China	Zhejiang Power	US$150 million syndicated loan	64	1 600
September 1995	Jordan	Jordan Telecom	US$50 million Euro/domestic bond	50	228
September 1995	China	Ertan	US$150 million syndicated loan	50	2 900
May 1996	Pakistan	Uch Power	US$75 million syndicated loan	75	630
July 1997	Lebanon	Electricite du Liban	US$100 million Euro/144a bond	100	486
March 1997	Ukraine	Pre-export facility	US$120 million in loans	120	120
November 1997	Morocco	Jorf Lasfar	DM313 million (US$184 million) in loans	184	1 500
Expected June 1998	Russia/ Ukraine	Sea launch	US$200 million in loans	200	650
Total			US$1.8 billion	1 442	13 614

Note: Hub, Uch, Sea Launch, Pre-Export, and Jorf Lasfar are partial risk guarantees for private sector projects; the others are partial credit guarantees for public sector projects.

Source: World Bank, 1998, updated by World Bank, June 1998.

[8] This 1 292 MW BOT project's financing structure involves 80:20 debt equity ratio with about $680 million in syndicated loans from commercial banks, $320 million of which is insured with commercial banks and the remaining debt guaranteed by the World Bank and the Export Import Bank of Japan.

In April 1995, the ADB recognised the need to expand guarantee facilities in infrastructure project finance and modified its policy on guarantees to include partial credit and risk guarantees. Guarantees can be offered to public or private borrowers for commercial debt in any currency. The ADB now offers three guarantee products:

- partial credit guarantees to public borrowers with government counter-guarantees
- partial credit guarantees to private borrowers without government counter-guarantees
- partial risk guarantees to private borrowers with government counter-guarantees (Asian Development Bank, 1998).

The ADB also recently contributed US$50 million in equity to a new bond insurance company Asian Securitization and Infrastructure Proprietary Limited, ASIA. The new company's main product is financial guarantee insurance on infrastructure and other asset-backed debt. A triple-A rated bond insurance company, CapMAC, manages the fund. ASIA works mainly with project sponsors issuing bonds based on the projects' revenue streams. For a fee, guarantees are provided on 100 per cent of principal and interest payments (Tan, 1996).

Public Equity Contributions to Public-Private Partnerships

Another method governments can use to reduce private sponsors' risk perceptions and obtain project financing, is to take up equity in joint private-government infrastructure projects, particularly in their high-risk early years. As is the case with multilateral development bank guarantees, government equity participation can provide comfort to private investors, as such participation should reduce sovereign risks, such as adverse policy changes. This approach also is useful if governments are reluctant to promote 100 per cent private project ownership.

In-kind government subsidies also assist financially marginal projects that have significant spillover or public good elements and are viable economically. This approach may expedite sub-commercial projects, such as tollroads in low income regions that may not be viable for many years. For example, the Philippine Government provided funds to build a section of a road in a major highway project, then allowed the private BOT investor to charge tolls over the full road length.

While most governments are poor at identifying winning business propositions and should be careful not to create projects which depend on public funds, government equity positions may be better than direct grants and loans to public projects. By providing 'seed capital' they reduce risks for the project sponsor while ensuring the project proceeds with mostly private finance, and commercial risk ultimately rests with the operator. This approach may be particularly useful as an interim measure, reducing risks and assisting in developing local capital markets to finance infrastructure.

Australian investors, financiers and infrastructure project developers in East Asia identify up-front costs and risks in infrastructure projects as constraining infrastructure investments. Government provision of infrastructure project seed capital, possibly supported by ODA grants and loans, can reduce these up-front costs and risks.

FUTURE PROSPECTS FOR FINANCING AND RISK MANAGEMENT

The many innovative developments occurring in infrastructure financing and risk management practices auger well for private sector infrastructure provision in the long term. However, the Asian financial crisis has raised significantly investors' risk perceptions and reduced financial resources available to East Asian countries in the short to medium term. This makes it imperative that regional governments, multilateral banks and bilateral donors continue to develop mechanisms to improve the depth and functioning of domestic capital markets and improve risk mitigation strategies for infrastructure projects. Bilateral donor contributions to this process are discussed in Chapter 6 – *Aid*. In addition, clear regulatory and legal frameworks and competitive, market-based industry structures improve significantly the bankability of projects. (See Chapter 3 – *Law and Regulation* and Chapter 5 – *Sectoral Best Practice*.)

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Chapter 5

SECTORAL 'BEST PRACTICE' POLICIES

Poor sectoral frameworks for promoting competition undermine government objectives to encourage private sector infrastructure provision, including improving services and reducing costs to consumers, and reducing fiscal costs for governments. Unstable policy frameworks also reduce the willingness of private project sponsors and financiers to undertake projects. As East Asia will face serious confidence problems after the financial crisis, investors will expect higher returns or may withdraw from infrastructure markets altogether, unless private sector infrastructure participation regimes are significantly reformed.

Usually, regulating competition and industry behaviour under a minimal set of common rules to impose similar standards on all industry sectors and ownership categories produces the most efficient outcomes. However, infrastructure's special monopoly network, public good and spillover characteristics provide strong policy reasons for designing infrastructure sector specific regulations and policies to enhance cost effective private sector competition and address social and environmental concerns.

Generic best practice approaches to infrastructure policy and regulation were detailed in Chapter 2 – *Principles*. They involve unbundling integrated monopolies, ensuring maximum domestic and international competition within and for unbundled markets, and providing independent, impartial regulation of residual monopolies. Guislain (1997), the World Bank (1994) and Porter (1996) discuss these approaches and their application to various sectors in some depth.

However, as each infrastructure sector has different technical characteristics limiting competition options, spillover effects and economies of scale, applying these best practice competition policies and regulations can vary from sector to sector. This chapter first looks at the inherent characteristics of different infrastructure sectors that determine the most efficient way to introduce competition and efficiently provide services. It then presents, sector by sector, examples of best practice approaches to private involvement in infrastructure provision.

INHERENT SECTORAL CHARACTERISTICS AFFECTING BEST PRACTICE

Each infrastructure sector has key characteristics related to the extent of monopoly networks and public good aspects, capital asset mobility, competition from substitutes, spillover costs and benefits, all affecting the ability to efficiently introduce competition in the sector (Appendix Tables 5.1 and 5.2).

While all infrastructure sectors include natural monopoly elements, many sectors include activities which can be separated from monopoly networks which private firms can undertake in a competitive market. Other key sectoral characteristics do not reduce the benefits of such unbundling. For example, monopoly network electricity transmission and distribution grids can be unbundled from electricity generation and retailing; generation and retailing then can be privatised to operate competitively. A similar approach for fixed line telecommunications and rail

networks allows service providers to compete to supply services on a grid that remains in public hands, probably operated as a concession. If the grid is privatised, it must be tightly regulated to prevent abuse of monopoly power. As monopoly networks are more central to water supply, road transport and electricity transmission and distribution, the most appropriate regulatory approach is to auction concessions to the private sector to operate these assets for a fixed period. BOTs generally are most applicable to transport or as an interim step to privatisation in other sectors (Table 5.1). (See Chapter 2 – *Principles* and Table 2.1.) These characteristics, and domestic political constraints, have helped determine the approaches to private participation different economies adopt (Table 5.2).

EXAMPLES OF BEST PRACTICE BY SECTOR

To accelerate the spread of information about new developments in infrastructure restructuring and competition, the following sections outline some best East Asian and Australian examples of successful private sector involvement in infrastructure provision.

ELECTRICITY

As discussed in Chapter 2 – *Principles*, the best practice approach to introducing competition and private participation into the electricity sector is to:

- unbundle the monopoly high tensile transmission network from generation and distribution/retailing
- operate the generation and distribution/retailing markets competitively, with many generators selling into a wholesale electricity market at prices which balance demand and supply throughout the day, and with many distributors/ retailers buying bulk power competing to supply it to customers
- operate the transmission network as a concession on the basis of competitive tender, or privatise it within a tight regulatory framework, controlling rates of return, prices or gross revenue
- establish an independent regulator that controls the wholesale electricity market, prevents cross-ownership of generation, transmission and distribution/retailing assets or ensures access to the monopoly transmission and distribution networks.

This approach was adopted in Victoria, Australia and has produced marked drops in power prices and improved operational efficiency. A similar approach is planned by Thailand, the Philippines and possibly Indonesia.

Technological progress after World War II favoured larger plant sizes for generating electricity. However, empirical evidence from the 1960s and 1970s indicated that large vertically integrated public sector monopolies also led to excessive investment in non-productive assets (gold plating) and inefficient production. Also, during the late 1970s and 1980s, it became evident the natural monopolies argument no longer applied to electricity generation. Economies of scale related to individual generating units and plant sites, and to some extent at the firm level; however, generating units larger than 500 MW (coal) and 1 000 MW (nuclear) showed declining economies of scale (Christensen and Green, 1976; and Joskow, 1987). Firm economies were exhausted by 4 000 MW (Christensen and Green, 1976). Developments in gas-fired

Table 5.1

Many Options for Private Infrastructure Provision

Best Practice Examples of Private Infrastructure Provision

Function	Service or management contract	Lease contract	BOT contract	Concession contract	Full privatisation
Sectors and activities it suits	Water pipe, road, rail, electricity and fixed phone line maintenance, billing, meter reading, data processing, water supply and sewerage (non-optimal)	Airports (or airport space), ports, water supply and sewerage (non-optimal)	Tollroads, electricity generation, railways, bulk water development, water and sewage treatment industrial estates, ports, airports	Water supply and sewerage, airports, ports (if it is a monopoly site), electricity transmission and distribution, railways, mass transit systems	Power generation, ports (where alternative sites are available), electricity retailing, mobile, domestic and international telephone services, waste water treatment, sewerage and toxic waste treatment, single user railways, rail services, mass transit services, single lines
Some Best Practice examples:					
• Power			Philippines, China		Victoria, Australia
• Water	South Australia		Malaysia	Manila, Macau	
• Transport		Malaysia (ports)	Australia	Argentina (rail)	Hong Kong (ports)
• Telecommunications					Chile, Philippines

Source: Tasman Asia Pacific, 1997, updated by East Asia Analytical Unit.

Table 5.2

Choice of Private Participation Models

Models of Competition and Private Sector Participation Planned and Implemented in Asia Pacific Economies

	Competition in the market			Competition for the market		
	Unbundling	**Private participation in new capacity**	**Privatisation of existing assets**	**BOTs**	**Concessions**	**Competition by comparison**
Water	Sydney Water	Sydney	United Kingdom	China, Indonesia, Malaysia, Philippines, Thailand, Vietnam	Manila, Jakarta	2 Manila water concessions, Melbourne water
Sewage					Manila	
Solid waste				Vietnam		
Roads				Burma, China, Indonesia, Laos, Malaysia, Philippines, Thailand, Vietnam, Australia		
Rail	Argentina	Philippines, Japan	Japan	China, Laos, Indonesia, Malaysia, Philippines, Thailand, Vietnam	Thailand[c], Philippines[c]	
Airports		Philippines, Osaka, Thailand	Burma, Cambodia, Narita (Tokyo), Thailand	Burma, Cambodia, China, Japan, Indonesia, Malaysia, Philippines, Thailand, Vietnam		
Seaports	Malaysia	Hong Kong,[a] small private ports in most countries	Malaysia	China, Indonesia, Malaysia, Philippines	Philippines	

Table 5.2 (Cont.)

	Competition in the market			Competition for the market		
	Unbundling	**Private participation in new capacity**	**Privatisation of existing assets**	**BOTs**	**Concessions**	**Competition by comparison**
Electricity - generation	Australia, Thailand Philippines, China	Indonesia, China, Philippines, Vietnam, Australia	Thailand, Australia, Philippines (thermal), Indonesia[b]	Indonesia, Malaysia, Philippines, China, Vietnam, Pakistan, Australia		
Electricity - distribution	Thailand, Australia Philippines	Australia	Thailand, Australia			Victoria, Australia
Gas	Australia		Australia			
Telecommunications	Philippines	Philippines, Australia	Philippines,[a] Malaysia,[b] Indonesia,[b] Australia[b]			Philippines

Note: Black type are implemented, blue type are planned: a is always private; b is partially privatised; and c is mass transit rail.

Sources: Nicholson, 1996; and Guislain, 1997, updated by East Asia Analytical Unit.

thermal power stations during the late 1980s also reversed the trend towards larger plants. The present optimal size is between 100 and 500 MW. Other technological developments also increased the scope for competition, for example by metering and monitoring incoming power from independent power producers.

Regulatory Alternatives

The electricity sector can use either *cross-ownership* or *grid access* regulation. (See Chapter 2 – *Principles*.) Under *cross-ownership* regulation, transmission firms cannot own generation assets, so have no incentive to act uncompetitively in power purchasing and wheeling electricity across their lines. Consequently, only the non-competitive transmission and distribution segments of the market require price regulation. Alternatively, *grid access* rules can give competing generators rights to use the transmission assets of integrated vertical monopolies at standard prices. However, experience in the USA suggests that the Thai and Victorian approach to unbundling generation and network assets with cross-ownership regulation is preferable. When generators owned transmission assets, the US Federal Energy Regulatory Commission found it difficult to stop anti-competitive practices by transmission companies limiting wheeling by rival generators across their transmission lines. Regulation is a poor substitute for competition.

Some East Asian countries adopt a hybrid approach to electricity sector regulation, the single buyer model. This combines wholesale market competition amongst several large generators who sell to a single state-owned centralised buying agent, which also may own generation assets. The single buying agent then on-sells to distributors and large retail customers. The Philippines uses this approach, but plans to privatise the National Power Company in due course.

Regardless of the regulatory approach adopted, an independent regulatory structure is needed to ensure a level playing field between state-owned utilities and independent power producers, and between distributors. Regulation requires independence and information about pricing. Sometimes a regulator may find it difficult to assess whether firms are being price competitive. Incentive-based regulation, which the Thai Government intends to adopt, provides electricity utilities with better price minimising incentives in non-competitive segments of the market (Loeb and Magat, 1979). Under incentive-based regulation, licences are sold to firms wanting to participate in non-competitive segments of the market. The revenue is used to pay an annual subsidy to the utility linked to its performance in reducing prices each year.

Independent Power Producer Generation in Asia

Reform in East Asia's electricity sector varies but generally is at an early stage (Table 5.3). Most private sector electricity investment in East Asia is from independent power producers, IPPs, funded by a mix of foreign and local equity and debt (Table 5.4). They supply wholesale power directly to a single buyer, the state-owned electricity utility, which then on-sells to customers. Employing IPPs requires the least change to existing institutional structures. The private generator is simply another source of power for the state utility, and the power purchasing agreement, PPA, contract has little effect on the utilities' structure or mode of operation.

Table 5.3

Integrated State Monopolies Dominate East Asian Power Supply

Structure and Ownership of Electricity Supply in Selected East Asian Countries

Country	Generation (G)	Transmission (T)	Distribution (D)	Ownership
Indonesia	PLN + regional electricity cooperatives	1 (PLN)	PLN + regional electricity cooperatives	State (PLN) Mixed (others)
Philippines	1 (NPC)	1 (NPC)	146 private distributors	State (G+T) Mixed (D)
Thailand	EGAT + EGCO	1 (EGAT)	2 (MEA, PEA)	State
China	1 new NPC holder of all state power assets[a]	1 National Power Grid Co (subsidiary to NPC) [a]	Over 1 500 state owned local distribution Cos	State
Vietnam	1 (EVN)	1 (EVN)	1 (EVN)	State
Japan	12 (+ small others)	10	10	Private

Note: a While a single NPC in China is vested with the state power sector assets, 13 different power networks are within this new integrated ownership structure; five are regional or multi-provincial, and eight are provincial. They tend to operate as self contained units with de facto property rights in their respective assets.

PLN is Purusahaan Umum Listrik Negara; NPC (Philippines) is National Power Corporation; EGAT is Electricity Generating Authority of Thailand; NPC (China) is National Power Company; EGCO is Electricity Generating Public Company; PEA is Provincial Electricity Authority; MEA is Metropolitan Electricity Authority; EVN is Electricity Vietnam; G is generation; T is transmission; and D is distribution.

Source: International Energy Agency, 1997; Shiwei et al, 1997; and Kinhill et al, 1996.

The Philippines initiated enabling legislation for IPPs in 1987[1] with implementing legislation allowing IPPs finally passed in 1991.[2] Indonesia[3] and Thailand[4] followed in 1992 with Thailand's IPP legislation approved in 1994. These legislative changes enabled independent generating companies to sell to the state-owned utility as the single buyer, and provided tax and import duties incentives, for example a six-year tax holiday for Philippine electricity investors.

IPPs' relatively simple implementation led to a rapid growth in private power supply in South East Asia in the 1990s (Figure 5.1). However IPPs may not be the most beneficial approach if the state-owned monopoly authority is inefficient and needing deeper reform. IPPs usually take little commercial demand risk as they mostly require take-or-pay contracts with the state utility. While this makes them more attractive to private investors, it may not provide the best incentive structure for efficient performance, or the most cost effective outcome for consumers.

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1 Executive Order No. 215.

2 *Philippines Republic Act 6957.*

3 Presidential Decree 37/1992.

4 'Regulations for the Purchase of Power from Small Power Producers', 1992.

While many IPPs are being negotiated, only a few have led to power purchasing agreements. However, while negotiations for the first power purchasing agreements in Indonesia and the Philippines were lengthy and complicated, now the process is streamlined. Because of the lack of a credible track record with investors, supply prices were high for the early projects in each country and most risks, like demand and foreign exchange risk, were borne by the electricity authorities. In Indonesia and the Philippines, early IPPs are set to earn high returns at the expense of the state utility; this has caused some resentment. However, competition amongst sponsors and lenders for new IPPs subsequently lowered these costs. Producers and purchasers now understand better the principles of risk mitigation. While IPPs can mobilise private sector capital to meet immediate power needs as industry reform becomes more comprehensive, in some countries this has come at considerable cost to governments and consumers.

Table 5.4

IPP Share Grew Rapidly in the 1990s

Independent Power Producers in Selected East Asian Countries

Economy	IPP share of generation	Planned IPPs
Indonesia	Less than 5 per cent	29 PPAs signed by 1997, most were deferred following currency depreciation. First IPP started operating in 1997. Several large IPPs scheduled to begin production in 1999.
Philippines	Approx 50 per cent	More than 40 PPAs signed. All new generation expected to be private.
Thailand	Less than 10 per cent	First round of IPPs to begin operating in 1999/2000. Five of seven signed PPAs have been delayed for six months to three years. Second round of IPP bidding deferred.
China	Many IPP joint ventures with state-owned enterprises	Wholly-owned foreign IPPs under bidding and construction (such as Laibin B).
Taiwan	0	First IPP closed financing in January 1998, 11 PPAs signed, with installed capacity of 10 000 MW by 2002.
Malaysia	Approx 50 per cent	Five PPAs signed in 1993, now operating. Three more IPPs being negotiated.
Vietnam	0	Eight BOT power projects have been identified with investment of US$1.5 billion, capacity of 2 415 MW. One PPA signed by mid 1998 (120 MW Wartsila diesel plant).
Japan	Less than 1 per cent	IPP entry allowed in 1995 legislation, privately-owned regional monopolies bidding PPA contracts. IPP share expected to be less than 2.5 per cent by 2002.

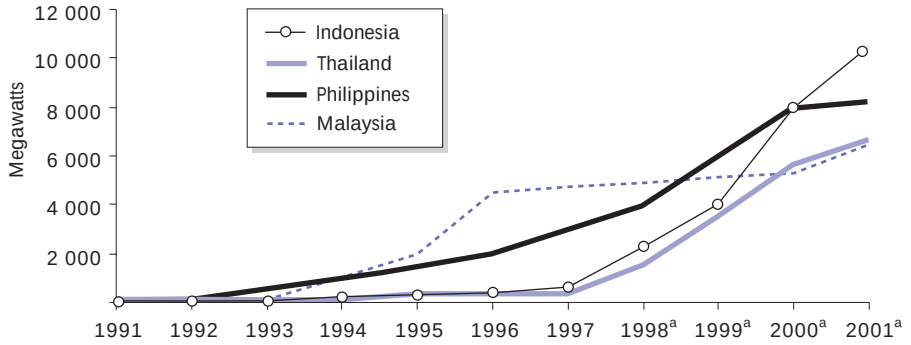
Note: IPP is independent power producer; PPA is power purchasing agreement.

Source: International Energy Agency, 1997; Shiwei et al, 1997; Kinhill et al, 1996; and East Asia Analytical Unit, 1998b.

Figure 5.1

IPPs Allow Rapid Growth in Private Power

Cumulative Development of Private Power Capacity in South East Asia, 1991-2001



Note: a Is projected.

Source: Gray and Schuster, 1998.

Impact of the Financial Crisis

The financial crisis has affected private participation in regional electricity sectors to different degrees, according to factors such as:

- rising cost of power generated by the private sector, resulting from higher costs of imported equipment and fuel, and contractual payments denominated in foreign currency
- heightened risk of contractual default by power off-takers
- reduced project finance, lower credit ratings and higher risk premiums associated with power authority and sovereign debt.

Countries, like Malaysia, which denominated power purchase agreements in local currency have faired better; the cost of power has risen by less than 10 per cent (Gray and Schuster, 1998). In Indonesia and the Philippines, wholesale tariffs were denominated in US dollars, and PPA costs have ballooned. Thailand's utility, EGAT, was partially insulated as payments were denominated in baht, except for purchases from Laos, which were denominated in US dollars. However, the baht's depreciation has made projects in Thailand unbankable under existing agreements. EGAT has since agreed to absorb some currency risk to stimulate projects required to reduce the risk of future power shortages. PPAs will be partially in baht and partially in US dollars, with the weighting reflecting US dollar and baht contributions to the IPP's total costs (Galledari, 1998). Growth in Thai electricity demand has been revised downwards and by agreement, private power projects delayed for up to three years.

Obviously, projects financed from domestic sources are less affected by recent depreciation, as they are less susceptible to the mismatch between project revenues denominated in domestic revenue and loans in foreign currency. Local debt finance was 90 per cent in Malaysia and 75 per cent in Thailand; whereas, it was only 14 per cent in Indonesia and 3 per cent in the Philippines (Gray and Schuster, 1998).

However, the financial crisis also has produced benefits, spurring regional government reform attempts, and increasing their resolve to overcome local vested interests (Table 5.5).

PRIVATE SECTOR POWER GENERATION PROJECTS IN INDONESIA - COUNTING THE COST

In 1991, to increase power generation capacity, the Indonesian Government invited two consortiums to submit proposals to build, own and operate two 600 MW power stations in the State Electricity Corporation's Paiton Power complex in East Java. This was Indonesia's first private power generation project. A power purchasing agreement for this project was signed in 1994 with a consortium of Japanese, Indonesian and US companies. The first private power station planned to begin commercial operation in June 1998 and the second, six months later. By mid 1997, the state power utility, PLN, and independent power producers had signed 29 power purchase agreements.

The financial crisis has devastated Indonesia's IPP program. The rupiah's 80 per cent depreciation since mid 1997 has driven a wedge between PLN revenues denominated in local currency and IPP contractual payments denominated in US dollars. PLN buys power from the IPPs at between 5.42 and 8.47 US cents per kWh and sells for less than 2 US cents per kWh. Furthermore, the Paiton power projects now look very expensive at over 8 US cents per kW/hour, compared with Laibin B in China which costs less than 5 US cents. However, as IPPs' imported capital equipment costs denominated in US dollars represent the bulk of their costs, they cannot afford to significantly cut off-take tariffs.

In late 1997, most new power projects were suspended or cancelled by presidential decree, including some which had reached financial closure and begun construction. Suffering a severe cash flow shortage, PLN initially sought to unilaterally amend PPAs by paying in local currency at the pre-depreciation exchange rate, but subsequently, under pressure from IPPs and their legal advisers, they have resumed most payments at the new exchange rate, at least for the present. However, PLN is having difficulty meeting its payment obligations to the small number of operating IPPs, while it negotiates with those which come on-line in 1999, including the Paiton plants. With more than 9 000 MW of capacity under construction or at an advanced stage of development, the financial stress will increase for PLN.

The fiscal and balance of payments crisis facing the Indonesian Government makes it likely it will consider privatising its state-owned power company. However, it is important for the government to restructure the industry to introduce open competition between generators and distributors, as proposed in the Philippines and Thailand, and as occurred in Victoria, Australia. However, a shift towards open competition in generation means power purchasing agreements the state-owned power utility has with IPPs will need renegotiating. Experience on a much smaller scale in Victoria shows this process can be costly.

Table 5.5

Increased Reform Commitment since Asian Crisis

Proposed Ownership and Industry Structure by Country

Country	Assets to be privatised	Planned structure
Indonesia	*Generation*: Maximum of 40 per cent of PLN's successors. Genco 1 (Java Bali 1) Genco 2 (Java Bali 2) after 1998 *Transmission*: Grid Extension, timing not determined To be considered further in light of currency crisis and IMF program	PLN single buyer. IPPs and privatised generators compete to provide new capacity and power to PLN. Separate transmission subsidiary may be created along with four horizontally separated distribution subsidiaries
Philippines	*Generation*: NPC privatisation through thermal generation divestiture. Geothermal and hydro remain under government control *Transmission:* Possible *Distribution:* New private entities Awaiting passage of enabling legislation	Bidding for new capacity centralised to Gridco/Department of Energy. Partial or full divestiture of generation and distribution. Gridco or NPC to retain grid
Thailand	*Generation:* EGAT spin-off EGCO already under majority private ownership. Further privatisation planned for 1999 *Transmission*: Admission of foreign private sector strategic partners after 2000	Possible generation split up before 2000. Separation of transmission and distribution after 2000
China	All existing power assets to remain state owned, with effective control vested in National Power Corporation. Consideration being given to devolution of control, with the national corporation being only a passive owner of assets	World Bank recommends single buyer model, pool trading between regional blocks, sale of regional generation assets to non-affiliated state owned companies
Vietnam	No proposals to divest assets. Private sector involvement only in BOTs for new generation capacity	All assets recently vested in single national state-owned power company, EVN. Greater separation of state ownership from EVN management under review

Source: Tasman Asia Pacific, 1997.

Asia Pacific Reforms

Technological developments led to competitive power markets being introduced in Britain in 1990-91, followed quickly by countries such as Norway, Chile, Argentina, New Zealand and Victoria, Australia (International Energy Agency, 1997).

Most East Asian countries reforming their electricity sector initially encouraged private sector participation by modifying foreign investment and electricity sector legislation to allow private investment in generation. While countries have not yet moved to world best practice in electricity industry reform, they are progressively developing regulatory structures and institutional experience with private infrastructure investment. In several countries, bureaucrats and electricity sector unions are slowing moves to full privatisation. However, since the Asian financial crisis, reform has gained new impetus, partly to earn foreign exchange and government revenue from privatisations.

Australia

Prior to 1993, vertically and horizontally integrated state-owned utilities, responsible for generating, transmitting and retailing electricity supplied Australia's needs. Under this structure, Australian electricity utilities lagged behind overseas performance on many criteria (Bureau of Industry Economics, 1996). Excess generation capacity and low labour productivity were particular problems.

In 1991, state and territory leaders jointly established the National Grid Management Council to open competitive access to the major south eastern Australian grid. Free trade in electricity by private generating firms, public utilities, and private and public electricity customers were key objectives (National Competition Council, 1997, p. 45). Subsequent reform proceeded most rapidly in Victoria, where most of the industry has been privatised, driven by strong political commitment and the need to repair state finances.

VICTORIAN STATE ELECTRICITY REFORMS - AUSTRALIA

Victoria, Australia adopted a very comprehensive and competitive restructuring and electricity privatisation model. Prior to 1992, one vertically and horizontally integrated state-owned utility generated, transmitted and distributed electricity throughout the state.

Reform Stages

Generation and distribution assets progressively were unbundled, corporatised then privatised between 1992 and 1997. There were no restrictions on foreign investment in these assets. In 1993, the Victorian Government unbundled and corporatised the State Electricity Commission of Victoria creating five distributional/retail organisations. Structural, regulatory and institutional reform preceded privatisation to ensure private sector investors would participate in a highly competitive market.

The five distributional/retail organisations were privatised in 1995, with proceeds exceeding $8 billion (Department of Treasury and Finance, 1997, p. 8). Initially each distribution firm retained monopoly rights to supply its local area. However, in 1996 large users could purchase from any distribution firm and by 2000, all customers will be able to choose their distributor.

Private sector participation in generation began in 1992 with the 51 per cent sale of the 1 000 MW Victorian Loy Yang B generator under a long term take-or-pay contract. In May 1997, the three other major Victorian power stations, totalling 5 000 MW, sold for $9.5 billion at competitive auction. Other smaller gas-fired plants and Victoria's 29 per cent share in the Snowy Mountains Hydroelectric scheme also will be privatised. Buying out Loy Yang B's take-or-pay contract in 1997 so it could fully participate in the newly created competitive electricity market, was very expensive.[5]

[5] Selling the Government's 49 per cent share (nearly 500 MW of capacity) to Loy Yang B's majority shareholder, combined with unwinding the take-or-pay contract, realised only $84 million, about $800 million to $900 million less than the Government could have otherwise expected.

A competitive wholesale electricity market now operates, with private generators bidding to sell power at a market clearing price set every 30 minutes, through a 'pool' arrangement managed by the publicly-owned Victorian Power Exchange.

The corporatised PowerNet Victoria, which owns and maintains the high voltage transmission grid, also was privatised in late 1997, realising $2.7 billion. Natural monopoly characteristics lessen pressure from competition in this case. A clear and predictable regulatory regime is therefore important to deliver efficient pricing and levels of service. The national regulator, the Australian Competition and Consumer Commission, will regulate the transmission grid and an independent state government entity, the Office of the Regulator General, will regulate the low voltage distribution grid, in accordance with the national regulatory framework legislated in 1995. (See box on Australian Competition Policy Reform in Chapter 2 – *Principles*.)

The reforms delivered real tariff reductions to consumers through the staged introduction of contestability and interim price caps on independent suppliers. By May 1997, a typical Victorian household consuming 5 500 kWh per annum paid 9.2 per cent less than five years earlier, and outage levels have halved (Department of Treasury and Finance, 1997). Selling generation and distribution assets also helped substantially reduce public sector debt from 31 per cent of state GDP in 1992 to around 11 per cent in June 1997 significantly easing debt service obligations (Department of Treasury and Finance, 1997).

Source: Williams, 1996; Department of Treasury and Finance, 1997; and Energy Information Administration, 1997.

Other states have not progressed as far as Victoria. However, following agreements made in 1993, all have unbundled their integrated electricity utilities into separate corporatised generation, transmission and retail/distribution entities. New South Wales and South Australia are considering privatising their generation and retail businesses.

A fully integrated wholesale market for the south eastern grid should start to operate in late 1998, with competitive dispatch of electricity. The market will draw together the individual state markets (New South Wales, Australian Capital Territory, Victoria and South Australia) under uniform competitive arrangements. Transition arrangements are expected until 2001, when all customer classes will become contestable.

An independent market manager, the National Electricity Market Management Company, will run the market on a daily basis, and ensure efficient network planning and system reliability. Market-clearing prices will be set every 30 minutes, but may vary between regions depending on interconnector constraints.

The National Electricity Code, authorised by the national regulator, sets out rules for the wholesale market. The National Electricity Code Administrator will manage the ongoing development of the code and ensure code compliance, manage dispute resolution and monitor performance. The national regulator, the Australian Competition and Consumer Commission will regulate the high voltage transmission lines. States have the option to regulate the retail/distribution businesses in their states or to cede regulation to the commission.

In late 1998 Queensland decided to accelerate its interconnection to the south eastern grid; this should be complete by early 2001. Queensland already uses the national market structures, including the code market rules and independent market management by NEMMCO, to phase-in competition. Tasmania will establish the BassLink undersea connection to the mainland, to join the national electricity market; this would be undertaken as a BOT or BOO.

Physical distances prevent Western Australia and the Northern Territory from joining the south eastern grid. However, they will repeal anti-competitive legislation and split generation and transmission into separate corporatised entities. Without implementing a fully competitive model, Western Australia has developed access arrangements for competitive generation and phased in contestability on the retail side for large customers with average loads exceeding 5 MW.

In states outside Victoria, competition also is lowering costs and improving service outcomes. For example, in New South Wales, electricity prices fell by 23 per cent in real terms between 1993 and 1997 (Independent Pricing and Regulatory Tribunal of New South Wales, 1998).

Thailand

Until 1968, Thailand's power sector was managed and operated by three state-owned utilities. Then the electricity generation authority, EGAT, was made solely responsible for generation and transmission. EGAT sells power to the Metropolitan Electricity Authority and the Provincial Electricity Authority, which distribute power in Bangkok and the rest of the country.

Since 1992, the electricity sector has undergone significant transformation. EGAT, the Provincial Electricity Authority and the Metropolitan Electricity Authority are becoming autonomous corporatised business units in readiness for privatisation. Since 1992, IPPs have operated and EGAT was allowed to establish limited or public companies for electricity generation or transmission, or take up shares in other firms in the electricity sector.

In March 1996, as part of power sector restructuring and privatisation, EGAT created six separate business units (transmission, power plants, engineering, maintenance, mining and construction) and five operating units (policy and planning, accounting and finance, management, business development, and hydropower plants). The business units were corporatised in 1997, and transfer prices and purchase contracts established between the new subsidiaries (International Energy Agency, 1997).

In 1997, EGAT hired Andersen Consulting and National Economic Research Associates to study the privatisation plan. According to EGAT's management plan, agreed with the National Energy Policy Office, EGAT will sell its ownership of generating assets, including its stake in the Electricity Generating Public Company to a strategic investor, and stakes in other, newly created generating firms established to handle existing and new power plants.

The long term goals of this restructuring program are to:

- separate the activities of generation, transmission and distribution companies and run them as either government-owned, publicly listed or private limited companies. Government's role in these activities will decline as private participation increases and/or shares in government-owned utilities are sold to the public

- allow private producers and the privatised generation companies of EGAT to competitively generate electricity
- maintain strong government control over the transmission company but seek strategic partners in running the business. The transmission system will eventually become a common carrier to provide producers with opportunities to sell electricity to consumers, charging a fair wheeling fee
- maintain one distributor in each area. However, the distributor also will become a common carrier to allow consumers to buy electricity directly from producers through using transmission and distribution line services. This will enhance competition and options for consumers
- establish an independent body, the National Energy Policy Regulatory Office, to regulate the electricity industry to ensure full competition under market mechanisms, create private investor confidence and provide fairness to both investors and consumers (International Energy Agency, 1997).

Since the Asian financial crisis, privatising EGAT and power distributors was included in IMF conditionality, due to EGAT's high debt burden and a shortage of funds to meet existing investment priorities.

The public sector power union representing the 30 000 employees, opposes unbundling and privatising EGAT as it fears major job losses. The union advocates privatising EGAT as an integrated company, thus converting a public monopoly into a private monopoly. Negotiations are ongoing, but most likely, EGAT will be progressively privatised, with generating assets sold off first and government retaining control of only the transmission network and a few generating assets.

The Philippines

In the Philippines, severe shortages in generation capacity emerged in 1989 and culminated in regular 12-hour brownouts during the 1993 power crises. These precipitated a staged process of reform and restructuring in the electricity sector (East Asian Analytical Unit, 1998a).

The first stage focused on providing rapid expansion to generation capacity through private sector BOT projects, while retaining a single buyer model and centralised control. Three principal laws enabled private sector participation in generation to proceed.[6] Following legal changes, a number of power projects were approved and implemented very quickly, but with relatively high uptake charges (World Bank, 1994, p. 67).

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[6] The *Republic Act 6957 of 1990* (also know as the BOT law) authorised private sector participation in government infrastructure projects. The *Foreign Investment Act of 1991* permitted 100 per cent foreign equity ownership of generation projects. During the 1993 crisis, *Republic Act 7648* short circuited approval processes for generation projects by allowing the President, through the National Power Company (NPC), to enter into negotiated contracts and also raised the allowed rate of return to the NPC to 12 per cent, thus facilitating an increase in tariffs.

While successfully meeting immediate capacity shortages, the reform framework needed to be more comprehensive to deliver greater cost savings to customers. Subsequently, the National Power Corporation, NPC reviewed the electricity sector, producing a three stage restructuring plan to lead to eventual privatisation of generation, excluding hydro and geothermal, and service subsidiaries of NPC:

- *Phase 1* should take two years once Congressional approval is given. During that time, NPC's generation and transmission functions will be unbundled and NPC's operation will be streamlined. These businesses will operate as NPC subsidiaries, but will be corporatised, turning them into profit-making entities in preparation for privatisation.
- *Phase 2* should take two years, during which NPC will progressively divest all of its generation assets. Government will retain control of hydro and geothermal resources, either through NPC or its successors (for example, a hydropower authority). Existing BOT contracts with IPPs will be renegotiated as BOO contracts or sold. Selected service subsidiaries also will be privatised and the sub-transmission system will be relinquished to regional and local electricity utilities.
- *Phase 3* should result in a fully restructured industry with NPC assuming the role of an independent national transmission company. The Electricity Regulation Board will regulate fair and transparent wheeling arrangements and prices, and independent power producers and electricity utilities owning power stations will generate power. Generators will sell into a competitive wholesale market. Distribution will remain the responsibility of local power utilities. However, private investment in distribution will be encouraged and utilities will be allowed to consolidate and merge. Distributors will be able to enter into direct contracts with generators (National Power Corporation, 1996; and International Energy Agency, 1997).

While NPC management strongly supports this legislation, it has been stalled before Congress since 1996. Selling NPC and restructuring the industry is a top priority of the Estrada administration and Congress will consider the bill again in 1998. The administration has begun implementing reform by unbundling power rates and requiring all utilities to identify and segregate the different components of electricity tariffs to promote transparency in power rates. Provisional authority was granted in 1998 to implement a 'one-day power sales program' on an experimental basis. The program allows the daily trading of excess supply capacity (Economist Intelligence Unit, 1998).

China

China has a multi-layered structure of governance and control in the electricity sector, including 13 state-owned power networks with a capacity of 1 GW or more. The number of independent power producers, typically foreign joint ventures with unaffiliated state-owned enterprises, is growing. Over 1 500 provincial power supply bureaus distribute and retail electricity at county or prefectural level. Local government authorities control, manage and operate these distributors (Shiwei et al, 1997).

In electricity and water supply, the priority is corporatisation rather than privatisation, as the Chinese Government wishes to maintain public ownership. Large central government and provincial authorities are considering unbundling

their activities and operating as commercial entities, but with assets still vested in the state. Corporatisation mainly implies removing management control from sectoral line ministries, installing boards of directors representing workers, management and owners (government ministries and state-owned banks) and vesting ownership rights in central or provincial level Asset Management Boards under the Ministry of Finance, which act as holding companies. This process is already well advanced in China's industrial state-owned enterprises (East Asian Analytical Unit, 1997a). Similar processes are foreshadowed in infrastructure sectors where asset ownership is a key issue. To achieve significant efficiency improvements, state enterprises must know which level of government owns its assets and to whom it is commercially responsible (Shiwei et al, 1997, p. 20).

Some core problems resulting from the government-owned electricity sector include a centrally organised power sector, direct management by government, and lack of a transparent legal or regulatory system and incentives for efficiency (Shiwei et al, 1997, p. 1). While almost all, except the smallest electricity enterprises and the few new BOTs, are state owned, which province, town, hamlet or state organisation actually controls particular generation, transmission and distribution assets is unclear. If assets were simply vested in the present de facto owners, a number of enterprises would own both generation and transmission assets and be in a position to extract monopoly rents and restrict access to their grid from competing generation sources.

POWER INDUSTRY REFORM IN ZHEIJIANG PROVINCE

Australian consulting firm Pacific Power International, the international arm of the state-owned electricity authority of New South Wales, Pacific Power, is designing a competitive generation bidding market for Zheijiang Provincial Electric Power Company. A World Bank loan is funding the project. Australian experience is particularly relevant to China, with the electricity sectors in the two countries sharing many similarities, including extensive state ownership, inter-provincial trading and supply over large distances.

Ultimately, Zheijiang province's transmission will be separated from its generation and retailing activities. Retailing will become competitive, and non-competitive elements will be independently regulated. Tariff reform is important. Current producer payment structures are based on a multiple-tier single tariff. For older plant, the tariff reflects only variable costs, while for new plant not financed by the central authority, tariffs reflect total debt repayments including a capital component (Shiwei et al, 1997, p. 76). Cumbersome bureaucratic approvals for large plant combine with these tariff formulas to encourage inefficient dispatch and a proliferation of small scale thermal plants with less than optimum efficiency, contributing to poor environmental performance.

Pacific Power International also is working with the Heinan Provincial Electricity Company on organisational reform.

Source: Williams, 1998.

Given the need for major sectoral restructuring and constraints on privatisation, the best approach for China's electricity sector could be to move towards a single buyer, purchasing agency model (Shiwei et al, 1997). This model involves allowing a single state-owned firm in each of the seven geographic areas to purchase wholesale power from generators and on-sell the power to consumers. The state-owned purchasing agents would own transmission assets but not generation assets, which could be owned by independent state-owned or joint ventures. With no generation assets of their own, provincial power authorities would have appropriate incentives to purchase power from the cheapest power source, so long as two-part wholesale tariffs separate operating and capital costs.

Some recent electricity sector reforms would enable a regional single buyer model to be implemented. *The 1995 Electric Power Law*, guarantees state-owned regional and provincial power enterprises the right to operate autonomously, subject to government supervision. The National Power Company has replaced the Ministry of Energy, the previous owner and operator of the national power system. Governmental functions of the former ministry were dispersed to other government agencies and the National Power Company now holds the state's power assets. The seven regional groupings and the National Power Grid company were made subsidiaries of National Power Company. The National Power Company is required to ensure all power enterprises using the inter-regional grid are treated equally.

A next step could be for regional groupings to sell generation assets to unrelated state-owned firms or joint ventures (Shiwei et al, 1997, p. 19). A National Power Regulatory Commission then would regulate access to regional grids for inter-regional transfers. Provincial Power Regulatory Commissions would ensure the regional power purchasers pass on cost savings to customers through lower prices. In implementing these regulatory changes, the old style of regulation involving direct management of all power sector activities needs to shift to a new style of regulation that is limited and transparent, and allows managers to manage (Shiwei et al, 1997, p. 11).

Such reforms should increase efficiency without divesting assets to the private sector, if various state instruments are sufficiently independent and generators compete vigorously. Involving joint venture generators should enable transfer of improved generating, operational and managerial technologies and skills, as well as injecting necessary capital. A similar approach to restructuring the electricity sector is being taken in Vietnam. The proposed regulatory model also has some applications for other East Asian governments with constitutional, political or legal constraints inhibiting full asset divestiture.

Vietnam

Although per-capita consumption of electricity in Vietnam is among the lowest in the region, demand has increased rapidly in recent years, straining the country's generating capacity. Vietnamese officials estimate the country needs to increase capacity 15 per cent per year to keep pace with demand. Vietnam experienced electricity shortages in northern regions in June 1997 and again in May-June 1998. Lack of rain caused water levels in the reservoirs at the Hoa Binh and Thac Ba hydroelectric plants to drop, so plants reduced operations, cut power, and started rationing in some provinces.

To meet increasing demand, Vietnam plans to double generation capacity to 9 GW by 2010.[7] To this end, the government implemented a BOT law to engage independent power providers. Eight BOT power projects have been identified with an investment of US$1.5 billion, and a capacity of 2 415 MW.

The major obstacles to IPP closures are that private sponsors and the government cannot agree on power purchase prices and the government is reluctant to provide guarantees for access to foreign exchange and payment for power (*Far Eastern Economic Review*, June 11 1998). By mid 1998, only one power purchase agreement was signed, for the 120 MW Wartsila diesel power plan in southern Vietnam. This project and other directly negotiated power deals have taken several years to negotiate, causing some concern among potential foreign participants. The government's desire to avoid future oversupply and excessively high tariff burdens has motivated these delays. However, a transparent competitive tendering approach may have reduced government concerns and hence delays, by more quickly exposing suppliers' minimum uptake prices and conditions. (See section on Bidding Procedures in Chapter 3 – *Law and Regulation*.)

WATER SUPPLY

In most countries, the public sector traditionally provided water services. However, in recent years, public water utilities have sought private involvement to improve service levels and finance investment. Private involvement can:

- secure access to large new capital investment for expanding pipe network coverage, developing bulk water sources and improving service quality and reliability
- reduce water losses and improve operating efficiency
- reduce tariffs from increased efficiency
- access technological advances from leading private operators
- reduce government debt through asset sales.

Water is an essential service or 'merit good' with many positive health and environmental spillovers. (See Chapter 2 – *Principles*.) As such, most governments are committed to providing universal access to the minimum daily requirement of safe water; this may require subsidies. Water distribution pipes are a monopoly network and many water and sanitation systems assets are buried. These factors complicate the valuation of assets and full transfer of water distribution to private sector ownership.

The scope to unbundle the water sector is not clear cut, with potential for competition amongst bulk water service providers more limited because the main water sources in urban municipalities are location specific and usually limited in number. Also the operational costs of providing the raw resource are relatively low

[7] Vietnam currently has an electrical generation capacity of 4.4 GW, with hydropower accounting for 64 per cent, thermal power 18 per cent, and natural gas 15 per cent. In the short term, it will expand gas and coal-fired capacity, but over the long term, it will continue to emphasise hydropower.

compared to the capital costs sunk in pipes, dams and treatment stations. Efficiency gains in the water supply sector are more likely to come about through increased opportunities for trade amongst water users and reduced water losses from piped distribution than increased competition amongst suppliers. Scope to unbundle competitive market segments is limited. Other regulatory models of competition *for* the market seem more appropriate than competition *in* the market. (See Chapter 2 – *Principles*.)

Approaches to private sector involvement in water vary from limited involvement of management and service contracts as in Adelaide, South Australia through long term concessions, as in Manila, to full divestiture as in England and Wales. The approach adopted depends on the level of government commitment to efficiency and reform, support or opposition of key stakeholders, political acceptance of cost recovery tariff structures, regulatory framework sophistication and the country's credit rating (Table 5.6).

Unbundling Water Sectors

Where water sector institutions combine commercial activities with policy development and regulation, there is scope to unbundle. For example, the large water commissions and other water sector institutions in China presently supply power and water, provide irrigation operations, develop engineering designs, construct infrastructure and manage water resources. The Chiangjiang (Yangtze) Water Resources Commission is exploring options for restructuring its activities, commercialising many operations and possibly corporatising its service delivery functions. As well as providing engineering skills to the water sector, the commission also performs administrative, planning and regulatory activities for the Ministry of Water Resources. Similarly, the former Sydney Water Board performed all these integrated functions, but is now unbundled into a number of discrete groups, and corporatised.

Organisational restructuring and unbundling of commercial and non-commercial activities should precede any commercialisation, corporatisation or private sector participation in the service delivery functions of water sector agencies. Government should separate resource management functions from potentially commercial functions of service delivery. Resource management involves integrated planning, coordination and implementation of policies that govern flood protection, catchment management, water quality, environmental quality and multiple use of bulk supply. Appropriately constituted government agencies, for example the Murray Darling River Basin Commission in Australia, or the Korean Water Resource Corporation should undertake these functions.

By contrast, autonomous and accountable institutions, such as corporatised or privatised engineering firms for dam design and construction, corporatised or privatised water supply firms and privately operated water supply concessions should undertake service delivery for urban water supply, irrigation, energy and sanitation (Arriens et al, 1996). Recent developments in the Philippines and Macau provide best practice regional examples of unbundling and privatising water supply service functions.

Table 5.6

Planning Needs and Outcomes

Prerequisites for Successfully Implementing Different Private Sector Options in Water

Requirement/ option	Stakeholder support and political commitment	Cost-recovering tariffs	Information about the system	Developed regulatory framework	Good country credit rating	Potential benefits of the option
Service contract	Unimportant	Not needed in the short term	Possible to proceed with only limited information	Minimal monitoring capacity needed	Not needed	Low
Management contract	Low to moderate levels needed	Preferred but not necessary in the short term	Sufficient information required to set incentives	Moderate monitoring capacity needed	Not needed	Moderate
Lease	Moderate to high levels needed	Necessary	Good information required	Strong regulatory capacity needed	Not needed	Moderate to high, depending on terms
Build, operate, transfer	Moderate to high levels needed	Preferred	Good information required	Strong regulatory capacity needed	Higher rating will reduce costs	Good for bulk water supply
Concession	High levels needed	Necessary	Good information required	Strong regulatory capacity needed	Higher rating will reduce costs	High
Divestiture	High levels needed	Necessary	Good information required	Strong regulatory capacity needed	Higher rating will reduce costs	High

Note: The shading signals the degree of importance: not significant low to moderate high

Source: Brook-Cowen, 1997.

Potential approaches to private participation in the water sector range from the minimalist approaches of service contracts to full privatisation (Table 5.6). The need for political commitment and regulatory capacity increase as more thoroughgoing reform models are adopted, but so do potential benefits.

Service and Management Contracts

Contracts for services or management are a minimalist approach to private sector involvement. Service contracts involve a public authority contracting with a private contractor to provide specific services such as billing or meter reading, tunnelling and pipe laying, capital works design and site supervision, information technology, operations and maintenance, and construction. Under a management contract, a more comprehensive form of service contract, the public authority appoints a private contractor to manage all or part of its operations. The private sector may deliver a complete service, such as managing a particular water works or the whole of the water supply and distribution agency. While such contracts provide access to expertise and potential for competition through bidding, financing and ownership, most commercial risks and all capital and investment risks remain with government. Management contracts also only introduce minimal incentives for improving performance. (See Chapter 2 – *Principles*.)

Unlike larger East Asian cities, many smaller municipalities do not meter water consumption or charge for its use. Metering and increased charges therefore are a necessary precursor to private sector participation, but social and political concerns about increased charges may make private sector involvement difficult. Here, governments can use management contracts as an interim step towards engaging the private sector more fully in retail water supply, prior to lifting charges to cover supply costs. For example, a pre-concession or enhanced management contract was awarded through competitive bidding to provide water supply services in Trinidad and Tobago. After three to five years, this will be converted into a long term concession in a two-phased approach to privatisation (World Bank, 1994). Similarly, the Nepalese Government is preparing tender documents and a bidding process for competitively awarding a management contract for water supply and sanitation services to Kathmandu. Until issues on tariffs are resolved, the government will pay the difference between charges collected and the price required by the contractor. However, the contract could be converted into a full retail concession in the longer term. Similar approaches could be tried in less developed East Asian nations with more limited experience in metering and charging, such as Burma and Laos.

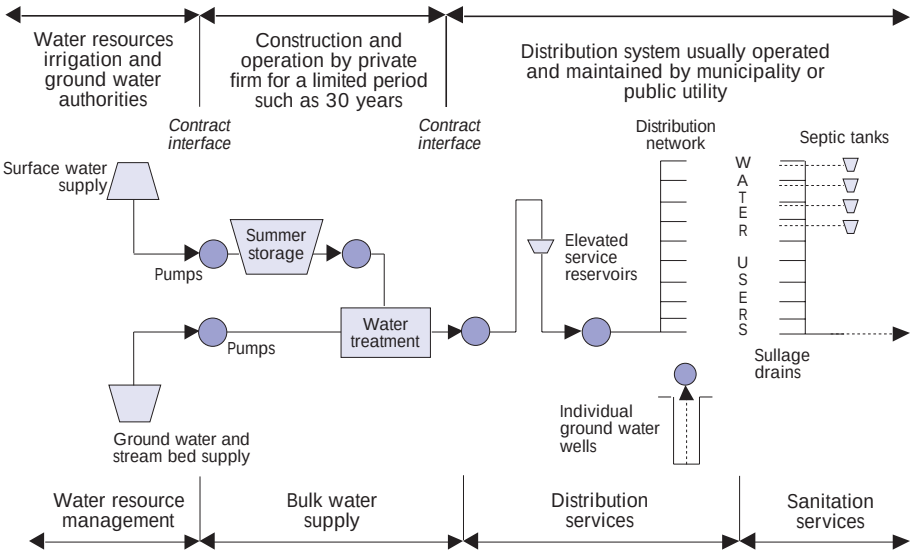
BOTs for Bulk Water Supply or Water Treatment

In East Asia, BOTs are the main approach to private sector participation in bulk water supply and water treatment (Figure 5.2). Like electricity generating BOTs, they are relatively simple to initiate and administer, and bring rapid benefits of increased water supply, tapping private sector funds and management expertise.

Figure 5.2

Private Sector Contribution Limited under BOTs

Representative BOT Arrangement for Bulk Water Supply



Source: Tasman Asia Pacific, 1997.

However, BOT schemes do not address the key problems of unaccounted-for-water losses and billing failure, the main areas of inefficiency in water supply, as network management and maintenance, retail billing and commercial risks, and potential rewards, remain with government. Furthermore, isolated water BOTs may not be properly integrated into the overall water supply planning system or may fail to account for environmental spillovers.

Leases and Concessions

The Philippines, Macau, Argentina, France, Spain, Guinea, and Turkey have introduced leases or operating concessions for water supply. Leases do not normally involve major new investments; whereas, concessions require the concessionaire to finance a significant capital investment program and usually last longer – up to thirty years. (See Chapter 2 – *Principles*.)

Very few East Asian economies have yet to implement private sector concessions in water supply, although Jakarta and Manila have contracts for urban water supply. The Manila concession, developed with World Bank assistance, has many features of a 'best practice' model. Unlike the Jakarta concessions, which were negotiated contracts, and are likely to be renegotiated by the Habibe administration, the Manila franchises were subject to open competitive tendering. Two franchises were granted, for east and west Manila, enabling the regulator to compare future performance; this is competition by comparison.

PRIVATISATION STRUCTURE OF MANILA WATER SUPPLY AND SANITATION

- Two 25 year concessions were let for vertically integrated water supply and sanitation for east and west Manila
- Manila Water Supply and Sanitation, the public water supply and sanitation utility, retains ownership of fixed assets but transfers operations and investment responsibility to private operators
- Concessionaires have rights to the local water source (Angat River) but must supply all additional bulk water needs
- Concessionaires must establish project companies that are at least 60 per cent Filipino owned
- Manila Water Supply and Sanitation prepared a rigorous Concession Agreement to define concessionaires' rights, responsibilities and relationships
- Concessionaires will improve service and expand coverage according to standards and targets stipulated in the Concession Agreement
- Manila Water Supply and Sanitation will regulate, monitor and enforce the agreement
- An arbitration panel of three members was established outside Manila Water Supply and Sanitation to resolve disputes between the regulator and the concessionaires.

Source: Veroy, 1997.

During the process leading to the award of these concessions, bids were decided on the average water tariff which bidders offered to charge (Veroy, 1997). The winning bidder for both zones was a consortium comprising the Ayala Corporation (local partner) and Bechtel and Northwest Water (foreign partners). However, the bidding rules specified that a single consortium could only win one zone. Consequently, the Ayala consortium was awarded the East Zone and the second placed Benpres and Lyonnaise des Eaux consortium was awarded the West Zone. The winning bidders now provide concessions at an average water supply price 57 per cent and 27 per cent below Manila Water Supply and Sanitation's Metro Manila pre-concession tariffs (Table 5.7) (East Asia Analytical Unit, 1998a).

The private concessionaires were given compliance targets to deliver direct benefits to water users, including almost universal water service for the Manila water supply and sanitation service area within ten years, and almost no increase in real water tariffs over the first ten years. US$7 billion is to be spent on improving and expanding the system over the concession period. Proposed extensions

Table 5.7

Ayala Consortium Bid Dramatically Cheaper than Rival Bids

Bid Rates Manila Water Concessions
(Peso / cubic meter and per cent of existing rate structure)

Bidder	East Zone	West Zone
Aboitiz Equity Ventures (local), Generale Companie des Eaux (foreign)	P5.52 (63 per cent)	P4.99 (57 per cent)
Ayala Inc (local), Bechtel and Northwest Water (foreign)	P2.32 (26 per cent)	P2.51 (29 per cent)
Benpres (local), Lyonnaise des Eaux (foreign)	P6.13 (70 per cent)	P4.97 (57 per cent)
Metro Pacific (local), Anglian Water (foreign)	P5.66 (65 per cent)	P5.87 (67 per cent)

Source: East Asia Analytical Unit, 1998a.

specifically address the needs of the 30 per cent of Manila's population, mostly low income households, who are unconnected and pay over ten times the price, relative to tariffs connected customers pay, for vendor supplied water. Within three years, the concessionaire is to provide to all existing connections uninterrupted 24-hour supply that meets WHO quality standards. Non revenue water must be reduced from 56 per cent to at least 32 per cent over the first ten years and a waste water disposal program with 80 per cent coverage must be implemented within 25 years.

The strength of these contractual obligations and the ability of the small regulatory unit the government established to enforce these obligations remains to be tested. Whether the winning bidder in the east Manila concession realistically evaluated costs is also untested. The current exchange rate volatility in East Asian economies is testing the tariff formulas attached to the contract. With the peso's 40 per cent depreciation after mid 1997 and depleted water sources due to El Niño, both concessionaires applied to double their tariffs in May 1998.[8]

Despite these problems, the concession approach can deliver major real cost savings to customers, as well as expand supply capacity. In addition, experience with similar types of arrangements in Argentina indicates the concession approach may provide long term solutions to entrenched problems such as poor revenue recovery and high unaccounted-for-water losses.

[8] As both concessionaires took on the significant US dollar debt Manila Water Supply and Sanitation incurred, the tariff adjustment formula protected them from depreciation.

THE BUENOS AIRES WATER CONCESSION

Since the 1900s, the state-owned Obras Sanitarias del Nacion has been responsible for water supply and sewerage in Buenos Aires. The company was notorious for creating waterworks monuments, which only provided a fraction of the water they were meant to produce. System rehabilitation was minimal and unaccounted-for-water loss represented 45 per cent of water produced. Only 20 per cent of connections had water meters, but these were seldom read and rarely billed. The number of employees was between 8 and 9 per 1 000 connections; whereas, efficient firms employ 2 to 3 per 1 000 connections.

The first World Bank water supply loan to Argentina in 1986 engaged consultants to work with counterparts in the local water utility to diagnose the situation. Only the first part of a three-phase study was successfully completed; lack of cooperation between consultants and their counterparts caused the contract to be terminated. Although some recommendations from the first phase could have been undertaken to improve performance, the water supply firm did not act on them. It took a 1991 government decision to privatise Obras Sanitarias del Nacion to break the impasse and initiate a path-breaking reform which revolutionised the water supply sector in Buenos Aires.

On 1 May 1993, a private consortium (Aquas Argentinas led by Lyonnaise des Eaux and Dumez) started operating the greater Buenos Aires water supply and sanitation system under a concession contract with the Argentinian Government. Until 1998, Buenos Aires was the single largest private water concession in the world. In the first year of operation, the concession significantly increased labour efficiency, improved water quality, reduced summer water shortages and cut water rates by 17 per cent. By December 1995, the number of meters in service had risen by 460 per cent, and in contrast to the years before privatisation, water rationing was not required during the summers of 1994-95 and 1995-96. (Data for later years are unavailable.) The concessionaire also implemented a substantial program of field data collection to reduce unaccounted-for-water losses and illegal connections.

Source: Rivera, 1996; and Idelovitch and Ringskog, 1995.

HIGHWAYS

Recent developments in electronic tolling, traffic management and intelligent vehicle and highway systems increase scope for private sector involvement in highway infrastructure. Lower toll management costs and greater charging flexibility according to time of day and congestion levels is possible.

This century, the public sector has substantially financed road construction in most countries. In the USA, states and counties had been responsible for most road investment and maintenance since the 1860s (Guislain 1997, p. 208). However, technological developments in the 1990s created considerable interest in private-public partnerships in road transport in the USA and Mexico. The first new private

tollroads in fifty years began operating in the USA in 1995, with another 49 new private toll facilities under construction. Only Mexico had more private highway projects underway.

Competition by tender to construct, operate or maintain infrastructure assets can significantly reduce governments' highway provision costs. However, availability of public funds to construct new roads, particularly with government budgets severely constrained in the wake of the financial crisis, and the quality of the resulting roads, can be problems.

Private ownership can help overcome these problems. Provided projects are bankable, the private sector can raise the funding for major road projects on a non-recourse basis, bear the construction and demand risk of projects, and repay loans from project revenue. Private ownership also provides incentives to minimise costs and build quality infrastructure (Hepburn et al, 1997).

Arguments For and Against Tollroads

Despite these potential advantages, some analysts question the relative efficiency of privately-owned tollroads compared to publicly funded roads because:

- tollroads within otherwise untolled urban road networks can be significantly under-used due to leakage to non-tollroads, resulting in inefficiency. Promoting private sector involvement in transport is difficult when the government subsidises activity on neighbouring 'competitive' routes and transport modes, undermining the market
- when the public good aspects of roads are considered, raising funds to pay for roads through fuel levies or car registrations may be more efficient.[9] However, two-tier tariffs and time of day charging may help overcome this problem
- private sector involvement in tollroad land acquisition may raise transaction costs, particularly where projects can only take a unique route. For this reason, the Philippine Government acquires the right of way for private BOTs using its constitutional power to purchase private land for fair compensation
- competitive tendering and contracting to construct and operate tollroads under public ownership may offer similar efficiency benefits as private BOOT schemes (Hepburn et al, 1997). Within an appropriate structure, a government-owned road corporation could access non-recourse debt and other innovative finance (Australian House of Representatives Standing Committee on Communications, Transport and Microeconomic Reform, 1997). However, in this situation, the government would still bear commercial risks of projects, which is not the case if they are operated as long term BOTs or BOOTs

[9] Another possible option is to introduce BOOT tollroad projects that receive their revenue from a 'shadow toll' per vehicle, paid by the government. This would afford users free access while the private sector continues to bear the traffic demand risk (Australian House of Representatives Standing Committee on Communications, Transport and Microeconomic Reform, 1997). However, this approach would not allow governments to avoid the fiscal costs of installing new roads, as tollroads do.

INCENTIVES OF TOLLROAD CONTRACTORS VERSUS LONG TERM OPERATORS

Tollroad project problems may arise from the interrelationship between the project sponsor or concessionaire and the construction contractor. Problems can arise when construction companies are also the tollroad sponsor and operator. Contractors tend to have a short term view of infrastructure projects, seeking profits from the construction phase; whereas, sponsors need a longer term view with incentives to efficiently structure the project for returns on investment over fifteen to twenty years. Cost over-runs are higher and more frequent when the sponsor is also the contractor. In properly structured project financing, project costs are set through a fixed price, fixed date contract with a reputable turnkey contractor, including provisions for liquidated damages and warranties to minimise cost overruns, and completion and performance guarantees to minimise time overruns. Arms-length contracts become difficult to negotiate and document where the contractor also has a large equity share in the project.

For example, rent-seeking behaviour in Indonesian tollroads has involved a co-sponsor of several projects making large returns through construction contracts, on which it under-performed. Where sponsors cannot minimise construction costs and risks through competitive tendering of construction and maintenance contracts, the benefits of private involvement are diminished.

- public road funding (and public funding of infrastructure generally) may be cheaper that private sector finance. However, this would only be the case because private funding costs reflect the true riskiness of a project; whereas, government funding costs reflect the expectation that borrowings have a sovereign guarantee, that is, governments bear all the risk. If the government funds tollroads on a non-recourse basis, with no guarantee to repay loans except from project revenue, its financing costs would be the same as a private firm undertaking the same project.

East Asian Tollroad BOTs

Many East Asian countries use BOTs as a contractual instrument to fund, construct and operate highway developments. Indonesia has implemented many private tollroad BOTs, with the Indonesian Government developing standard approaches to engaging private contractors and operators. However, transparency in project selection was a serious problem; the new administration has indicated it will adopt open and competitive tendering for tollroad projects. The Philippines, Malaysia, Australia, Thailand and China also operate tollroad BOTs, and most East Asian economies have tollroad projects in the planning or construction phase.

COMPLETING MALAYSIA'S NORTH-SOUTH EXPRESSWAY - PRIVATELY

The Highway Authority of Malaysia initially managed construction of the North-South Expressway, begun in the early 1980s. However, the government more than halved the budget for the expressway in 1988 when it faced severe budget constraints. To prevent delays, the government awarded a BOT concession to a private firm, Projek Lebuhraya Utara-Selatan, PLUS, to complete the expressway. The concession agreement included the right to collect tolls from users for 30 years, with the government providing a soft loan totalling RM1.65 billion (US$600 million). Government also guaranteed forecasted traffic revenues, and gave protection against movements in the exchange rate or external interest rates for the first 17 years of the concession. The project was completed in February 1994, fifteen months ahead of schedule.

The expressway has been criticised by some who argued the award of the concession lacked transparency, as two other companies submitted bids that were more competitive than PLUS – which was owned by United Engineers Malaysia, a company with connections to the ruling party. Critics also claim construction sequencing was inappropriate as the northern, low traffic segment was completed first and higher trafficked southern stretches completed later.

Source: Naidu and Lee, 1997.

In the 1990s, Hong Kong's administration has awarded several BOT concession arrangements to private companies to construct, manage and operate commercially viable road projects. Two major BOT tollroad projects include the Western Harbour Crossing, awarded in 1993, valued at HK$6.5 billion and the Route 3 Country Park Project, awarded in 1995, valued at HK$7.25 billion.

The Hong Kong administration provides an example of best practice in private tollroads, minimising government involvement, avoiding guarantees on traffic flows and employing an efficient toll adjustment mechanism to reduce concession holders' risks from poor revenue collection. Competitive tendering is carefully planned and implemented, and closely monitored by the Central Tender Board and the Independent Commission Against Corruption.

HONG KONG'S TOLL ADJUSTMENT MECHANISM

The Hong Kong, SAR Government policy towards BOT road tolling aims to create:

- a stable and low toll regime
- a reasonable but not excessive return
- a toll mechanism linked to profitability, capping profitability and providing an incentive for the franchisee to be efficient.

The toll adjustment mechanism involves calculating net revenue from the project relative to upper and lower 'tramlines' at discrete points in time, for example every four years. If the return is higher than the upper tramline, the excess return accrues to the government. If the return is below the lower tramline, toll increases can be brought forward.

From the government's point of view, the mechanism quantifies what is a reasonable rate of return, and sets a mechanism for comparing actual net revenue to estimated net revenue, providing a more certain toll increase mechanism. From the franchisee's point of view, the mechanism does not provide a guaranteed return, nor will it lead to a toll increase unless performance conditions are met. The franchisee is still exposed to market risk related to:

- completion delay
- cost overrun
- tax
- traffic demand
- inflation
- completion of alternative routes.

Source: McFeat-Smith, 1996; and *Project Finance International,* 19 July 1995.

Guarantees and Subsidies for Tollroad BOTs

Tollroad usage rates below demand forecasts, in part caused by unpredicted leakage to non-tollroads, has undermined the viability of many tollroad projects in Thailand, China, Mexico and elsewhere. Traffic flow estimates frequently prove overly optimistic, especially when premised on high economic growth forecasts. Declining usage is likely to be a serious problem for tollroads in the wake of the financial crisis. Recent currency depreciations have further undermined tollroad viability.

As a result of the considerable risks involved, most BOT tollroad projects in Asia obtain finance largely because they have government guaranteed revenue projections. Hence, government bears the demand risk rather than the private sector, except in the event of sovereign default on guarantees. Where traffic flows are insufficient or are too uncertain, government guarantees for tollroads may encourage construction of unviable projects. The use of government guarantees to support such projects does not represent best practice.

As tollroad revenue alone often does not cover construction and operation costs, governments frequently supplement tollroads' financial viability by granting the right to develop surrounding land. However, as property development benefits tend to be highly unpredictable, they often are heavily discounted by prospective investors. The collapse of property markets in Indonesia, Malaysia and Thailand, and lower growth has left many associated property developments almost worthless.

Net present value guarantees

To help address demand uncertainties, BOT projects for tollroads can be auctioned according to the lowest present value of projects' future net revenue streams rather than minimum toll fees or the length of concession (Engel et al, 1997). The regulator could set a maximum toll, but the winning bid would be awarded on the basis of the operator collecting toll revenue with the lowest net present value over the contract life.[10] If demand is lower than expected, the operator can extend the period of the concession until the full present value bid amount is recovered. This model reduces demand risk for the operator and the potential for default and/or renegotiation of contract terms that would shift commercial risk back to government. However, the regulator needs to carefully specify and monitor operators' allowable costs to prevent them inflating costs to suppress the project's net present value.

PORTS

In the port sector, full privatisation is frequently a straightforward option because other transport modes, alternative routes and port facilities usually provide competition. In unusual situations where a single wharf has a monopoly because it is in the only feasible location, or because port usage is too low to justify a second wharf, a concession model may be more appropriate, with government retaining ownership of the port asset. In addition to full privatisation, in large seaports, particular wharves and stevedoring services can be unbundled and privatised. Large seaports where competition for cargo is intense are particularly good candidates for privatisation.

Options for Port Unbundling and Private Involvement

In unbundling ports, responsibility for infrastructure such as access channels and quays can be separated from service delivery. The landlord port model allows for competition in commercial activities such as towage and cargo handling. The private sector also can invest in fixed assets such as constructing and operating container terminals on a BOT or BOO basis. Competition can reduce charges and improve services. This involves not only competition among ports, but also inviting operators to bid for a concession to operate a port and by dividing large ports into terminals and operating each as a separate concession.

[10] The net present value of a project is the discounted value of its stream of net benefits (revenue minus costs) over the project's life where the appropriate discount rate is the cost of finance for the project.

Port developments have traditionally followed one of two public sector models:

- landlord ports where one entity, usually public, provides infrastructure but not services
- service ports where an integrated public port authority provides both infrastructure and services (Guislain, 1997, p. 227).

Hong Kong, the world's largest privately financed port, is a privately-owned landlord port which has never had an integrated port authority. Similarly, Japan operates publicly-owned landlord ports, with the Government leasing fully developed berths to private ocean carriers to manage according to their requirements. In contrast, Singapore is a service port, where the Singapore Port Authority owns and operates most infrastructure and services.

Constructing modern container ports involves major investment in wharves, land reclamation, docking facilities and cargo handling equipment. However, Hong Kong's experience demonstrates that the capital intensity of the industry does not necessitate extensive government involvement. The increasing globalisation of shipping and entry of Asian shipping lines into previously cartelised markets have helped make global container shipping markets highly competitive over the last decade (Kinhill et al, 1996).

In this new environment, major private and public hub and feeder ports seek to maintain their place in a market where containers can be transhipped by alternative routes. Singapore, Kaohsiung and Kobe are among the ports competing to become major container hubs for East Asia (Hong Kong Port Development Board, 1996). In this competitive environment, regulating or publicly owning the infrastructure assets of large ports is unnecessary. The major role of governments is to integrate planning and coordinate future infrastructure networks.

Hong Kong Port

Hong Kong is East Asia's premier best practice example of private sector port development. From the beginning of Hong Kong's history as a centre for international trade, waterfront properties were auctioned to raise funds for government activities (Wong, 1996). Private traders built an extensive network of wharves and warehouses. This pattern continues. Hong Kong's eighth and newest container terminal, connecting Stonecutters Island to the Kwai Chung port system, was entirely built and operated by private enterprise. Government already has agreed with the private sector to build and operate the ninth container terminal on Tsing Yi Island, opposite Kwai Chung. Authorities anticipate additional port development twice the size of Kwai Chung will be needed by 2006, although the regional financial crisis may reduce demand forecasts (Hong Kong Port Development Board, 1996).

HONG KONG'S PRIVATE SECTOR CONTAINER TERMINAL DEVELOPMENT

The port of Hong Kong is the busiest container terminal in the world, handling over 14.5 million 20 foot equivalent units in 1997. Hong Kong is the only major fully privately owned and operated international port in the world. The government provides the necessary land, navigation channels, infrastructure and utilities and the private sector finances, builds, owns and operates new terminals in response to market demand. They assume the risk and take the profit. Competition among the container terminals and alternative modes of container handling drives the operators to improve efficiency and service. Government ensures market forces operate efficiently by encouraging competition and planning for additional capacity to meet forecast demand.

Competition exists in all modes of operations. Four main container terminal operators are in Kwai Chung container port – Hong Kong International Terminals, Modern Terminals Limited, SeaLand Orient, and COSCO/HIT. Together they operate eight container terminals comprising 19 berths. Over 20 big and small mid-stream operators and numerous other firms operate in the river trade.

In 1987, when the authorities recognised Hong Kong would require major developments in infrastructure to cope with increased demand for transport in shipping, air and roads, it initiated a Port and Airport Development Study. This integrated plan for Hong Kong's infrastructure development includes the new airport, extensive new road and rail links, a port tunnel and development of new port capacity.

The plan recommended government create a Port Development Board to coordinate planning of the rapidly growing port system. Established in 1990, and renamed the Port and Maritime Board in 1998, the board is not a port authority in the traditional sense, as it coordinates future port planning through a government-private sector partnership. Through this process, government supports infrastructure such as roads, but does not own or operate ports. These arrangements also allow maximum freedom for port owners and operators to set tariffs.

Source: Thompson, 1996.

Private Participation in Other East Asian Ports

The Hong Kong system of private/public cooperation is being emulated globally. Within APEC economies, Canada, Australia, Hong Kong, China, Malaysia, Mexico, New Zealand, Indonesia, the Philippines and Thailand have all sought greater private sector involvement in existing ports or in port development (Guislain, 1997, p. 227).

P&O PORTS

An Australian based and managed division of UK company, The Peninsular and Oriental Steam Navigation Company, P&O Ports operates the most extensive network of ports in the world, and is Australia's largest private sector investor in overseas infrastructure. The Australian headquarters manages the firm's presence in almost 40 ports in 16 countries across five continents. P&O Ports currently has equity in and management of operations in Buenos Aires (Argentina), Maputo (Mozambique), Laem Chabang (Thailand), Port Qasim (Pakistan), Manila (Philippines), Vostochny (Eastern Russia) and Irian Jaya (Indonesia). Together with a Sydney based project team, P&O Ports' regional offices located in India, South Africa, UK and USA are principally involved with project evaluation and business acquisition by government privatisation or direct purchase.

In Australia, P&O Ports has container terminals at Botany Bay (Sydney), Fremantle (Western Australia), West Swanson (Melbourne) and Brisbane, as well as bulk and general cargo facilities in 35 locations across Australia and in Tauranga in New Zealand.

The company's Australian parent, P&O Australia Limited, has an annual turnover of about $1.7 billion, employing assets in Australia in excess of $1 billion. It currently employs some 41 000 people, approximately 33 000 in Australia. Using Australia as a stepping stone into South East, East and South Asia, USA and Latin America, P&O Australia derives 30 per cent of its profits from outside Australia.

In the Philippines, P&O Australia through P&O Ports has emerged as the largest Australian investor. P&O Ports manages and is a shareholder in Asian Terminals Incorporated, the operator of all port facilities in the South Harbour of Manila. The company listed on the Manila Stock Exchange in 1996. Appointed manager in 1990, P&O has redeveloped the port providing specific container handling facilities, including an inland container depot, a new land-based grain handling facility at Mariveles and greatly improved general cargo handling capability. It is currently studying the feasibility of further regional developments.

Source: P&O, 1998; Setchell, 1998; and East Asia Analytical Unit, 1998a.

Malaysia was the first South East Asian economy to involve the private sector in port management. In 1986, Malaysia leased the country's largest container terminal at Port Kelang to a consortium of local and foreign interests. In 1988, the Philippines followed, granting management of Manila's International Container Terminal to a private holding group, Asian Terminals Incorporated, owned by P&O Ports and local interests. Both countries have since expanded private involvement in port management and construction by allowing private operators access to other local ports and maritime transport related services.

LESSONS FROM PORT REFORM IN ARGENTINA

Between 1990 and 1993, the Argentinian Government reformed work practices at its ports, liberalised restrictions on ship registration, freed up contracting and stevedoring firms, and deregulated pilotage and towage services. The port of Buenos Aires, Argentina's largest and busiest port handling most of the country's container traffic, was largely privatised with the six main terminals awarded to concessionaires. The six terminals at Peurto Nuevo were auctioned to the highest bidder on the basis of the highest annual rental fee offered to the government.[11]

Combining deregulation, competition and privatisation has dramatically reduced Argentinian port charges, and barge and ocean shipping tariffs. Charges for shipping containers between Argentina and Northern Europe dropped by 30 to 70 per cent in less than two years, and charges for shipping grain and other bulk goods dropped by 10 per cent. Tariffs for port services also fell; towage tariffs fell by 40 per cent.

However, Argentina's experience also had some shortcomings. The authorities did not anticipate or cater for the significant impact of increased port capacity on city traffic. The increased congestion and pollution were not priced into concessionaires' costs. An independent national port authority was not organised to act as regulator and monitor of the concessionaires before privatisation. Finally, bidders were too optimistic about the market growth potential and made excessive bid prices. Consequently, the concessionaire for one terminal went bankrupt in late 1995.

Source: Estache and Carbajo, 1996.

Future Prospects for Private Port Development

Increasing budget constraints and continuing growth in demand for port services are pressing East Asian governments to push ahead with private involvement in ports. China, India, Indonesia, the Republic of Korea, Taiwan and Vietnam all are starting to let concessions to private port investors and operators. This trend will continue and in most Asian countries the private sector will be formally involved in port construction and management. So far, emphasis has been on container terminals and bulk handling facilities for specific projects such as mining projects. So long as care is taken to appropriately unbundle port activities before concessions are let and regulate them afterwards, this process can yield significant benefits, as experience from Asia and Latin America indicates.

[11] This approach works where a competitive market has many service providers. However, the Subic Bay Authority case indicates that granting concessions on the basis of rental only is inappropriate when only one operator will service a port, and no ports close by provide competition. (See Chapter 2 – *Principles*.)

RAILWAYS

Most East Asian countries operate integrated publicly-owned rail authorities undertaking a wide range of core and non-core activities, including:

- planning extensions to the rail system
- scheduling track use
- constructing and maintaining track, bridges, tunnels
- operating rolling stock
- maintaining equipment and rolling stock
- building and maintaining customer relations
- ticketing and invoicing customers
- cooperating and competing with other transport modes.

Unbundling Rail Services

No one enterprise needs to perform all these activities. Indeed, Latin American experience demonstrates competition for unbundled segments of integrated railway monopolies improves efficiency and reduces government subsidies to the railway sector.

The two main monopoly elements in the rail industry are the design, planning and ownership of the rail system and train service scheduling. Once a line has been built, an additional line probably will not be profitable unless it is far enough from the first to attract customers who will save costs by using the new line. Normally new lines must be connected to the larger rail network for the investment to be viable. These factors give the existing railway network owners some natural monopoly protection. Scheduling also is a monopoly function since duplicated track is scarce on most networks, and services cannot run at the same time on the same track. However, all other activities integrated railway firms undertake can be unbundled and provided on a competitive basis.

Firstly, rail network ownership can be separated from rolling stock ownership, improving efficiency. Several rolling stock owners can compete to provide scheduled services on the rail network, reducing their capacity to overstaff rail service operations and spurring improved reliability and customer service. Just as with electricity systems, the rail regulator would ban cross ownership of rail lines and rolling stock, so rail network owners will have incentives to allow all rolling stock owners to compete freely for scheduled services. Strict regulation of track use charges would ensure the track owner did not exploit its monopoly power.

One problem with splitting rail and rolling stock ownership is it can lead to poorly maintained wheels, increasing wear on the track. Conversely, badly maintained track can cause excessive wear and increase the maintenance of rolling stock. Excessive wear on either component increases the probability of derailment, which would be costly for both parties and the public. Either party has the common law right to recover damages that demonstrably resulted from negligent acts of the other party. However, detecting and proving negligence might be costly so, over some range, both parties could have an incentive to under-maintain their assets.

Two-part fees for track use based on a fixed charge, plus a component that depends on the total time the facilities are used, may offset these incentives to under-maintain. Owners of rolling stock will want to maintain wheels so their trains can travel faster, lowering their time related charges. Owners of track will have an incentive to ensure train journeys take less time, so they earn more fixed charges.

Geographically separating a rail system also might introduce some costs; rolling stock can be used more efficiently if schedules can be optimised over a number of interlinked lines. However, gains from inter-linkages with other transport providers could offset the potential costs of geographical separation of rail services. For example, separating the owner of the track and associated infrastructure from the service provider would enable trucking and shipping firms to provide rail services that are integrated with their other transport services.

Rail Privatisations

In the 1990s, New Zealand, Canada, Japan and the United Kingdom privatised railway operations. New Zealand's railway freight and operations were privatised in 1993, after an extensive process of consolidation and corporatisation.

CORPORATISATION AND PRIVATISATION OF NEW ZEALAND RAIL

For most of the twentieth century, the Railways Department of New Zealand controlled all freight and passenger railway operations. From 1962, it also operated a ferry service between the North and South Islands. In 1982, the Railways Department and the ferry service were reorganised into the government-owned New Zealand Railways Corporation. The corporation extensively restructured the railway and ferry operations to conduct business more efficiently. In 1990, New Zealand Rail Limited was incorporated as a wholly government-owned limited liability company. Government transferred all of its rail and ferry assets and related liabilities to New Zealand Rail but retained ownership of the land on which rail assets operated and leased the land to New Zealand Rail. This reorganisation anticipated the privatisation of railway and ferry operations.

Tranz Rail Holdings Limited was formed to bid for New Zealand Rail when it went on sale in 1993. The firm acquired New Zealand Rail in September 1993 at a purchase price of $328.3 million in cash, including the lease of land. The company's shareholders include affiliates of Wisconsin Central Transportation Corporation, a publicly held US rail holding company, Berkshire Partners LLC, a US private equity firm and Fay, Richwhite and Company. In 1995, New Zealand Rail Limited became Tranz Rail Limited. In 1996, the company went public, listing on the New Zealand Stock Exchange where the company currently ranks fourteenth in terms of market capitalisation.

Source: Tranz Rail, 1998.

Most US railroads have been privately funded and operated since the 1800s (London Economics, 1995, p. 3). However, to date no developing East Asian economy has introduced comprehensive private participation in the rail sector, although Pakistan is considering private sector options (Thompson and Budin, 1997). Nevertheless, Japan has privatised Japan National Railways in the last decade (East Asia Analytical Unit, 1997b) and private railway concessions have been implemented with some success in other developing regions, particularly Latin America (Table 5.8). Several rail BOTs are in the planning or construction stage in countries like the Philippines.

Table 5.8

Latin America Leads in Private Rail Concessions

Railway Concessions in Latin America, Africa and the Asia Pacific

Country, railway	T-km (000 000)	P-km (000 000)	Line (km)	Employees	TU/km (000)	TU/Employees (000)
Argentina						
NCA (1997)	1 741		4 529	865	385	2 013
FEPSA	982		5 163	575	190	1 708
Ferrosur Roca	854		4 791	808	178	1 057
BS AS al Pacifico	2 029		5 493	1 079	369	1 880
Mesopotamico	620		2 751	534	225	1 161
Bolivia						
Andina (1995)	322	114	2 082	2 443	209	178
Oriental (1997)	514		1 179	632	436	813
Brazil						
RFSSA (1996)	35 118		21 715	28 401	1 617	1 236
EFVM (1997)[a]	50 137		898	4 991	55 832	10 045
Carajas (1997)[a]	37 500		1 175	1 814	31 915	20 673
Chile						
Freight, FEPASA (1997)	816		2 200	475	371	1 718
Mexico						
Northwest	17 200		6 200	21 300	2 774	808
Northeast	14 000		3 960	9 830	3 535	1 424
Canada National (1995)	159 540		29 700	27 979	5 372	5 702
New Zealand (1993)	3 260	525	4 000	4 500	946	841
USA, Conrail	128 627		19 082	24 728	6 741	5 202
Cote d'Ivoire and Burkina Faso	417	163	1 155	1 823	502	318
Togo (management contract)	19	9	532	800	53	35

Note: a Parent company is CVRD; T-km means metric-ton-kilometres; P-km means passenger-kilometres; and TU means traffic units, the sum of metric-ton-kilometres and passenger-kilometres; TU/km is traffic units per kilometer of line operated.

Source: Thompson and Budin, 1997.

Rail Concessions

During the 1990s, Latin American countries used the concession model as an alternative to privatisation because they were reluctant to fully transfer railway assets to the private sector. Railway concessions created competition *for* rather than *in* rail service markets, via competitive bidding to supply rail services on government-owned rail assets. As well as creating incentives for reducing costs, improving maintenance and better service, selling railway operations and letting concessions has reduced government spending in a sector that historically drained government budgets.

No one simple approach to the concession model dominates. The governments of Argentina, Brazil, Chile and Mexico all selected different numbers and mixes of operations to include in each concession. The eventual structure and number of participants varies considerably between countries. However, four key lessons from the Latin American experience with rail concessions are:

- the length of the concession should be consistent with the life of assets financed by private sector concessionaires
- the concession process should be implemented rapidly, as once the process begins, public operators have little incentive to maintain assets
- as retrenchments tend to be large after rail privatisations, a structured program of redundancies and assistance with reemployment in other sectors assists political acceptance of the change
- the state should carry existing environmental liabilities but the private sector should carry demand and operating cost risks. Government should continue to regulate safety, monopolistic behaviour and adherence to service obligations (Thompson and Budin, 1997).

The governments of Argentina, Chile, Brazil and Mexico introduced innovations that built on each others' experience and addressed concerns that arose in initial attempts at private participation:

- Argentinian concessions were the first to use negative bids to subsidise suburban passenger services
- the Argentinian system also was the first to require freight concessionaires to share tracks with passenger services, for which they paid a fee
- Chile separated tracks from rail operations; government retained public ownership of the rail network and passenger services in separate enterprises, while freight services were let as a single concession in 1995. This model reduces the need to regulate track access
- Brazil arranged for the World Bank to directly fund severance payments for employee redundancies
- Mexico rapidly implemented its program through prior separation of the state-owned operator into four geographically divided stock companies with separate managements. Controlling interests in the stock companies were sold to the private sector as going concerns (Thompson and Budin, 1997).

FRANCHISING RAIL FREIGHT AND PASSENGER SERVICES TO THE ARGENTINIAN PRIVATE SECTOR

In 1990, the publicly-owned Argentinian railways system generated major government funded operating losses. The largest carrier, Ferrocarriles, lost US$1.4 billion per year in 1992 dollars. The size of these public liabilities created a momentum for reform that led to privatising many Argentinian freight and passenger railway services through concession contracts.

Freight networks were broken up into six regional monopoly franchises combining track and service operations. Each concession had a 30-year contract term, with an optional ten-year extension. Freight concessionaires had exclusive use of tracks in their concession area, apart from a requirement to give access to passenger operations for a fee. Fixed assets remained government property, so a fee was paid for track services and rental of rolling stock. Concessions were granted through competitive bidding using a complex weighted formula for the decision criteria. The formula included experience, investment plan, employment pledge, local investor participation, fees, rent and passenger service access toll.

The complex formula may have encouraged bidders to present unrealistic demand projections and investment plans to win the franchises. By 1996, after three years of operations, freight demand was 30 per cent short of projections and little used lines were not maintained. Trucks provided strong competition, contributing to low rail demand. Nevertheless, freight volumes over the elapsed concession period grew by between 40 and 160 per cent on major lines. Also, further savings came from reductions in staffing levels, no more than half of which came from cutting services on lesser used lines. For example, Ferrocarriles Argentinos reduced staff from 92 500 in 1989 to about 17 000 in 1996.

After creating the freight franchises, seven suburban railway services also were franchised as ten-year concessions, or 20 years in Buenos Aires. Because passenger services were heavily subsidised, concessions were awarded on the basis of the lowest subsidy. This single selection criteria increased transparency and avoided the difficulties of complex multi-criteria selection formula in the freight franchise. After bidding, the final subsidy required was just over US$1 billion in 1992 dollars, with payment spread over 12 years. Preliminary conclusions after reviewing the initial period of operations indicate passenger traffic increased by 75 per cent in all but the SUBTE (subway) concession. At the same time, car kilometres have only increased 25 per cent, indicating improved use of existing capacity. Revenue per passenger also increased through fewer fare evasions.

Source: Carbajo and Estache, 1996.

Preliminary reviews of outcomes from franchising Latin American rail operations to the private sector indicate considerable success in achieving the government objectives. For example, levels of subsidies in Argentina were reduced and concessionaires were able to reduce costs and increase traffic on major lines (Carbajo and Estache, 1996).

TELECOMMUNICATIONS

Recent technological developments in telecommunications have increased the scope for competition for fixed wire networks from close substitutes such as cellular phones and the Internet. In addition, telecommunication assets, such as satellite dishes, microwave towers and switching stations, can be more easily resold than water mains and highways. Thus investors in telecommunications assets have some degree of security if projects fail, and are more easily able to enter the market and compete with or take over incumbent firms. Consequently, privatising telecommunication facilities raises fewer monopoly regulation problems than piped water or electricity transmission networks.

Telecommunications Reforms in Latin America and East Asia

Chile's recent experience with telecommunications privatisation is most successful. As well, several Asian countries are moving towards more competitive models of service provision, particularly the Philippines. Some East Asian economies have partially privatised their state-owned telecommunications utilities. For example, in Indonesia, government equity in the state-owned telecommunications firm, PT Indosat, was floated on the stock market. Other privatisations are in the planning stage (Holtsbaum et al, 1996). The private sector has minority equity shares in government-owned monopolies in Singapore, Japan, Malaysia and, more recently, Australia (Table 5.9). The Philippine telecommunications sector is fully private.

However, often partial privatisations of government carriers are designed to raise investment funds for the utility and provide a government financial windfall through asset sales. Since the onset of the financial crisis, the impetus to raise funds through asset sales has increased. Most share sales have not been part of a coherent process to introduce competition.

Mobile phones

The low fixed costs of mobile telephony make cellular phones the preferred entry point for many new telecommunications companies, particularly in Asia. Cellular technology makes competition feasible at the low teledensities presently evident in Asian countries such as the Philippines. Up to a minimum teledensity, cellular phones are more cost effective than fixed phones (Smith, 1995). At the same time, the lack of reliability of fixed line systems creates a broader base for market demand for mobile services than initially anticipated. For example, long queues for new phone connections in the Philippines rapidly raised the number of cellular subscribers to 26 per cent of all subscribers by 1996 (International Telecommunications Union, 1997). Thus mobile telephony creates competitive incentives even where monopoly incumbents control fixed line systems or governments restrict new entrants' access to networks.

Table 5.9

Government Ownership Still Dominates

Telecommunications Operators in East Asia and Australia, 1998

Economy	Regulatory authority	Ownership of Incumbent operator	Number of operators (old and new)			
			Local	National	Inter-national	Cellular
Australia	Australia Telecommunications Authority	Telstra 70 per cent government owned; Optus private	2	2	2	3
Cambodia	Ministry of Post and Telecommunications	Government owned	3	1	1	4
China	Ministry of Post and Telecommunications	Government owned	1	1	1	2
Hong Kong	Office of the Telecom-munications Authority	Government owned	4	1	1	6
Indonesia	Directorate General of Posts and Telecommunications	81 per cent government owned	1	1	2	8
Japan	Ministry of Posts and Telecommunications	65 per cent government owned	2	4	3	3
Korea, Republic of	Ministry of Information and Communication	71 per cent government owned	1	1	2	2
Laos	Ministere des Communications, Transports, Postes et de la Construction	Government owned	1	1	1	1
Malaysia	Jabatan Telekom Malaysia	67 per cent government owned	1	3	3	5
Burma	Posts and Telecommunications Department	Government owned	1	1	1	1
Philippines	National Telecomm-unications Commission	Privately owned	7	4	9	5
Singapore	Telecommunications Authority of Singapore	83 per cent government owned	1	1	1	2
Taiwan	Ministry of Transport and Communications	Government owned	1	1	1	6
Thailand	Ministry of Transport and Communications	Government owned	3	1	2	4
Vietnam	Department General of Posts and Telecommunications	Government owned	1	1	1	2

Note: Local is local telephone; national is national long distance; international is international long distance telephone; cellular is cellular mobile.

Source: International Telecommunications Union, 1997, updated by East Asia Analytical Unit.

TELECOMMUNICATIONS REFORM IN CHILE

Chile has one of the most successful approaches to involving the private sector in telecommunications, with full privatisation of the incumbent utilities, only technical restrictions for licensing new entrants, independent government regulation, and customer choice in providers through a three digit access code (Guislain, 1997, p. 211).[12] In late 1988, the government transferred all its shares in the local service telecommunications provider, CTC and the long distance and international service provider, ENTEL, to the private sector, producing one of the most competitive telecommunications markets in the world. Government learned from previous failures and implemented a sustainable long term framework for competition, which delivered real benefits to customers.

In Chile eight firms, five of them major players, vie for customers in long distance and international services. For each call, customers dial a three digit number to access the carrier of their choice. After a fierce price war pushed the price of an off-peak call from Santiago to New York down to about 23 US cents per minute at the end of 1995, prices rose to about 75 cents in January 1996, which was still slightly cheaper than calls from New York to Santiago, and significantly cheaper than the $3 charged in neighbouring Argentina for similar calls. Competition not only reduced margins, but rapidly increased the number of subscribers; penetration or teledensity rates have increased from 5 per cent to 12 per cent since privatisation in 1988, and much greater call volumes have left most carriers with higher than expected profits.

Source: Guislain, 1997, p. 211.

In East Asia, only the Philippines has moved substantially towards the Chilean model of full private ownership with regulated access to trunk networks and an independent industry regulator. However, licensing new entrants is still restricted and the incumbent private provider has attempted to block new operators' access to its fixed line network. Nevertheless, competition has encouraged new investment and significantly benefited consumers.

[12] Chile first began privatising infrastructure services in the 1970s. However, these attempts failed economically and financially, principally because attention to the broader institutional and regulatory framework was inadequate (Guislain, 1997, p. 2). The telecommunications sector was not part of the initial wave of privatisations.

INTRODUCING COMPETITION IN PHILIPPINE TELECOMMUNICATIONS

Until recently, a privately-owned monopoly, the Philippines Long Distance Telephone Company, PLDT, provided most fixed wire telephony in the Philippines. In 1996, PLDT was the largest telecommunications company in South East Asia fully owned by the private sector (International Telecommunications Union, 1997).

PLDT is typical of the monopolies that dominated the Philippine economy during the Marcos era. While the company is publicly listed, one of the Philippines' wealthiest families holds the controlling interest. For a long time, PLDT enjoyed special treatment and protection from competition, operating very inefficiently with long new connection wait times, up to nine years, and high tariffs (Eshahani, 1994; and Tasman Economic Research, 1993).

Changing technology has enabled the Philippine Government to promote competition in the telecommunications sector. Since 1990, eight companies have been granted licences to enter the telecommunications market to compete with the incumbent monopoly in the fixed wire system and a second private monopoly in the cellular market. Consistent with the constitutional limits on foreign ownership, most new operators are 40:60 per cent joint ventures between foreign and local companies. Nine international gateway operators and five national mobile phone operators, including the original monopoly providers, now operate.

To increase access to telephone services in under-serviced areas, new licensees are contractually committed to provide new fixed line services. The Philippines also has set up a telecommunications regulator independent of the Department of Transport and Communications, in line with best practice approaches being adopted in countries such as Chile.

Some new carriers complain they cannot meet network development commitments because the incumbent PLDT does not provide enough interconnection points. Guaranteed mandatory interconnection rights are difficult to enforce. PLDT appears to have resisted interconnection, possibly as a strategic game to reduce competitors' revenue and maintain market share (Lichauco, 1997). The PLDT still has 80 per cent of the market, although this has dropped from 90 per cent. While, PLDT has no economic incentives to facilitate interconnection, new operators have an incentive to lobby government to reduce their contractual obligations.

Despite these difficulties, government promotion of competition in telephony since 1993 has increased fifteen fold the annual installation of main lines (Petrazzini, 1996). Threat of competition in the Philippines in 1993 also may have prompted PLDT to announce the 'zero back-log program' raising annual investment in new connections from about US$300 million to $450 million after relatively stagnant growth in previous years (Smith, 1995). At same time, the company decreased staff numbers 5.8 per cent in 1995-96 to increase overall productivity. Waiting time for connections has fallen significantly and mobile phone charges are some of the cheapest in East Asia.

Source: International Telecommunications Union, 1997; and East Asia Analytical Unit, 1998a.

MASS TRANSIT

Sizeable external benefits accrue from constructing mass transit systems. They relieve road congestion and cut pollution, traffic noise and travel times. However, competition from subsidised road usage makes few mass transit projects financially viable. User willingness and ability to pay is low in most developing country cities while up-front capital costs are very high. Projects also are very difficult to implement. Construction causes traffic diversion and congestion, and pollution from noise and dust. Land acquisition can be difficult and drawn out, often slowing or stalling projects.

The Philippines, Thailand and Malaysia have awarded concessions to the private sector to design and build mass transit systems financed by the private sector on a limited recourse basis. The optimism of recent years led to projects in a number of countries; many of these now are stalled or cancelled. Experience has left sponsors and financiers with little appetite to attempt wholly private-owned mass transit projects in the near future.

In the early 1990s, Thailand initiated three projects to address Bangkok's serious congestion problems:

- Hopewell's elevated rail and road network project, valued at US$3.2 billion
- Bangkok Transit System Corporation/Tanyong elevated metro skytrain system, valued at US$1.7 billion
- Metropolitan Rapid Transit Authority's underground electric train system, valued at US$3.2 billion.

The first two projects are private-sector led and financed, the third is owned by Bangkok's mass transit authority and financed by official development assistance loans from Japan's Overseas Economic Cooperation Fund. All three projects have had major problems, due to increased construction costs resulting from the baht's depreciation, difficulties in raising finance and problems with land access arrangements.

Hopewell was granted a 30-year concession for its project in 1991. After long delays and controversy over approvals with multiple local authorities along the route of the project, the Thai Government cancelled the concession contract in February 1998 with only 16 per cent of the 60 km route completed (*Asian Infrastructure Monthly*, April 1998). Thailand's currency crisis increased the project's estimated cost from US$3.2 billion to $4 billion.[13] The Thai Government is planning to continue with a cheaper, scaled down version of the project. If no private consortium is willing to implement the project, the government intends to proceed using soft loans from Japan's Overseas Economic Cooperation Fund. The experience highlights the importance of clarifying land access arrangements on transport projects prior to implementation, and also the broader problem of high financial risks associated with investment in private infrastructure where negotiations lack transparency.

[13] See *The Nation*, 1997, www.nationgoup.com/nation/breaking/NWS040.5.HTML, 5 December.

The 30-year concession granted to the Bangkok Transit System Corporation appears to be faring better. This concession contract was developed with assistance from the International Finance Corporation, in 1995. The International Finance Corporation saw the project as a demonstration pilot for other developing countries, so it helped evaluate the regulatory framework for the project and provides equity and loans to the project totalling US$70 million (International Finance Corporation, 1995; and International Finance Corporation, 1996). The credibility of the local project sponsor and care taken with the implementation of this project using International Finance Corporation's advice and input appears to have minimised political controversy and interference. However, the project sponsor still has to weather the present economic downturn in Thailand. If this concession is successfully completed, it will highlight the importance of careful project structuring and financing for limited resource infrastructure projects. Already delayed by two years, the system is now supposed to open in December 1999 (*Asian Infrastructure Monthly*, August 1998).

The Metropolitan Rapid Transit Authority subway system also is beset with problems. Although Japanese soft loans were approved, the heavily indebted authority cannot provide its share of the construction costs, and cannot borrow funds due to limits on Thailand's public borrowing. Controversy surrounded the award of the first contract for line construction, with one bidder complaining of political meddling and contract rigging (*Asian Infrastructure Monthly*, July 1998). Meanwhile, income projections suggest the project will only recover 25 per cent of construction costs over its 25 years of operation.

Manila has one operating light rail system (LRT1), two being constructed (LRT2 and LRT3) and a fourth, the subject of an unsolicited proposal. The LRT2 project is financed by a loan from Japan's Overseas Economic Cooperation Fund, and was tendered to the private sector in four packages. Government will retain management of the line.

Manila's only privately financed project to date is the EDSA LRT, now 35 per cent complete. The project is a build, lease, transfer structure. The project owners, Metro Rail Transit Corporation, will build the project and operate it under a lease agreement with the government. In return, the government will make lease payments which will be used to repay project loans. In effect, the government is directly subsidising the project, but leaving construction and operating risk with the private sector. Like other Asian mass transit projects, the EDSA LRT relies on land development around the main stations to supplement operating revenue.

The project has faced problems and delays, and been criticised for its non-transparent bidding process in 1992. Only one company pre-qualified for the project and it designs each new section as it comes to it, resulting in poor planning (Reinoso, 1998). In 1998, work on the line slowed significantly and construction is causing major congestion problems.

Jakarta's planned mass transit system has suffered a similar fate to Bangkok's Hopewell project; non-transparent allocation of the tender meant a financially unsound project was approved. In Malaysia, light rail projects are progressing, but more slowly than envisaged and only after government soft loans have kept the projects afloat. Future mass transit projects in Asia will require substantial

government backing to succeed. While subsidies can be justified if spillover benefits are sufficiently large, governments should transparently implement financial and economic cost benefit analyses, subsidy decisions and bidding to ensure economically and politically sustainable projects. Even the successful metro systems in Hong Kong and Singapore do not recover capital costs from fares. Using land swaps and property development rights to support projects is very risky, as benefits from property development are highly uncertain.

PROSPECTS FOR BEST PRACTICE APPROACHES

Except in electricity generation (Victoria) and telecommunications, most private sector infrastructure in the Asia Pacific relies on competition for the market through franchising, BOTs and concessions, rather than direct competition in infrastructure services. However, introducing independent power producers has created a momentum for more widespread competition reform in the electricity sector, and cellular phones have created similar pressures in telecommunications. BOT type arrangements have been the preferred form of competition for the market in most sectors. While these are an appropriate best practice form for new highways and railways, concessions are preferable in water and electricity distribution, and existing highways and railways operations. Electricity generation can be fully privatised in a competitive market. Economies like the Philippines have developed concession arrangements for water supply, but no East Asian economy has yet adopted comprehensively the Latin American concession approach to railways, except in mass transit. In general, the approaches adopted combine best practice technical approaches and second best approaches that take account of economy specific institutional and political constraints.

Increasing evidence of the benefits from private sector involvement, after well designed industry restructuring to ensure competition and control of monopoly power, should generate increasing interest in more thoroughgoing reform in electricity, water, transport and telecommunication sectors in the coming decade.

Financial imperatives created for governments by the financial crisis and the need to reassure cautious private infrastructure investors should spur deepening reform. Recent increased interest of the Philippine, Indonesian and Thai governments in electricity and water sector reform illustrate the likely future trend towards more competitive approaches that should produce better outcomes for consumers. However, rather than creating new models from scratch, regional governments can benefit from lessons learned by other economies in the Asia Pacific, Latin America and elsewhere, which have tackled these complex issues.

APPENDIX 5.1

SECTORAL CHARACTERISTICS AFFECTING BEST PRACTICE RESTRUCTURING

Appendix Table 5.1

Monopoly Networks in Water and Energy Don't Stop Competition

Sectoral Characteristics Affecting the Best Practice Regulatory Options - Water Supply, Sanitation and Energy

	Water supply and sanitation			Energy	
	Water	**Sewage**	**Solid Waste**	**Electricity**	**Gas**
Monopoly characteristics	Piped water networks are a natural monopoly with very high capital costs relative to operating costs	Piped sewerage system is a natural monopoly	Not monopoly	Transmission and distribution networks natural monopolies; generation and retailing can be competitive	Transmission and distribution pipe networks are natural monopolies
Capital mobility	Most capital is sunk (literally)	Capital is sunk	Capital mobile	Thermal generators can be resold, line networks and dams are mostly sunk investments	Pipelines are mostly a sunk investment
Competition from substitutes	Piped water competes with vendors but these are expensive. Groundwater is a viable substitute. River water may not be clean. Recycling now becoming an option	Septic tanks compete with systems	Self disposal can compete	For some uses gas, oil and solid fuel compete but not for others (like lighting). Stand alone generators can also substitute for grid	Substitutes available for almost all uses

Appendix Table 5.1 (Cont.)

	Water supply and sanitation			Energy	
	Water	**Sewage**	**Solid Waste**	**Electricity**	**Gas**
Scope for vertical unbundling	Water resource management, service delivery and billing can be unbundled from network	Treatment and billing can be unbundled from network	Industrial treatment can be unbundled from household	Generation, transmission, distribution and retailing can be unbundled	Metering and supply can be separated from pipelines
Scope for horizontal unbundling	Distribution networks	Collection networks	High degree of unbundling possible	Distribution networks	Distribution networks
Spillover effects	Saline intrusion from groundwater, clean water supplies improve household health	Disposal needs to be regulated because of negative health effects	Disposal needs to be regulated because of negative health effects	Pollution from fossil fuel generation, flooding, environmental and social impact from dams, nuclear accident risk	Pollution from gas production
Merit	Water essential good with no substitutes. Quality control by consumers is difficult	Reduces disease risk	Reduces pollution	No substitutes for many uses (operating electrical equipment)	No merit characteristics, all uses have substitutes
Rivalry	Yes	Only in treatment, not network use unless insufficient capacity	Yes	Yes	Yes
Excludability	Groundwater and illegal tapping a problem	Can exclude	Can exclude	Can exclude	Can exclude
Measurement and monitoring	Meters require direct checking. New technologies reduce metering costs and allow time of day pricing	Metering difficult	Measurement difficult and costly for household waste	New metering technologies allow time of day pricing.	Lower cost of new metering technologies allowing time of day pricing

Source: Tasman Asia Pacific, 1997.

Appendix Table 5.2

Dominance of Monopoly Networks in Transport Make Concessions More Appropriate

Sectoral Characteristics Affecting the Best Practice Regulatory Options - Transport and Telecommunications

	Transport				
	Roads	**Rail**	**Air**	**Sea**	**Telecommunications**
Monopoly characteristics	Local monopoly network but competition from other transport modes	Tracks are a natural monopoly network	Airports are local natural monopolies	Seaports can be local natural monopolies but large hubs compete	Few monopoly characteristics left, except for fixed linenetwork
Capital mobility	Capital sunk	Tracks are mostly a sunk investment, rolling stock is mobile	Runways and terminals are sunk investments	Wharves are sunk investments	Lines are mostly a sunk investment; satellite dishes and mobile transmitter stations are not
Competition from substitutes	Other transport modes	Other transport modes	Other transport modes	Other transport modes	New technologies, mobile phones, satellites and electricity lines
Scope for vertical unbundling	Separate construction and maintenance from ownership	Separate track from trains	Separate airport services from ownership of terminal, allocation of slots etc.	Ports can be unbundled into stevedoring services, individual wharfs or terminals and scheduling services	International, national, local and mobile services can be unbundled. Scope for unbundling has increased with technological developments
Scope for horizontal unbundling	Regional franchises or private ownership	Regional franchise or private ownership of track or services	Individual airport franchises or private ownership	Individual port/wharf franchises or private ownership	Local operators
Spillover effects	Better roads reduce accidents, increase real estate values	Rail transport reduces traffic accidents, increases real estate values	Noise pollution	Impact on coastal environment possible	Facilitates population decentralisation

Appendix Table 5.2 (Cont.)

	Transport				
	Roads	**Rail**	**Air**	**Sea**	**Telecommunications**
Merit	No	No	No	No	Emergency communications
Rivalry	Non rival consumption when not congested	Non rival consumption when not congested	Non rival consumption when not congested	Non rival consumption when not congested	Fibre optic cables have reduced congestion problems. Network use non-rival but not billing and services
Excludability	Exclusion possible but not practical on minor roads. Road traffic regulation required	Broad exclusion possible but rail scheduling needed for licensed operators	Not possible to exclude airways access except by air traffic regulation	Not possible to exclude open sea access except by sea traffic regulation	Access to electromagnetic spectrum cannot be excluded so requires regulation
Measurement and monitoring	Smart card and chip technology has made monitoring tolls more economical	Monitoring relatively simple	Electronic customs clearance, cargo management and billing	Electronic port clearances	Monitoring is simple under public or private ownership

Source: Tasman Asia Pacific, 1997.

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Chapter 6

INFRASTRUCTURE AID

Despite the Asian financial crisis, the private sector eventually will return to the region to fund commercially viable (usually urban) infrastructure. The crucial question for developing countries will be how quickly private finance can be mobilised to improve services and how efficiently this private funding will be employed. In this context, economic governance aspects of infrastructure are crucial.

Providers of official development assistance, ODA, for infrastructure increasingly are reorienting their programs to recognise the potential role of the private sector. To attract welfare improving private infrastructure investment, recipient economies require high levels of managerial skill and experience to develop and implement appropriate regulatory, legal, financial market, risk mitigation and tariff policies. As developing economies often lack people with such skills, multilateral and bilateral aid agencies are reprioritising ODA to address these skill gaps. However, this transition to supporting private infrastructure provision via economic governance assistance is still gathering momentum. Bilateral and multilateral ODA programs can accelerate developing economies' institutional capacity to attract appropriate private sector infrastructure by providing more technical assistance and training that increases developing economy governments' capacity to:

- develop and implement competition policy and appropriate infrastructure regulatory frameworks
- corporatise and privatise public infrastructure enterprises, including implementing tariff reform policies and competitive bidding procedures
- reform and expand capital markets, including developing local corporate bond, equity, pension and risk markets
- develop and implement corporate, contract, property rights and environmental laws, special purpose BOT laws and dispute resolution mechanisms
- mobilise internationally competitive advisers to assist with these processes.

In addition, if multilateral banks and bilateral donors believe financial markets are deficient, they can sponsor infrastructure investment funds and offer loan guarantees.

This chapter will discuss the most appropriate forms of assistance donors can provide and which donors are best placed to provide such assistance. As this is a relatively new area for aid agencies, many need to strengthen their own capacity and networks in private sector infrastructure development, so they can identify and develop viable aid projects and select consultants to undertake them.

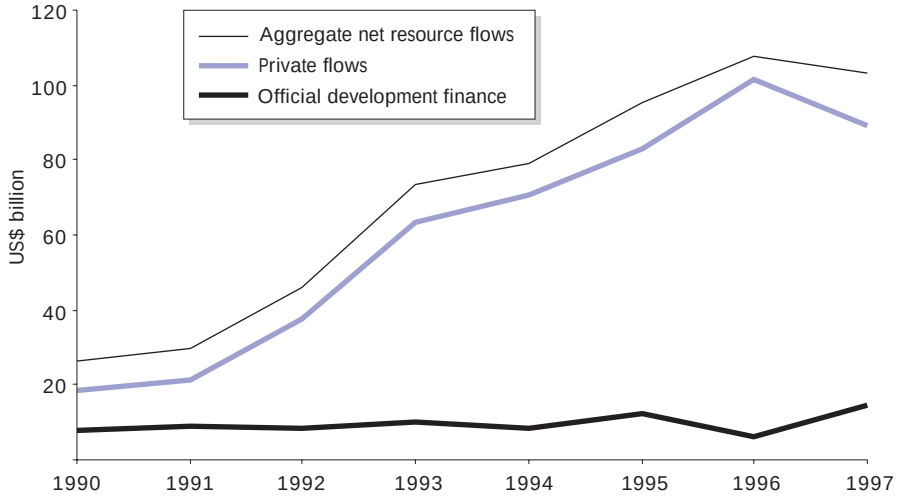
AID FLOWS AND PRIVATE CAPITAL

Despite the crisis-induced downturn in capital flows, long term private capital flows still dwarf ODA (Figure 6.1). While ODA has stagnated or declined in real terms, private capital flows to developing countries have increased dramatically in the last ten

Figure 6.1

Private Flows Outstrip ODA

Aggregate Net Long Term Resource Flows to East Asia and Pacific (US$ Billion)



Note: Private flows include commercial bank loans, bonds and other; official development finance includes grants, concessional non-concessional loans from bilateral and multilateral agencies.

Source: World Bank, 1998.

years. However, long term private flows to the region will fall in 1998 due to the financial crisis and short term private flows have turned heavily negative. Furthermore, a few middle income developing economies in East Asia dominate private capital flows to the region. While private capital for infrastructure finance grew rapidly from 1992 to 1997, the largest source of funding for infrastructure remained the public sector, with aid playing a supporting role. ODA can assist developing economies to use private capital better and attract more foreign capital by improving their investment environment. ODA flows will remain particularly important for low income countries until they can achieve a higher share of private flows.

MULTILATERAL ORGANISATIONS

Multilateral organisations increasingly stress the importance of the private sector in driving growth and development. The World Bank, Asian Development Bank and the United Nations Development Program now have significant programs to facilitate public-private partnerships in infrastructure provision. These programs aim to develop public sector capacity to plan overall sectoral approaches, achieve advantageous outcomes for consumers and regulate private sector providers.

Multilateral institutions play a major role in advising recipient governments on infrastructure policy reform, disseminating best practice approaches, providing training and technical assistance and leveraging private sector funding via guarantees and selected equity stakes in projects.

The World Bank Group

The World Bank Group leads the move to private sector infrastructure provision. Through technical assistance and training, the World Bank supported many early initiatives in Latin America, Asia, Eastern Europe and Africa. The International Finance Corporation, the private sector arm of the World Bank, has invested in path-breaking projects, many of which would not have eventuated without its involvement.

With its global outlook, the World Bank Group can apply private infrastructure lessons from many countries to benefit Asian countries.

THE WORLD BANK GROUP'S ACTION PROGRAM TO FACILITATE PRIVATE INVOLVEMENT IN INFRASTRUCTURE

The World Bank endorsed a new 'Action Program' for private involvement in infrastructure in September 1997, continuing its drive to overcome impediments to private infrastructure provision. The Action Program indicated the World Bank's intention to give priority to:

- country frameworks and status reports stating the country's intentions concerning private sector involvement in each infrastructure sector and reviewing progress on reforms
- advisory services to facilitate policy and regulatory reform and assist project development in conjunction with lending, but also extended as a separate non-lending service
- strengthening and expanding guarantees, including more capital for the Multilateral Investment Guarantee Agency; additional project assistance with International Bank for Reconstruction and Development, IBRD, guarantees; IBRD guarantees for enclave projects earning foreign exchange in International Development Agency, IDA, countries; and a proposed pilot program for guarantees using IDA resources
- support for sub-sovereign infrastructure, including assistance to provinces and municipalities in devising investment financing strategies, improving creditworthiness and meeting requirements to access domestic and international markets, as well as technical and financial support to develop municipal credit markets
- knowledge management and information on best practice, including exemplary practices for each infrastructure sector; improved sectoral performance indicators and project data bases to facilitate diagnosis and monitor progress; Internet facilities for information exchange and communication among infrastructure market participants; and training for Bank Group staff, client governments, and industry officials in regulation, finance, and operation of infrastructure.

Source: World Bank, 1997.

The Asian Development Bank

Like the World Bank, the Asian Development Bank, ADB, helps analyse the feasibility and develop the structure of private sector infrastructure projects and provide financial support through direct equity investment and loans (Asian Development Bank, 1998). The ADB can provide long term funding with maturities of up to 15 years; blended with shorter term commercial finance, this can provide suitable terms for infrastructure projects. While the ADB's financial resources are modest relative to regional needs, ADB involvement can provide comfort to lenders working in unfamiliar circumstances. These interventions are particularly useful for initiatives in less experienced, lower income countries or riskier sectors, where projects may otherwise have difficulty reaching closure.

The ADB advises recipient governments on the appropriate project structure, risk sharing arrangements, tariffs, environmental standards and financing arrangements, ensuring returns to private sponsors and host economy governments are commensurate with risks borne and resource contributions.

ADB SUPPORT FOR PRIVATE SECTOR PARTICIPATION IN THE WATER SECTOR IN INDONESIA

Indonesian provincial and local governments are responsible for detailed planning and implementation of urban water supply. The Director General of Human Settlement within the Public Works Department is responsible for development planning, assistance to local authorities and overall supervision of water projects. Around Indonesia, 50 cities and more than 300 local authorities are developing projects requiring private sector finance. The skills, procedures and approaches needed to engage the private sector in water supply and sanitation therefore must be transferred to numerous authorities and institutions.

The new central government Sub-Directorate for Private Sector and Community Participation Development, with a staff of 40 professionals, will develop local skills and capacities in the water sector. However, as the sub-directorate lacks the experience to develop BOT/concession projects using a competitive bidding approach, the ADB provides technical assistance helping the central government build local government agency capacity to implement urban projects involving private sector participation.

To build local capacity, the ADB will provide hands-on experience to develop two projects in each local authority area. During 1998, experienced consultants will work with professionals from the Director General of Human Settlement and local government officials during each stage of the full project cycle for competitive bidding, from reviewing project documentation, pre-qualification and bidding through to selecting contractors and financial closure.[1]

[1] ADB TA No. 2016-INO: *Private Sector Development in Urban Development Bandung and Semarang* (Approved 14 December 1993) and ADB TA No. 2837-INO *Capacity Building for Private Sector Participation in Urban Development* (tendered August, 1997).

UNDP: PUBLIC-PRIVATE PARTNERSHIPS

The Public-Private Partnerships for the Urban Environment program's three inter-related components are focused investments, technology transfer and capacity building.

1. Project Development Facility is a funding mechanism to identify and develop investment projects costing from $5 million to $30 million, through grants of $300 000 for technical assistance. It supports between 30 and 50 projects over five years.
2. UrbanTech 21 facilitates the development and transfer of environmentally sound technologies, sharing expertise and establishing joint ventures between companies and municipalities for disseminating such technologies.
3. Capacity Building includes activities supporting research, symposiums and workshops on urban environmental issues, as well as fellowships and specifically designed training programs.

Source: United Nations Development Program, 1998.

United Nations Development Program

The United Nations Development Program also participates in the policy dialogue and provides targeted assistance. For example, its Public-Private Partnerships for the Urban Environment program promotes private and public sector collaboration to address developing economies' urban environmental problems, including water and sanitation, waste management and energy services.

Asia Pacific Economic Cooperation, APEC

Dialogue through international forums such as APEC, is potentially catalytic in developing a new action agenda for government-private sector infrastructure partnerships in the Asia Pacific region. APEC is a unique alignment of 18 economies at varying stages of development, enabling cooperative equal partnerships rather than traditional aid relationships. APEC activities explicitly reject traditional donor funded projects in favour of:

- policy dialogue
- sharing technical expertise and experience
- sharing information
- harmonising standards and approaches
- training
- joint funding of projects of common interest (APEC Economic Committee, 1996, p. 14).

APEC undertakes an extensive program of cooperative activities to encourage greater private sector investment in the region's economic infrastructure, including in sectoral working groups such as energy, transport and telecommunications, as well

as the infrastructure workshop under the Economic Committee. These sectoral working groups promote practical cooperation and contribute to decision making through discussion of national policies and information exchange. For example, the APEC Energy Group working group has commissioned several useful publications to assist private sector participation in the power sector.[2]

In their Subic Bay Declaration *From Vision to Action*, APEC leaders recognised lack of infrastructure as a serious bottleneck to the region's growth, and endorsed strengthening economic infrastructure as one of six priority themes for APEC's ongoing Economic and Technical Cooperation agenda. The Economic Committee, through its Infrastructure Workshop chaired by Indonesia, has developed an action program on infrastructure which identifies the goals, basic principles and priorities for infrastructure cooperation.

The Infrastructure Action Program explicitly focuses on the importance of public-private partnerships to enhance the effectiveness of infrastructure improvements. The annual Public-Private Sector Dialogue on Infrastructure and Sustainable Development provides a forum for the public and private sector to exchange views on regional infrastructure issues. Other activities conducted through APEC include discussion and development of new approaches to infrastructure development. An example of this is a project to explore new financing strategies for infrastructure in rural areas, including using long term debt instruments and securitisation.[3]

APEC's agenda on economic infrastructure was further developed at the Economic Leaders' Meeting in Vancouver in November 1997. The Vancouver Framework states members need to strengthen 'partnerships between the public and private sectors … and manage the infrastructure required by the APEC region to meet its economic, environmental and social goals'. APEC's work program for infrastructure development is now based around this framework.

THE VANCOUVER FRAMEWORK FOR ENHANCED PUBLIC-PRIVATE PARTNERSHIPS IN INFRASTRUCTURE DEVELOPMENT

The Voluntary Principles for Facilitating Private Sector Participation in Infrastructure aim to:

- establish and maintain sound macroeconomic management
- establish stable and transparent legal frameworks and regulatory systems to provide investors with a high level of protection
- adopt sectoral policies that promote, where applicable, competitive and efficient provision of infrastructure services
- increase the availability of long term capital required for infrastructure investments by accelerating efforts to broaden and deepen domestic financial and capital markets.

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2 APEC, 1997; Norton Rose and Worley International, 1997; and Blake Dawson Waldren, 1995.

3 Economic Committee-Infrastructure Workshop project titled 'Infrastructure to Diversify and Integrate Rural Economies'. The project involves an international symposium in May 1999 and a pilot project in one or two countries to demonstrate how financing strategies and integrated infrastructure planning can benefit rural areas.

BILATERAL AGENCIES

Because of the complexity of the issues involved and their more limited resources, smaller bilateral agencies have less capacity and flexibility to undertake the complex private sector infrastructure financing schemes of the World Bank and ADB. However, particularly in sectors where the donor country has specific expertise, bilateral aid agencies can play an important role in identifying and initiating technical assistance and training for recipient governments, and building key skills in infrastructure sector restructuring, financial market development and legal, institutional and regulatory reform.

Australia

A recent review of Australia's Overseas Aid Program addressed the private sector's role and recommended Australian aid give priority to creating an enabling environment for private sector development (AusAID, 1997a, p. 149).[4] In particular, the review indicated that 'aid can play a useful role in building local capacity to restructure government enterprises, through technical advice on how to package and arrange activities for private sector involvement' – a statement supported in the Government's response to the review (AusAID, 1997a, p. 151; and AusAID, 1997b, p. 10).

The government has decided not to involve the Australian aid program in co-financing private sector led infrastructure projects, accepting the recommendation that these activities should be left to multilateral agencies.[5] The review points out that the level of analysis required to evaluate risk, demand and supply and the developmental and distributional effects of large private sector infrastructure projects, is beyond a relatively small aid agency like AusAID. Rather than co-financing private infrastructure projects, government has decided to 'support developing countries' efforts to access private finance in areas such as privatisation and infrastructure development' (AusAID, 1997b, p. 10).

Australia's infrastructure aid

The Australian aid program now targets infrastructure service assistance to marginalised communities, particularly for rural roads, electrification and access to clean water. Project design focuses on generating positive distributional and environmental effects, using appropriate technology and relying on community participation, management and maintenance.

Road transport currently dominates Australia's ODA expenditure on infrastructure, with nearly half of expenditure (Figure 6.2). Water supply expenditure was significant at 26 per cent of infrastructure ODA in 1997-98, and should grow in 1998-99.

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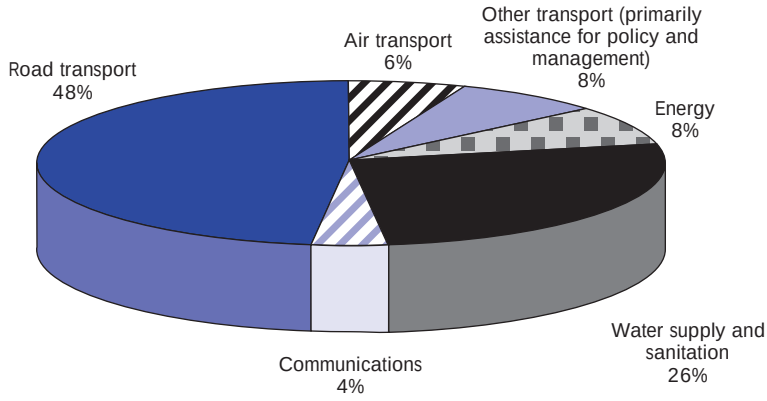
[4] Mr Paul Simons chaired a committee that reviewed the Australian Overseas Aid Program in 1996-97. The review is generally known as the Simons review. Recommendations were published in 1997 in the *Report of the Committee of Review*. In the Government's response to the recommendations of the review, published in November 1997, the Australian Government adopted 'poverty reduction through sustainable development' as the sole objective of its aid program.

[5] Recommendation 8.4. This recommendation addresses the issue of public-private co-financing of private infrastructure projects such as BOTs and concessions. The recommendation does not concern concessional loan schemes, which are addressed in recommendations 11.1, 11.2, and 11.3.

Figure 6.2

Road Transport Dominates Australian Infrastructure Aid

Australian Assistance to the Infrastructure Sector, 1997-98



Source: AusAID, 1998a.

Since the mid 1990s, most energy sector assistance has gone to conventional energy generation and transmission lines, mostly funded through the former Development Import Finance Facility.[6] As these projects are completed, energy sector assistance should decline significantly and be reoriented because:

- the increase in private finance for generation and supply in some countries eventually should reduce such projects and increase the need for assistance with appropriate policy analysis, legal and regulatory frameworks
- cross-subsidisation may be less possible with commercially provided electricity, and regional state electricity authorities face financial distress as a result of the crisis, so AusAID may receive requests for aid for network expansions to under-serviced rural areas.

Subsequent to the discontinuation of the Development Import Finance Facility, most transport sector aid now is concentrated in Papua New Guinea, where project aid is replacing program aid. The Government accepted the Simons review recommendation that transport projects be appraised to consider whether the private sector could wholly or partly fund them and suggested assistance be targeted at increasing the access of marginalised populations to essential services, such as rural feeder roads.

[6] The Development Import Finance Facility was a tied aid mixed credits scheme, introduced in 1982. The scheme combined grant aid with commercial export finance to provide soft loans for Australian goods and services. The scheme was terminated in July 1996 because the Government believed it inappropriately attempted to achieve dual objectives of economic development for recipient countries and commercial benefits for Australian business.

AUSTRALIA'S AID PROGRAM: SECTORAL PRIORITIES

The Australian aid program has five sectoral priorities, of which two are infrastructure and governance.

Infrastructure

Essential infrastructure, such as water supply and sanitation, energy, transport and communications, is fundamental to sustainable development. Private capital flows, rather than aid will be the main source of external capital to finance infrastructure demands in developing countries. Privately funded infrastructure is, however, unlikely to be sufficient to meet all the needs of the very poor and marginalised. Nor is it available for all countries, or where it is difficult to levy user charges and achieve cost recovery. Aid resources, carefully targeted to ensure they are not displacing private funds, are important for ensuring vital infrastructure services reach all the people who need them. Aid also can play an important role in assisting developing countries prepare infrastructure projects for private sector financing.

Governance and the Private Sector

AusAID is to prepare a strategy on how aid may best facilitate the private sector in developing countries. The strategy will reflect the new focus within the aid program on strengthening governance in developing countries; in particular, Australia's aid will not be used to pick winners in the private sector but will focus instead on creating the conditions for private sector growth with projects in support of:

- effective macroeconomic policy
- legal and regulatory reform
- structural economic reform.

The strategy will also identify ways to provide highly targeted support for enterprise development including, micro-credit schemes directed towards the poor.

Source: AusAID, 1997b.

The Government's response to the Simons review recognised water supply and sanitation are high priority areas. Australian assistance to extend access to clean water for rural communities will continue to receive significant funding. Most private water supply involvement is in urban areas, and many rural communities continue to rely on government or donor funded initiatives.

Economic governance

The Australian Government is giving greater prominence to governance activities and the role of the private sector in development. For the first time, governance is a specific focus for Australia's aid program, and a governance section was set up in 1998. However, governance projects involving institutional strengthening, training or capacity building can be difficult to design and implement. Institutional strengthening projects require a longer design and start-up phase and require

sensitive approaches to achieving attitudinal and organisational change, and depend on the broader political and policy making context. Indicators of achievement are more difficult to identify and monitor than for projects developing physical infrastructure, unless governance projects are linked to pre-agreed 'deliverables', such as passing new legislation, establishing new institutions or developing measurable mechanisms for implementing changes.

AUSTRALIAN ASSISTANCE TO ECONOMIC CAPACITY BUILDING IN INDONESIA

In July 1998, the Australian Minister of Foreign Affairs and Trade announced a program of new and ongoing activities worth up to $70 million over three years to promote economic management capacity and reform in Indonesia. Activities contributing to improving economic governance (and hence efficient private sector infrastructure development) include:

- funding for the World Bank Public Expenditure Review, specifically to assess the financial condition of the 22 largest state-owned enterprises
- technical assistance to the State Audit Agency to assist in developing an institutional strengthening project master plan covering anti-corruption strategy development, strengthening performance audits, public sector accountability and strengthening public sector auditors
- a needs analysis mission to identify possible areas of Australian assistance in reforming Indonesia's bankruptcy system
- assistance to the newly formed Bankruptcy Court, including training court officials and IT support to publish and disseminate written court decisions, including on the Internet
- technical advice on a registration system and training program for bankruptcy receivers
- training courses and seminars in dispute resolution, corporations law, international trade law, negotiable instruments and insolvency
- cooperation between the Australian Bureau of Statistics and the Indonesian Central Bureau of Statistics to strengthen statistical services
- funding of a national level study on streamlining investment regulations
- the APEC initiative to improve training of regulators in the banking and securities sector
- over 120 tertiary education scholarships in economic capacity building subjects, and an additional 60 postgraduate scholarships earmarked for studies in disciplines related to economic capacity building.

Source: AusAID, 1998b.

Other Bilateral Agencies

While reviewing all major bilateral aid agencies' activities is not within the scope of this report, most clearly recognise the importance of private sector involvement in infrastructure, particularly in strategies for urban development assistance.

Japan

Japan has the world's largest bilateral aid program and is the major bilateral donor to developing infrastructure in Asia. Japan's aid program consists of bilateral grants managed by Japan International Cooperation Agency, bilateral loans managed by Japan's Overseas Economic Cooperation Fund and contributions to multilateral agencies. The Overseas Economic Cooperation Fund provides concessional loans for both public and private sector infrastructure projects. Loans for public infrastructure are at very low interest rates, typically 1 to 3 per cent with a ten year grace period. Loans to the private sector are at higher rates but generally are cheaper than commercial sources of funds. ODA loans account for around 30 per cent of bilateral assistance and 80 per cent of loans go to Asian countries. These loans are predominantly for economic infrastructure, with transport accounting for 31 per cent and electric power and gas for 18 per cent of total loans in 1997 (Overseas Economic Cooperation Fund, 1998).

Where projects are not financially viable, the Overseas Economic Cooperation Fund can provide co-financing with the private sector sponsor. For example, its concessional loans may fund transmission lines to connect a private power station to the grid. In mass transit, soft loans can be used to finance the public sector contribution to the project, for line construction for example, with the private sector providing rolling stock and machinery.

However, soft loans must be used judiciously so they do not encourage governments to delay reform to infrastructure sectors. As soft loans to public enterprises for commercially viable activities can crowd out private sector activity, donor agencies must carefully discriminate between potential public and private projects to ensure they do not introduce a bias against private projects.

USA

The United States Agency for International Development, USAID gives high priority to economic governance projects. For example, in the Philippines USAID has undertaken several successful projects to assist financial market development; it sponsors the government BOT Centre; and it recently initiated a major new economic governance program, Accelerating Growth, Investment and Liberalisation with Equity, AGILE (Dy-Liacco, 1998). USAID also funded development and implementation of Indonesia's BOTs law. Most USAID ODA now goes to governance and market development programs, including in infrastructure sectors.

DEVELOPING THE LEGAL AND REGULATORY FRAMEWORK IN INDONESIA

USAID funded the project on Private Participation in Urban Services that helped:

- establish a legal and regulatory framework for BOT, BOO and joint public-private partnerships in infrastructure services
- provide institutional strengthening and training in the skills needed to implement such arrangements
- develop standard project documentation, including project life cycle documents that contain sets of procedures for undertaking the various models and standard concession and BOT contracts.[7]

The World Bank also supported the Indonesian Government in formulating legal, regulatory and institutional frameworks for private sector participation, for example, through the Second Technical Assistance Project for Public and Private Provision of Infrastructure.[8]

Canada

The Canadian International Development Agency, CIDA, recently revised its programming strategy for economic infrastructure to focus on what it calls upstream programming, giving greater attention to the enabling environment and equitable distribution of services. A strategic sequencing approach that starts with creating the enabling environment, building institutional and human capacity will guide programming. CIDA envisages new infrastructure work or rehabilitation of existing infrastructure will occur only in exceptional circumstances, for example where a shortage of vitally needed basic infrastructure services occurs in the least developed countries. The new strategy also advocates partnerships with the private sector in the design, delivery, management and financing of infrastructure services (Canadian International Development Agency, 1998).

ODA TO ENCOURAGE PRIVATE INFRASTRUCTURE

While bilateral and multilateral agencies direct an increasing proportion of their funds to capacity building, increased priority could usefully be accorded to technical assistance programs addressing specific constraints to private sector infrastructure development. A wide range of governance related activities could assist regional governments to attract welfare enhancing private sector infrastructure participation. This section examines potential areas of productive ODA assistance in appropriately sequencing assistance.

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7 This and other information on private sector development projects in Indonesia is outlined in the Background Information and Terms of Reference for ADB TA No. 2016-INO.

8 IBRD Technical Assistance Project P-6606-IND was approved on 22 June 1995.

The first major area of potential assistance is to enhance the overall legal and regulatory environment, including assisting to draft legislation and establishing enforcement mechanisms to achieve:

- private property protection
- appropriate environmental standards
- effective contract, bankruptcy and other relevant commercial law
- international accounting standards
- specialised private sector infrastructure legislation to validate and encourage domestic and foreign private sector participation in infrastructure, such as the Philippines BOT law, with clear terms and conditions of standard private sector sponsorship, leasing, concession and ownership arrangements
- standardised procurement and tendering procedures, bidding eligibility and documentation, transparent bidding and selection procedures
- credible, efficient and neutral domestic dispute resolution mechanisms or official recognition of international arbitration services to settle disputes between private sector providers and government authorities or private sector contractors
- independent and credible infrastructure sector regulatory bodies, separate from operational functions, responsible for:
  - licensing infrastructure service providers
  - addressing safety and quality of service issues
  - ensuring competition
  - controlling terms of access to natural monopoly networks
  - regulating prices or rates of return if service is not competitive
  - monitoring other performance targets.

The second priority area for ODA is assisting to develop policy, regulatory and management skills within central and large provincial governments, public authorities and regulatory agencies, by training and employing domestic and foreign consultants to work with local policy makers, assisting them to:

- undertake sectoral analyses of the scope for efficient infrastructure restructuring and unbundling into natural monopoly and contestable components and where appropriate, manage corporatisation, leasing or privatisation of previously state provided services
- operate infrastructure sector reform units that act as a focus for infrastructure reform efforts, develop and implement technical assistance and training programs on reform strategies for government ministries and

authorities, assist in developing private sector infrastructure projects, regulations, reforms and financing packages and build links with similar units abroad, including in Australia[9]

- develop appropriate tariff policies that encourage private participation, result in adequate conservation incentives, provide optimal outcomes for consumers and meet government social objectives
- where appropriate, develop supplementary fiscal arrangements, including cost effective and economically efficient tax relief, subsidies and land access arrangements, to facilitate economically beneficial but sub-commercial projects, to ensure optimal private sector provision levels and consumption of infrastructure services
- undertake risk analysis and allocation, including employing World Bank, International Finance Corporation and domestic government guarantee mechanisms dealing with political and credit risks
- establish transparent and efficient tendering and bidding processes possibly by implementing two or three pilot projects for private sector participation, working with government authorities through all tendering stages leading to financial close and eventual implementation.

The final major area of potential assistance is financial sector regulation, to increase the ability and ease of raising funds and reduce the cost of finance, including:

- creating efficient, well regulated domestic equity markets with credible regulators to enable transparent and efficient transactions, and accounting standards
- establishing and deepening appropriately regulated public (national and municipal) and corporate bond markets, including secondary markets
- strengthening domestic banking systems, possibly with foreign bank participation, improving regulatory controls and thereby increasing depositor confidence, allowing banks to increase the term of loans to infrastructure and other projects
- developing competitive and efficient insurance and pension fund sectors, possibly with foreign financial institution competition, providing a market for long term infrastructure bonds
- developing credit rating agencies to assess the quality of proposed infrastructure projects and existing infrastructure assets

[9] Most countries with successful infrastructure performance and privatisation programs have employed expert groups, usually within their finance ministry, focused on private sector led infrastructure development. Asian economies can benefit from such reform units, which to be effective must command high quality human and sufficient financial resources. The units need not be large, as most advisory roles could be contracted out to consultants with relevant experience. To make such units effective, countries as diverse as China, Indonesia, Vietnam and the Philippines need additional training to strengthen specialist skills in project finance, sectoral restructuring, competitive bidding procedures, risk allocation and industry regulation.

- developing or encouraging credit enhancement agencies to on-sell risks of private infrastructure project sponsors and financiers, including establishing government sponsored infrastructure finance development corporations to guarantee, preferably at a price, some major sovereign, foreign exchange or project specific risks.

Human Resource Development Is Critical

Experience in Asia shows human resource development is critical to achieving better private sector partnership models of infrastructure service provision. While many countries lack vital local expertise, international educational exchanges and scholarships and institutional capacity building can help remedy this situation. In Chile, Argentina, Mexico, the Republic of Korea, Indonesia and the Philippines, western-trained economists and other experts have played a leading role in reform processes.

Relevant senior people need to be equipped to preside over a process whereby private sector contracts with governments deliver sustainable benefits. Projects need to be more than commercially viable for operators and financiers; they also need to benefit consumers and meet a range of community and political concerns. Training on core economic and organisational concepts can be provided in targeted short courses. Key groups who would benefit from such training include:

- senior public servants in departments such as finance
- heads of infrastructure departments
- executives in public utilities or local private sector infrastructure firms
- cabinet ministers.

Qualified younger officials should be offered longer term educational opportunities, including postgraduate degrees in economic analysis and public policy.

OUTLOOK FOR ODA DELIVERY

Increasingly, a major priority for bilateral and multilateral infrastructure ODA is to assist governments implement competitive, private sector based infrastructure models. The impact of the financial crisis on governments' budgets is increasing the imperative for them to pursue private project sponsors. However, while potentially saving fiscal resources, attracting and implementing appropriate, welfare enhancing private infrastructure places considerable demands on bureaucratic and institutional skills. This approach to infrastructure provision also generates pressure for reform in a broad range of legal, public enterprise, regulatory and financial institutions. Many of the skills necessary to use private infrastructure effectively and undertake these reforms are in short supply in developing regional economies.

These skill shortages result in significant training and capacity building requirements, many of which donor agencies are well placed to supply. Providing such technical assistance and training is relatively inexpensive, compared to installing large infrastructure projects through ODA programs. However, delivery of such assistance is very intensive in aid agency time and resources, compared to the amounts of funding disbursed. Furthermore, agencies themselves often need to acquire, internally or via consultancies, expertise in many new areas to provide

assistance effectively. While ODA agencies increasingly recognise the need for internal changes and reorientation of aid programs to reflect the changing needs of recipient governments, this process is still underway.

Chapter 7 – *Implications* details the wide range of Australian expertise available to the Australian aid program for high priority training and institutional building.

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Chapter 7

IMPLICATIONS FOR BUSINESS AND GOVERNMENT

This chapter evaluates prospects for economies achieving the reforms highlighted in this report, drawing out implications for infrastructure related businesses and the Australian government.

BUSINESS OPPORTUNITIES IN THE CRISIS AND BEYOND

In the short to medium term, business conditions will be very difficult in many Asian infrastructure sectors. However, in two to five years, regional economies should recover and over the next decade or so, crisis-induced reforms should make private infrastructure investments more profitable and sustainable for both regional governments and project sponsors. Accelerated infrastructure reforms, privatisations and stimulatory infrastructure spending could start to expand business opportunities in Asian infrastructure sectors as early as 1999.

Crisis Implications for Project Closure and Financing

When infrastructure development resumes in Asia, capital markets and commercial sources of funding, which had been at the forefront of financing in the mid 1990s, at least initially, will approach projects in Asia with caution. Financial institution country and project limits are likely to be lower, loan terms shorter and pricing higher.

This response reflects the new risk environment in East Asia, including altered growth expectations and shifts in attitudes to regional regulatory and legislative regimes. Financiers will find it difficult to assess these risks. Nevertheless, the size of East Asia's prospective infrastructure market and its continued long term attractiveness to global financiers should bring competitive pressures to bear relatively quickly.

In 1995, marginal or unviable projects often proceeded because governments accepted many of their associated foreign exchange and demand risks. Given the huge cost this approach is now imposing on public authorities in economies like Indonesia and the Philippines, regional governments in future will be less able and willing to bear these risks. In the post crisis environment, private funds only will be available for correctly structured projects with a good balance of risk and reward, and strong internal rates of return, able to withstand downside foreign exchange and demand growth risks. Financiers will require credible feasibility studies using rigorous and conservative forecasts of demand and consumer willingness and ability to pay. The move will be away from numerous marginal projects to fewer higher quality projects. These projects will require a significantly improved governance, competitive bidding and regulation environment (Asian Development Bank, 1998).

Organising limited recourse finance is likely to be difficult in 1998-99 and possibly beyond, as banks will be more reluctant to extend new credits, and regional progress with financial system reform will be uneven. Banks' increased risk aversion to limited and non-recourse finance will force many project sponsors to contribute more equity. Banks also are likely to require stricter default covenants and be less willing to lend to projects in countries without effective bankruptcy laws. Thailand, Indonesia and the Republic of Korea currently are upgrading their bankruptcy laws.

Business Opportunities from Regional Infrastructure Reforms

To restructure and privatise monopoly infrastructure sectors, governments need to assemble a wide range of skills, including in engineering, legal, treasury, financial, regulatory, institution building, and infrastructure and financial market reform processes. Infrastructure reform in other countries produces individuals, enterprises and institutions with invaluable experience and skills; competitive tenders can access these through consultancies. Australian firms and consultants already are active in these fields, particularly in China, India and Indonesia, but many more opportunities are emerging throughout East and South Asia in the wake of the financial crisis.

Increasingly, sophisticated project financing structures to handle and allocate risk are central to growing private sector involvement in major infrastructure projects, generating a demand for structured finance services. Initiatives to encourage capital markets require wide ranging institutional reform, providing opportunities for financial and legal firms, as well as the subsequent direct opportunities for pension/superannuation funds and insurance firms (East Asia Analytical Unit, forthcoming). For example, as a result of government moves to open up savings markets to competition, Australian insurance/pension company National Mutual recently opened in the Philippines, while Colonial Mutual gained a life fund licence in China.

Listed infrastructure funds are likely to be important in helping regional infrastructure investment recover and provide opportunities for investors to access high yield investments at currently depressed prices. The crisis is expediting the sale of state-owned infrastructure assets, to help fund budget deficits and vital new non-commercial or network infrastructure investments. This will provide new investment opportunities for Australian infrastructure investment firms.

Investment expansion flowing from privatisations will increase opportunities for equipment exporters, particularly in sectors suffering from high unsatisfied demand. For example, Brazilian purchases of telecommunications equipment are forecast to increase by 30 per cent in 1999, to US$20.9 billion, following the full privatisation of Brazil's Telebras in late July 1998. Canada's Telesystem International Wireless bought two of Brazil's cellular companies and will go to competitive bidding for equipment supply (Project Finance, 1998). Australia has strong capabilities in the design, manufacture, installation and maintenance of equipment for the power, telecommunication, transport and water distribution sectors.

Project and Sponsor Size Implications

As risk premiums have risen due to the financial crisis, smaller infrastructure projects may be less bankable because they may not amortise banks' fixed due diligence costs. Larger firms with sector specific skills, conservative gearing and strong activity in other markets including domestic markets, may fare better in this environment with their greater ability to access internal financial and project assessment resources, and borrow on a full recourse basis. Larger firms also are able to diversify risks across many projects and thus take on more risks themselves.

Size also can increase firms' capacity to deal with weak legal frameworks in some regional economies through increased vertical integration of activities (Williamson, 1997). On the other hand, if Asian governments respond to the current crisis by increasing transparency and strengthening legal frameworks, smaller firms would be better placed to compete in Asian markets than previously.

Smaller firms may partially overcome resource and diversification disadvantages by accessing specialist infrastructure financial facilities as a source of funds and project assessment skills. Specialist infrastructure funds are seeking to provide equity and debt for sound projects. (See Chapter 4 – *Financing and Risk*.) Furthermore, while governments are postponing or cancelling mega-projects, smaller more viable projects, within the capacity of smaller firms, are more likely to proceed. The increased need for multilateral agency support, with the requirement for transparent competitive processes, also may increase small and medium sized Australian firms' potential for success. The current crisis therefore may become an opportunity for firms aspiring to become regional players.

However, smaller firms need to recognise they face significant competition from major international firms, as well as indigenous players made more competitive by recent currency depreciations. A better entry strategy for smaller firms may be to align themselves in consortiums with established larger Australian or international firms which require specialist skills and competitive service provision.

INDIVIDUAL COUNTRY BUSINESS OUTLOOKS

Outlooks for economic growth, infrastructure sector reform and business opportunities vary considerably across regional economies.

Indonesia

Prior to the crisis, around 5 000 MW of private sector power generation was under construction, and cumulative private power capacity was scheduled to increase to over 10 000 MW by 2001 (Gray and Shuster, 1998). However, in 1997 analysts warned Java's power capacity would soon exceed demand and tariffs would need to increase to cover payments for the new supply agreements (Asian Development Bank, 1998).

Confidence in Indonesia's underlying creditworthiness plummeted in late 1997, following the onset of the crisis and postponement of US$13.2 billion of infrastructure projects. As a result, further projects were sidelined. Most of a presidential list of high priority projects, including ten power projects, now are

postponed or under review. The value of private infrastructure projects dropped sharply from $7.4 billion in 1996 to $5.1 billion in 1997 and only $2.7 billion in 1998 (Appendix Table 1.1) (Asian Development Bank, 1998, p. 23).

Since the crisis broke, it has become evident the Indonesian electricity authority, PLN overextended seriously its offtake commitments and now is struggling to meet its commitments to pay independent power producers US dollar linked up-take tariffs. New projects coming on stream soon will exacerbate these problems. Unless the Government of Indonesia negotiates a solution acceptable to independent power producers, new private sector infrastructure development may cease (Asian Development Bank, 1998, p. 39).

Malaysia

In Malaysia, project financial closures have dropped even more steeply, plummeting 80 per cent from $3.1 billion in 1996 to $646 million in 1997, and just $522 million in 1998 (Appendix Table 1.1) (Asian Development Bank, 1998). Prior to the crisis, successful closure of several transport projects, including the North-South Highway and the STAR light rail project resulted in planning and approval for several new transport projects. However, all of these now have stalled (Asian Development Bank, 1998, p. 24).[1]

Malaysian infrastructure projects mainly are financed in local currency, largely insulating them from the impact of currency depreciation on debt repayments. However, domestic interest rates have increased by 30 to 50 per cent and more importantly, domestic banks have drastically curtailed new lending, due to their growing non-performing loan exposures and a need to restore capital adequacy ratios. Rising interest rates and falling confidence are straining project sponsors (Asian Development Bank, 1998). As a result, in mid 1998, the Malaysian Government created a US$125 million fund to help ongoing private sector infrastructure projects overcome financing constraints.

Thailand

In Thailand, advanced plans to develop independent power producer BOTs now are on hold as authorities determine the impact of the currency crisis on demand projections and relative costs. Although seven potential IPPs continued their negotiations after the onset of the crisis, by August 1998, only one had reached financial close (Asian Development Bank, 1998). Privatisation of Electricity Generation Authority of Thailand, EGAT, is part of International Monetary Fund conditionality for Thailand. However, opposition from the power sector unions and bureaucrats has slowed share sales to the public and plans to privatise parts of EGAT to strategic industry players.

Other marginal projects have been scrapped, including Hopewell's controversial Bangkok elevated transport link, BERTS, that the Thai Cabinet finally cancelled in early 1998 (Asian Development Bank, 1998). (See Chapter 5 – *Sectoral Best Practice*, Mass Transit section.)

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[1] These include the 22 kilometre Kuala Lumpur elevated expressway, the Pandan Corridor Highway and the Muar-Angkak-Segamet Highway (Asian Development Bank, 1998).

Republic of Korea

Prior to the crisis, the Korean Government initiated private sector participation in infrastructure provision, allowing the chaebols to develop large scale BOT projects, including ports and power stations. Korean banks also were significantly financing international infrastructure projects, partly to improve their skills in this area. However, as a result of the crisis, all new private projects have halted, with closures dropping to virtually zero from $397 million in 1997 (Appendix Table 1.1) (Asian Development Bank, 1998). In late 1998, to stimulate growth, increase delivery efficiency and encourage foreign investor confidence, the Government will partially privatise over ten major state-owned industries, including the power company KepCo, Korea Telecom and Korea Gas (Asian Development Bank, 1998). In July, the Government announced it would spend an additional US$370 million on public works as part of its economic stimulus package.

The Philippines

The Philippines' policy framework for private infrastructure was gaining increasing credibility with investors prior to the crisis. Generally efficient and transparent implementation of its refined BOT law and very modest output contraction in 1998 has enabled the Philippines to withstand the impact of the financial crisis on private sector infrastructure better than most other East Asian economies. As a result, private infrastructure funding rose from $1.2 billion in 1996 to $2.2 billion in 1997 and $2.1 billion in 1998 (Appendix 1.1) (Asian Development Bank, 1998). Recent BOT projects embody a more mature pattern of risk sharing, involving greater private sector risk bearing (Asian Development Bank, 1998; and East Asia Analytical Unit, 1998).

However, the Philippines has not escaped the financial crisis unscathed. Power purchasing agreements signed in the mid 1990s imposed heavy foreign exchange and demand risks on the Philippine National Power Corporation. The peso's 40 per cent depreciation since mid 1997 has generated huge, possibly unsustainable costs in honouring payments under these agreements. IPP deliveries in excess of demand growth have resulted in the National Power Corporation cutting back generation from its own, lower cost generators. The Government may be unwilling to shoulder foreign exchange risk in future private projects unless it can adopt appropriate hedging strategies.

Financing for a proposed new generation project, First Gas Power, failed after the crisis began due to restricted liquidity in the debt syndication market. Several other power plans also have failed to materialise due to declining power demand forecasts. Other transport projects have been adversely affected, including the Manila to Clark North Rail project now on hold (Asian Development Bank, 1998). Escalating official foreign debt repayment costs have eroded the Government's fiscal position and will reduce its capacity to fund infrastructure from its own resources. However, progress in building a sound private infrastructure provision environment should help it make good this shortfall once economic conditions recover.

China

China's private infrastructure activity grew significantly in 1998, following the decline from a major peak in 1996 (Appendix Table 1.1) (Asian Development Bank, 1998). In the past four years, China has successfully formulated competitive bidding

BOT models to attract foreign capital to infrastructure projects. The BOT program reached maturity with Laibin B power station seeking finance from international markets at the time of the crisis; it was not adversely affected, with strong demand for financing participation. This has allowed many of China's other BOTs to proceed, including the Chengdu water project, developed as a model for private sector participation in water (Asian Development Bank, 1998).

While China's growth rate slowed to under 8 per cent in 1998, due to tight monetary policy (now relaxed) and declining exports to Asia, the Chinese Government has undertaken to significantly boost infrastructure and housing spending to maintain growth at around 8 per cent in 1999. New infrastructure spending rose by 14 per cent in the first half of 1998. This should provide many commercial opportunities for Australian infrastructure related businesses. Furthermore, ongoing reform of state-owned infrastructure sectors and new BOT developments are providing opportunities for corporate and sectoral reform consultants, infrastructure companies and equipment suppliers.

Hong Kong

Hong Kong infrastructure development also paused significantly during 1997 and 1998, dropping from $13.8 billion in 1996 to around $1 billion in each of 1997 and 1998 (Appendix Table 1.1) (Asian Development Bank, 1998). However, most of this fall was due to the completion of Hong Kong's new airport and other large pre-handover projects. Despite the general downturn, some new projects are reaching financial closure, including the River Trade Terminal, although it too was caught up in funding problems and high interest rates associated with the financial crisis (Asian Development Bank, 1998).

BEST PRACTICE LESSONS FOR REGIONAL INFRASTRUCTURE REFORMS

This report analyses many policy reforms which Asia Pacific economies can undertake to increase the scope, quality and benefits of private sector infrastructure provision. The main conclusions of this analysis follow.

Unbundling to Create Competitive Markets

Successful infrastructure reform involves unbundling monopolies into enterprises which can operate freely in competitive markets and residual monopoly networks, which must be retained in public ownership or carefully regulated to avoid abuse of monopoly power. (See Chapter 2 – *Principles*.) Depressed growth and excess infrastructure capacity in some sectors provide a window of opportunity for regional governments to make the transition to competitive markets.

Governments must avoid taking short term actions which jeopardise their subsequent ability to undertake reform. For example, partial or total sale of public monopoly assets to the public or strategic industry buyers *before* they are unbundled into competitive markets will be difficult and expensive to unwind at a later date and can create serious obstacles to competitive reform. Similarly, approving new BOTs with government guaranteed take-or-pay contracts creates long term obligations

which often are extremely expensive to terminate. In economies with many such take-or-pay contracts, achieving full competitive reforms of infrastructure provision may be very difficult.

Introducing fully competitive markets is complex and can take a number of years to implement. However, these reforms can produce the largest benefits. Introducing competition will require governments to:

- build bureaucratic capacity able to implement change
- develop mechanisms for stakeholders to participate in the reform process
- plan and announce key objectives, milestones and timelines
- institute tariff reform to facilitate private participation
- provide clear objectives and mechanisms for achieving social goals and equity
- establish accompanying institutional arrangements, such as regulators and market and legal frameworks.

Legal, Institutional and Regulatory Frameworks

Credible legal, institutional and regulatory frameworks reduce uncertainty and sovereign risk for foreign investors, improve the efficiency of contractual arrangements and accelerate cost-effective private infrastructure project implementation. (See Chapter 3 – *Law and Regulation*.) The financial crisis-induced slowdown in project activity provides governments with an opportunity and incentive to address shortcomings in these areas.

Laws prohibiting or limiting foreign land and infrastructure project ownership or concessions, such as in Vietnam and the Philippines, and controlling funds repatriation, as in Vietnam and China generally create barriers for foreign involvement in infrastructure.[2] If infrastructure project sponsors do not have title to land on which they are sited, they may find accessing non-recourse finance difficult. Even in economies where foreign investors can gain secure land ownership rights, the need to gain special approvals, often at more than one level, increases costs, uncertainty and opportunities for corrupt officials, deterring project implementation. A requirement for local equity involvement is common, as in the Philippines, further complicating participation and potentially increasing project costs. Since the advent of the crisis, several regional governments, including the Republic of Korea and Indonesia, have relaxed restrictions on foreign ownership, and others like Thailand are considering removing restrictions.

Effectiveness of dispute resolution procedures varies across the region, but is very important for long term infrastructure investments which expose sponsors to considerable contractual risks. The ability to stipulate a secure process at the project outset is important in reducing sovereign risk. Adequate dispute resolution mechanisms help prevent abuse of contracts and assure financiers that assets can be

[2] While controls on profit repatriation obstruct foreign direct investment in all sectors, they are particularly problematic for infrastructure projects, which usually have fewer opportunities for reinvesting profits than manufacturing investments.

recovered in the event of irreconcilable disputes. Many regional countries accept international legal jurisdiction, such as arbitration services provided by the International Centre for the Settlement of Investment Disputes or by ad hoc independent domestic or international arbitration centres using rules prepared by the International Centre for the Settlement of Investment Disputes. They also allow use of rules of procedure under the United Nations Commission for International Trade Law Model Law.

However, international arbitration decisions often cannot be enforced without recourse to local courts, frequently an uncertain, difficult and time consuming process. Governments which have not yet done so should be encouraged to become party to the New York Convention on the Enforcement of Arbitral Decisions to increase investor confidence in dispute resolution mechanisms. For example, while Indonesia ratified the 1958 New York Convention on the Recognition and Enforcement of Foreign Arbitral Awards, the government has not introduced the required implementing regulations.

A number of regional governments have developed special purpose BOT laws, effectively overcoming many legal and regulatory deficiencies in standard commercial laws, reducing the time needed to implement projects and increasing certainty for investors. However, the existence of a BOT law is not necessarily a panacea, as the experience in Vietnam attests, where uncertainty and lack of security continue to concern investors. Continued strengthening of underlying legal and regulatory frameworks will eventually reduce the need for special BOT laws.

Transparency and Competition

Perceptions of corrupt selection processes significantly deter cost-effective private sector infrastructure bids. For growth in private sector involvement to match and exceed pre-crisis levels, governments may need to improve the transparency of project selection and bidding processes. (See Chapter 3 – *Law and Regulation*.) More projects must be won on merit, and fewer based on deals. Encouragingly, many regional governments recognise this. For example, in mid 1998, Indonesia announced all future public projects would be let on the basis of open competitive bidding. If such practices become more widely practised, successful firms will rely more on core strengths rather than political influence or networks. This should improve the selection, construction and operational efficiency of projects.

Governments can help to mitigate firms' tender costs by setting clear frameworks for private participation and ensuring government administrators have the skills needed to negotiate complex agreements. Governments would benefit from more rigorously evaluating projects before putting them to tender, improving sectoral planning processes and ensuring more vigorous private sector competition. Providing initial assessments and scoping studies to all tenderers, on an open book basis, can reduce total tender costs.

Planning and Coordination

Even in economies with competitive infrastructure market segments, governments should establish priorities for major expansions of infrastructure networks, which usually will be heavily regulated or remain publicly owned. The government and the private sector jointly may assess and publicise demand and supply projections for competitive segments of markets, like electricity and telecommunications, reducing

business market risks. Since the financial crisis began, government planners and developers have queried future growth rates, the appropriate scale of new projects and their economic viability. Good future growth figures and confidence in their stability are needed before planning resumes (Asian Development Bank, 1998).

New official infrastructure spending to stimulate economies in the wake of the financial crisis will be more effective, if this expenditure funds well prioritised plans, based on thorough financial and economic cost benefit analyses. Appropriate planning of overall network needs in sectors like electricity, highways and urban roads should reduce ad hoc unsolicited bids, freeing up government resources currently employed assessing such bids, to more quickly implement priority projects. When unsolicited bids arrive, they should be subject to a competitive test on costs, as in the Philippines. For solicited projects seeking private sponsors, rigorous public planning and assessment processes, and clearly specified project requirements will reduce private tender costs and hence tendered project prices.

The benefits of public infrastructure planning accrue particularly to major monopoly network expansions and projects which are economically beneficial but not commercially viable, such as pure public goods and infrastructure with major spillover effects.

Limits to planning

If the private sector undertakes most commercially viable infrastructure projects in an economy, official projections and infrastructure master plans only will be useful to *guide* private investors. So long as the cost of capital applied to projects automatically adjusts to the risks and alternatives involved, projects' market fundamentals will determine their viability. When government is heavily involved in infrastructure decision making, it prepares long lists of 'feasible' projects. Much more importantly, it should introduce:

- competitive private sector approaches to infrastructure provision
- capital market deepening and reforms
- incentive based regulatory regimes for natural monopoly services such as networks, grids, pipelines (Asian Development Bank, 1998).

Project Financing

The long term and sunk cost nature of infrastructure assets, as well as cashflow delays due to long construction times and initial spare capacity, mean successful investments require carefully structured long term financing. (See Chapter 4 – *Financing and Risk*.) Few firms can afford to put infrastructure assets on their balance sheets and most seek non-recourse financing. In the past, governments financed infrastructure through tax revenues and long term sovereign borrowing, drawing on government guarantees to extend terms of loans. More recently, official guarantees have encouraged private sector provision, particularly foreign financing.

Further developing domestic capital markets, for both debt and equity, will reduce reliance on foreign capital, with its inherent foreign exchange risks. On the supply side, most governments recognise the need to broaden long term savings options to provide competitive sources of longer maturity funds to stimulate capital market deepening and finance long term assets like infrastructure.

A number of governments encourage private sector competition in the insurance/ pension sector. For example, India is deregulating the formerly nationalised insurance business to encourage a private pension industry. Similarly the Philippines is freeing up entry by foreign life insurance firms to expand the market for long term bonds (East Asia Analytical Unit, 1998). As part of a broader policy to increase the depth of its financial markets, Singapore also will allow private fund managers to manage a proportion of contributions to the Government's Central Provident Fund.

Bond market development is very uneven across the region. Lifting government controls on the asset allocation policies of the contractual savings institutions, allowing them to hold corporate bonds as well as government securities, as occurred in Malaysia in the early 1990s, can increase the volume and liquidity of longer term bond markets (Dalla et al, 1995, p. xi). Encouraging competition, including foreign competition, in the pension and insurance sector adds further volume. These measures tend to become self reinforcing; as markets mature and liquidity increases, maturities generally lengthen, further encouraging institutional investors. However, even in relatively well developed markets such as Malaysia's, activity has almost ceased since the crisis began. Resumption will depend on broader economic recovery and further institutional reform by governments. In particular, effective prudential control of financial institutions, improved corporate governance and enforcement of accounting standards is necessary to increase transparency and investor confidence in long term corporate debt instruments and equities.

Equity financing is important to reduce the need for government guarantees, as private investors bear foreign exchange and other risks. Asian equity markets can develop their potential in terms of domestic financing, if share liquidity is increased, and if equity prices assume a greater role in evaluating and effectively disciplining corporate or managerial performance (International Monetary Fund, 1998, p. 21). Listed infrastructure funds can assist portfolio investors to manage foreign exchange and other risks while allowing small and large investors to diversify risks across projects and countries. However, equity funds have difficulties placing the considerable funds at their disposal, because equity usually is less of a constraint for project sponsors than debt, and because equity fund expectations about yields may be too high. The corollary is that infrastructure debt funds have better prospects as project finance providers (Project Finance, 1998, p. 14).

Risk Management

Sound project design requires careful risk analysis and allocation, prior to calls for competitive tenders. Risks should be allocated to those best able to manage them. (See Chapter 4 – *Financing and Risk*.) Frequently, government guarantees to private infrastructure providers inappropriately shift full commercial and sovereign risk to governments, creating adverse incentives for private sponsors and concealing the need for more fundamental policy reforms. While such guarantees may be necessary early in the process of attracting foreign investors to countries with no track record in private infrastructure, they are less justifiable as governments establish investment grade credit ratings, competitive markets and transparent regulatory frameworks.

The recent crisis has highlighted problems associated with misallocating risks, as in guaranteeing rates of return in US dollars as in many early BOT electricity projects. In future, governments will be far more cautious about the degree of commercial risk

they assume and be reluctant to accept commercial and foreign exchange risks. Private sector investors are better at handling foreign exchange risks, reducing them through hedging in foreign exchange markets, or diversifying them across different markets.

Governments nevertheless will continue to have a role managing risks which they can control, such as sovereign policy risk and providing partial guarantees for the activities of state enterprises. Governments also are becoming more sophisticated in their approach to risk, for example levying charges for guarantees, as now occurs in the Philippines, or establishing credit enhancement agencies, like the Infrastructure Finance Development Corporation in India. Recently refined Philippine BOT laws shift many commercial risks of infrastructure investment back to the private sector as infrastructure authorities and government debt achieve higher investment ratings.

Multilateral development agencies such as the World Bank offer guarantee services; these will be important in re-establishing confidence in regional infrastructure projects as economies recover. Increasingly, such agencies seek to leverage their funds to encourage greater private sector activity through guarantees for sovereign risk and government non-performance. Nevertheless, such multilateral bank guarantees are ultimately borne by recipient governments. Therefore, they should not cover risks private project sponsors should appropriately bear. Individual country export credit and insurance agencies, like Australia's Export Finance and Insurance Corporation, also can reduce infrastructure project and export risks through credit guarantees and enhancement.

AUSTRALIAN GOVERNMENT IMPLICATIONS

The growing role of the private sector in Asia Pacific infrastructure and the need for ongoing reform has several implications for the Australian Government:

- Australian infrastructure reforms need to be encouraged to provide local infrastructure enterprises with the experience to achieve commercial advantage in export markets
- Australian aid programs need to focus on fast moving developments in infrastructure provision, providing governance assistance to encourage private provision
- the high priority for service trade liberalisation negotiations needs to continue, including for infrastructure related services
- commercial implications need to be assessed for trade promotion through Austrade
- implications need to be assessed for infrastructure investment insurance and credit via the Export Finance and Insurance Corporation.

AUSTRALIAN INFRASTRUCTURE REFORM IMPLICATIONS

Many major international infrastructure firms first gained expertise providing private infrastructure in their own countries. For example, French water companies and US energy utilities account for a large share of their respective global markets because they have long experience in privately providing infrastructure in their domestic economies.

Rigorously applying national competition policies, including restructuring and unbundling public monopolies where appropriate, encouraging competitive or contestable infrastructure services, assessing the need for public ownership and encouraging further new private sector infrastructure investment would all assist Australian enterprises gain infrastructure sector expertise relevant to winning private infrastructure contracts in Asia. This objective also would be furthered by continuing administrative reforms including measures to improve pricing, identifying and directly funding community service obligations, increasing contracting out of non-core services, supporting competition policy through labour market and taxation reforms and improving infrastructure planning and investment processes.

Many emerging Australian infrastructure businesses started life as monopoly government business enterprises; some still are corporatising and privatising. Australia will benefit from accelerating infrastructure reform and privatisation to enable more entities to enter global markets as fully competitive players. Government business enterprises usually cannot make equity investments or take large risks offshore, even if they have developed good skills at home. Such constraints on public enterprises are appropriate, as taxpayers do not expect government enterprises to take risks. However, private shareholders may be willing to do so, if anticipated returns are appropriate. Australian skills and experience are significant; these could be used to win export contracts and undertake profitable foreign investments, but currently many such skills remain under-used in government business enterprises that fail to reform or privatise.

IMPLICATIONS FOR THE AUSTRALIAN AID PROGRAM

Many multilateral and bilateral donors, including AusAID, want to prioritise systemic infrastructure provision restructuring and reform in recipient economies. This includes introducing competitive markets and credible regulation so the private sector can participate in infrastructure markets rather than simply supply new facilities. (See Chapter 6 – *Aid)*

To assist regional developing economies attract welfare enhancing private infrastructure projects, aid activities should emphasise improved economic governance, including assistance with:

- developing commercial law and dispute resolution mechanisms
- developing and implementing competition policy
- corporatising and privatising public infrastructure enterprises and establishing infrastructure reform units
- establishing appropriate regulatory frameworks for competitive and monopoly infrastructure sectors
- reforming capital markets, including developing local corporate bond, equity and risk markets.

A recently completed study for AusAID identified the many high priority economic governance training needs of regional APEC economies requiring assistance (Centre for International Economics, 1998). This information will enable Australia to develop a coordinated, proactive approach to economic governance assistance, including for infrastructure.

Competition Policy and Infrastructure Regulation

Australia has excellent institutional resources in the Australian Competition and Consumer Commission, ACCC, the Productivity Commission, various state regulatory agencies and many private consultancy firms and educational institutions to provide training in competition policy and infrastructure regulation. The ACCC is an international leader in enforcing competition and infrastructure regulation, and Australia leads the world in policies on monopoly network access. The Productivity Commission (previously the Industry Commission) undertakes industry competition studies and advises government on the economic costs of policies restricting competition or trade, and is another a potential source of advice and training.

The ACCC currently is involved in two successful AusAID funded technical assistance projects to help the Philippines and China with their competition policies and measure the costs of protection. With its experience in regulating network access and pricing, the ACCC also can advise regional economies on regulatory frameworks for competitive infrastructure markets and monopoly networks. The ACCC indicated regional governments show considerable interest in receiving such assistance (Fels, 1998).

Infrastructure Privatisation and Reform Units

Another area where regional economies could benefit from technical assistance is in corporatising and privatising state-owned infrastructure enterprises. Australia has considerable recent experience and expertise in this area; for example, the unbundling and sale of Victorian electricity assets was run by the specialist reform unit, Energy Projects Division, in the Victorian Department of Treasury and Finance. The Office of Asset Sales and IT Outsourcing within the Commonwealth Finance Department portfolio is responsible for privatising Commonwealth government assets and advising on appropriate commercial structures. Electricity utility Pacific Power won several internationally competitively bid World Bank projects, advising Chinese provincial power authorities on power sector corporatisation. (See Chapter 5 – *Sectoral Best Practice*.) Many private consulting firms also have considerable expertise in this area and can provide technical assistance and possibly training through AusAID coordinated projects.

Another area of potential assistance is to help establish and support infrastructure sector reform units (Asian Development Bank, 1998). Such units would contain a specially trained expert group providing advice to local public infrastructure utilities, as well as to central and provincial government ministries on methods of unbundling and introducing competition into infrastructure sectors, and engaging private investors on a mutually beneficial basis. Reform units also can provide a useful focal point for international and bilateral development agencies, banks, public and private sector agencies and others with experience and skills to assist utility restructuring (Asian Development Bank, 1998). For example, the US ODA agency, USAID helped establish and provides ongoing support for the Philippine Government BOT Centre, which stimulates private sector infrastructure provision and acts as a one stop shop for private investors.

Capital Market Reforms and Regulation

The report highlights the importance for future private sector infrastructure provision of reforming domestic capital markets, including developing local bond, equity and risk markets. This will increase the ability and ease of fundraising and reduce the cost and riskiness of financing infrastructure projects. To achieve this objective, regional governments will need expertise in improving financial sector regulation, including:

- creating efficient, well regulated domestic equity markets and accounting standards
- establishing and deepening public and corporate bond markets
- encouraging development of domestic and foreign trust funds to purchase equities, bonds or securitised loans for infrastructure projects
- developing competitive and efficient insurance and pension fund sectors
- developing credit rating agencies
- developing or encouraging credit enhancement agencies
- designing guarantee mechanisms for major sovereign, forex or project specific risks.

Australia has considerable public and private sector expertise in all these areas. The Australian Securities and Investment Commission is internationally credible and has extensive expertise in financial sector supervision; the new Australian Prudential Regulation Authority has considerable expertise in regulating banks, other deposit taking institutions, superannuation funds and insurance companies; Australian investment banks have expertise in project financing and risk management; and local insurance firms and pension funds also can advise on conditions required to achieve healthy institutional infrastructure investment.

Commercial Law and Dispute Resolution

Finally, assistance to regional governments to enhance legal environments could include help with drafting and implementing legislation to:

- protect private property
- enforce environmental standards
- strengthen contract and other relevant commercial law
- stipulate accounting standards
- establish specialised legislation, such as BOT laws
- establish dispute resolution mechanisms.

The Commonwealth Attorney General's Department, legal professional bodies and private law firms all could assist this process; many currently are involved in formal and informal assistance in the region. The newly established Centre for Democratic Institutions at the Australian National University has the task of providing training in civil good governance. This initiative recognises that implementing concepts such as adherence to the rule of law, accountability and transparency in government and legislative actions, and popular participation in the democratic process is essential to the successful functioning of a society. Other bodies with expertise in these areas providing advice to regional governments on legal system development include legal

professional bodies and non-government organisations like the Australian Legal Resources International supported by Australian judges and lawyers, private consulting and legal firms, and academic legal institutions. Such bodies employ AusAID and other resources to undertake legal system development projects relevant to facilitating private sector infrastructure.

APEC Initiatives in Private Infrastructure

Building on the APEC leaders' broad political commitment to attract private sector infrastructure investment, outlined in the Vancouver Declaration, Australia will submit this East Asia Analytical Unit report to the infrastructure workshop of the Economic Committee of APEC. In addition to coordinated approaches through APEC, developed APEC members, including Australia, will continue to advance technical assistance to identified priority reform areas, such as infrastructure sector restructuring and privatisation, legal, accounting, financial sector and regulatory reform, to encourage private sector involvement.

COMMERCIAL IMPLICATIONS FOR THE AUSTRALIAN GOVERNMENT

The major commercial policy implications arising from the growth of private infrastructure provision relate to trade and investment liberalisation negotiation priorities, the responsibility of the Department of Foreign Affairs and Trade, and the support provided by Austrade and the Export Finance and Insurance Corporation for Australian infrastructure firms and related equipment and service providers.

Trade and Investment Negotiations

The growth of private infrastructure significantly affects the government's promotion of services trade and investment liberalisation. For Australian infrastructure enterprises, financial institutions and legal, engineering and related consultants to contribute fully to private infrastructure provision, regional governments will need to remove many existing trade and investment barriers. To maximise these opportunities, the Australian government will need to maintain and even enhance efforts to speed service trade and investment liberalisation through APEC, the World Trade Organisation, and the OECD's Multilateral Agreement on Investment.

World Trade Organisation services negotiations

A strong and open financial sector is essential for future growth of all sectors and is crucial to restore confidence and economic growth in Australia's East Asian trading partners. Financial sector reforms can promote the role of prudential regulation, which all countries view as central to the integrity and stability of the financial system. Greater transparency and predictability will best promote trade and investment, simultaneously assisting regional economies and providing opportunities for the Australian financial sector.

In the World Trade Organisation services negotiations, to begin by January 2000, Australia should emphasise to members the importance of increasing transparency in their regulatory regimes, and legally binding existing domestic regulatory reform or agreements made as part of International Monetary Fund packages. The negotiations provide an opportunity to build on the significant gains made in the last round of World Trade Organisation financial services negotiations which, despite the regional crisis, concluded in December 1997. As a result of this round, 70 countries including Australia agreed to make new or improved commitments to liberalise their financial services sectors. Relevant examples include Malaysia's undertaking to improve the treatment of foreign-owned insurance companies and Thailand's to relax the limits on foreign equity participation in locally incorporated banks and finance companies.

APEC investment and services trade liberalisation

Intensified activity through APEC to liberalise regional service sectors could benefit private sector infrastructure providers. Controls limiting foreign and domestic participation in many regional economies' services sectors, including financial sectors, construction industries, infrastructure sectors like telecommunications, electricity, airlines, railways and water, professional services like law, engineering, accounting and general consultancy services, all inhibit private infrastructure provision. On-going efforts to open up these sectors to domestic and international competition should receive higher priority in light of the financial crisis and the urgent need to stimulate domestic infrastructure activity, as well as financial system and broader institutional reform.

Role of Austrade and the Department of Industry, Science and Resources

Beyond the current crisis, the private sector's expanded involvement in Asian infrastructure means infrastructure trade and investment opportunities are likely to grow significantly in the next decade. Austrade provides a range of services to help Australian architects, consultants, contractors, infrastructure enterprises, financial and legal advisers, and suppliers of goods and specialised services, enter Asian markets. Austrade needs to understand the changing competitiveness of Australian industry and how companies win business in overseas markets, as the private sector finances more infrastructure projects, and institutional structures and processes undergo rapid change following the crisis. It therefore will be important for Austrade to focus more closely on a primary intelligence role, including for front-end legal and financial services, to meet the increasing service content of Australian's export base.

The interests of the Department of Industry, Science and Resources in this area include encouraging the creation of competitive domestic markets in gas, water and electricity, so Australian businesses will be able to compete more successfully in international markets. This department also is involved in improving the performance of the construction and urban development industries in international markets. It manages a number of bilateral agreements with governments in the region, and can use this to address market access and development issues for the

industry. The department also helps develop regional technical requirements for building and construction and their incorporation into international (ISO) building standards.[3] These activities facilitate regional trade.

Role of Australia's Export Finance and Insurance Corporation, EFIC

Given the current environment of heightened risk, difficulty in making confident risk assessments and the restricted capacity of the commercial market to take on risk in the region, the role played by government-backed export credit agencies in helping develop finance packages for infrastructure is likely to increase with the resumption of infrastructure financing.

Australia's official export credit agency, the Export Finance and Insurance Corporation, has considerable experience in the region and is well positioned to assist exporters, financiers and investors looking to participate in Asian infrastructure. It can assist by providing:

- finance for the export of capital goods and related services for a project, by making a direct loan to the overseas buyer of Australian exports
- export credit or commercial credit guarantees to Australian or foreign banks that provide financing for Australian exports. This insurance can cover impairment of project viability from an inability to convert local currencies to foreign exchange, sovereign risk from government non-performance and damage arising from war or civil strife
- political risk insurance for either equity or debt investments in infrastructure projects.[4]

All Export Finance and Insurance Corporation assistance is provided on commercial terms related to risks incurred.

The corporation approved its first export credit guarantee facility support in July 1996 for an ANZ loan to a Thai construction firm importing mining conveyer equipment from Transfield. This facility guarantees long term, commercial bank loans to importers of Australian equipment exports, enabling Australian exporters to match credit arrangements several European export credit agencies provide.

As financiers and export credit agencies attempt to manage their Asian exposures, the need to involve a larger 'club' or syndicate of financiers to develop infrastructure projects will increase. This will result in project procurement from many different sources to mobilise these funds – or 'multi-sourcing'. The Export Finance and Insurance Corporation has participated in multi-sourced projects and is able to provide finance to match the support provided through other government-backed agencies.

.....

[3] Under this program Australia has lead responsibility for developing structural design and loading requirements for APEC economies. The department also has lead responsibility for Standards and Conformance issues within APEC.

[4] For example, EFIC assisted two large infrastructure projects, the Alumbrera project in Argentina, sponsored by MIM, and the Lihir project in PNG, sponsored by RTZ, with political risk insurance for equity investments. In the case of the Alumbrera project, risk insurance was provided jointly with several other export credit agencies.

An APEC protocol agreed in November 1997 will enhance cooperation among export financing institutions including EFIC. The protocol agreement sets out a framework for promoting technical cooperation to finance private infrastructure projects. The expected cooperation and coordination may involve a wide range of activities, including financing, insurance, guarantees and/or other forms of official support, which do not undermine market principles.

FUTURE PROSPECTS FOR PRIVATE INFRASTRUCTURE PROVISION

While the crisis-induced decline in infrastructure investment in 1997 and 1998 is creating severe difficulties for project sponsors and governments, it also may provide opportunities both for reform-oriented governments and private infrastructure businesses wishing to expand in the Asia Pacific region. Governments have a strong incentive to improve the infrastructure investment environment with new private investments down sharply and governments financially constrained from investing in much needed infrastructure themselves.

Regional governments need to act to regain the momentum of private infrastructure investment inflows by:

- continuing legal reform, including of bankruptcy and property rights laws and dispute settlement mechanisms
- deepening financial sector reform, including improved prudential controls, encouraging bond, equity and institutional investor market development, and promoting competition and efficiency by permitting entry of foreign financial institutions
- reallocating risks to make private and public sectors responsible for risks they are best able to bear, and improving returns and outcomes for private sponsors and governments
- undertaking competitive infrastructure industry restructuring and reform, including selling assets within transparent and efficient tendering, regulatory, tariff and legal frameworks.

Apart from generating valuable improvements in infrastructure efficiency and private investment inflows, all these reforms will provide commercial opportunities for Australian businesses and consultants. The Australian government will need to promote and facilitate such reforms through the aid program, APEC and services trade and investment liberalisation negotiations, and develop capacities to assist Australian business to take advantage of evolving opportunities.

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AUSTRALIAN GOVERNMENT AGENCIES

Australian Trade Commission
National Manager Infrastructure
Austrade
Level 24, AON Tower
201 Kemp Street
Sydney NSW 2000
Postal: GPO Box 5301
Sydney NSW 2001
Tel: 02 9390 2397
Fax: 02 9390 2125
Austrade Hotline: 13 28 78
Internet: www.austrade.gov.au

Department of Foreign Affairs and Trade
RG Casey Building
John McEwen Crescent
Barton ACT 0221
Tel: 02 6261 9111
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State Government Bodies

Australian Capital Territory

Office of Business Development and Tourism
Level 2, Canberra Nara Centre
1 Constitution Avenue
Postal: PO Box 1000, Civic Square
Canberra ACT 2608
Tel: 02 6205 0689
Fax: 02 6205 0636

New South Wales

Department of State and Regional Development
Trade and Business Services Group
Level 43, Grosvenor Place
225 George Street
Sydney NSW 2000
Tel: 02 9338 6684
Fax: 02 9338 6970

Northern Territory

Department of Asian Relations and Trade
Development House
76 The Esplanade
Darwin NT 0800
Tel: 08 8999 5219
Fax: 08 8999 5106

Queensland

Department of State Development
South East Asia Secretariat
19th Floor, 111 George Street
Brisbane QLD 4000
Tel: 07 3224 6824
Fax: 07 3404 3179

South Australia

Office of Asian Business
Level 15, State Administration Centre
200 Victoria Square
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Tel: 08 8226 2690
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Tasmania

Department of State Development
Marketing and Export
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Hobart TAS 7000
Tel: 03 6233 5888
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Victoria

Business Victoria
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Tel: 03 9651 9044
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INDEX

I

J

K

L

M

N

P

R

S

T

U

V

W

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Australia

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Located within the Department of Foreign Affairs and Trade, the Unit has to date undertaken and commissioned 20 studies on a range of topics related to Australia's trade policy interests in the region.

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Contact details:

East Asia Analytical Unit
Department of Foreign Affairs and Trade
RG Casey Building
John McEwen Crescent
Barton ACT 0221
Australia

Executive Director of the Unit:
Dr Frances Perkins

Directors:
Edward Sulikowski
William Brummit (Acting)

Deputy Directors:
Richard Begley
Chris Elstoft

Administration:
Rosalind Callow

Telephone:	61 2 6261 2237
Facsimile:	61 2 6261 3493
Email:	eastasia.analytical@dfat.gov.au
Internet site:	www.dfat.gov.au/eaau

CONTENTS

GLOSSARY

AusAID	Australian Agency for International Development, Australia's overseas aid program.
BOT	Build operate transfer. (For other variants see page 55.)
East Asia	Unless otherwise stated, the East Asia grouping includes the developing East Asian economies of Brunei, China, Hong Kong, Indonesia, Republic of Korea, Malaysia, the Philippines, Singapore, Taiwan, Thailand and 'others' including Burma, Cambodia, Laos, and Vietnam. Japan is not included unless specifically indicated.
financial closure	The point at which financing of a project is arranged and lending documents are signed and become unconditional.
full recourse financing	Recourse is a lender's right of claim against a debtor. Full recourse financing therefore involves lending with recourse to all the project sponsor's assets on their full balance sheet, not just to the assets of a specific project. (See limited recourse financing and non-recourse financing.)
GDP	Gross domestic product.
escrow accounts	A special purpose account administered by a third party, into which revenues from a project are paid, then disbursed according to specified legal agreement.
IPO	Initial public offer.
IPP	Independent power producer.
limited recourse financing	Recourse is a lender's right of claim against a debtor. Hence limited recourse financing allows only partial, specified recourse to the debtor's, or project sponsor's assets. (See full recourse financing and non-recourse financing.)
non-recourse financing	Recourse is a lender's right of claim against a debtor. Non-recourse financing allows financiers recourse to the assets of a project only, and not to the assets of the project sponsor. (See full recourse financing and limited recourse financing.)
ODA	Overseas development assistance.
PPA	Power purchase agreement.
project finance	Funding arrangements made for a particular project, typically involving a funding agreement with suppliers of equity and debt finance.

public good	Once supplied to one consumer, it is not possible to exclude other consumers from a 'pure' public good (non-excludable), which then is available to others at no extra cost, with undiminished quality (non-rival in consumption).
South Asia	The South Asia grouping includes Bangladesh, Bhutan, India, Nepal, Pakistan and Sri Lanka.
take-or-pay contracts	The buyer undertakes to purchase a specified quantity in a period, at an agreed price. The producer takes the production risk and the buyer the market risk.
turnkey contract	A contract to fully construct and establish a facility such that the user can commence operations immediately.
USAID	United States Agency for International Development.
wheel/wheeling	Transmission by third parties across an infrastructure network on specified terms and conditions.

CLICK HERE TO GO TO PAGE 1