

PART ONE

STUDY OVERVIEW

I. INTRODUCTION

An Asian Development Bank (ADB) regional technical assistance was approved with the aim of developing sector specific best practices for promoting private sector participation (PSP) in key infrastructure sectors in ADB's developing member countries (DMCs). The sectors studied included power, water supply, roads, ports and airports and the best practices covered: (i) sector policy issues relating to pricing and competition; (ii) conducive legal and regulatory frameworks; (iii) the unbundling, mitigating, and management of risks; and (iv) mechanisms to reduce transaction costs. Five individual experts were engaged to undertake the study, one for each sector. A two-day regional workshop was held at ADB on 9-10 December 1998 for the experts to present their findings and validate them with an invited group of experienced senior government and private sector individuals, together with ADB staff. These volumes represent the final outputs of the study.

A summary of the expressed views in these volumes in relation to preferred forms of PSP in infrastructure, informed by the currency crisis, is that it is "best practice" to have a customer focus and a well structured regulatory environment around infrastructure projects, in part since this can allow domestic financing. In other words, it is financially and economically sensible to utilize the essential and often monopoly status of efficient infrastructure services in creating, in effect, a *customer finance* model of PSP. Under this customer-focused concession or franchise model, government provides the regulatory and legal framework that can satisfy customer and investor alike, with the securitization of customer accounts (say via an escrow account) or insurance techniques underpinning financing arrangements. Investors will always seek to mitigate uncertainties, but many of the privatization models to date have done so by way of government guarantees which have undermined the process in the longer run.

Regulation by entities appointed by the government is still required in the new model, given that monopoly provision of key network assets is often the only efficient option. For example there is a need to regulate access charges for connection to network assets such as pipelines, high voltage wires and port channels. But where competition can be achieved in the product market, as with electricity generation selling into a power pool, then this competition is generally the best mechanism to achieve good outcomes for customers. Realistically, in much of Asia, there is little experience with these new pro-competitive models of regulation and thus there is an expectation, on the part of the experts, of a substantial phase-in to this regulatory element of best practice in the future.

The challenge as we enter 2000 with its information-rich possibilities, is to learn from the 1990s infrastructure experience on investor-to-government build-operate-transfer (BOT) deals and concession transactions so that DMCs can benefit from the adoption of best practices in the various infrastructure sectors.

The following presents an overview of the study, including a discussion on the growth of private sector infrastructure investment in Asia, a review of the cross-sectoral issues, a summary of the sectoral best practices for each sector and suggestions on the role of ADB in supporting private sector investment in infrastructure. Part 2 comprises the specific sectoral report.

II. THE GROWTH OF PRIVATE SECTOR PARTICIPATION

A. Expansion and Contraction of Private Sector Investment

The last decade, and notably the period to 1996, saw both the rapid expansion of private investment in public infrastructure and a sharp increase in private management of the services associated with this infrastructure. The investment was fuelled by the development of new forms of PSP including varying forms of public/private partnerships: BOT, build-own-operate, build-own-operate-transfer (BOOT), and concessions.

New financial instruments, especially project finance, and the globalization of private investment funds, played a major role in the expansion of the infrastructure sectors in most countries. PSP in infrastructure, and in particular power generation, was supported enthusiastically by the multilateral development banks and bilateral development agencies, as well as by the international financial community. But fewer transactions were completed in the more complex and customer-focused areas such as water, electricity distribution and transport infrastructure. Early successes involved financial transactions without major organizational restructuring; later transactions focused on major infrastructure in mega-cities such as Manila, Jakarta and Shanghai. For example, water treatment plants, bulk water supply, individual power generation units, container terminals, passenger terminals, and airport toll roads.

In the first half of the 1990s, investment requirements for infrastructure in Asia were seen to be on a scale that dwarfed earlier projections and experience. Asian tiger economies were growing rapidly, and demanding massive investments in power, roads, telecommunications and other infrastructure. In most Asian economies, there was also a sense that development was being hindered by bottlenecks in power (e.g., the Philippines), transport (e.g., Thailand), water (most of Asia) and telecommunications. Since government infrastructure spending, international aid, and official sector lending could not be on a scale sufficient to meet requirements, the private sector was the focus of attention.

The new infrastructure investment requirements were estimated by ADB to be of the order of US\$1,000 billion for the 1990s for East Asia. Subsequently, they were estimated by the World Bank to be of the order of US\$1,500 billion for the decade 1995 to 2004. Such projections were useful as a means of highlighting the scale and structure of the huge infrastructure requirements of a growing and increasingly prosperous and urbanized Asia. They helped make clear the need for a major shift of focus towards PSP in infrastructure, to some extent motivated by efficiency considerations, but mainly reflecting the view that public sector financing for this scale of infrastructure requirements was neither feasible nor desirable.

There had also been a shift in views as to the comparative advantages of governments and the private sector in performing the various roles related to the provision of quality infrastructure services. Increasingly, an expanded regulatory and restructuring role was seen for governments, with investment, construction, financing, and management viewed as best opened to competitive PSP. Risks should, under this approach, be assigned to the parties best able to mitigate them, and this meant a greatly expanded role for the private sector.

There was recognition that while many private sector investments of the BOT type were being completed, the assignment of risks in many of these projects left much to be desired. Government guarantees of bulk take-or-pay contracts (between utilities and investors), often

indexed to exchange rates, had created huge contingent financial obligations of the utilities and their governments.

As with many investment trends, optimism, a proliferation of Memoranda of Understanding and glossy investment announcements gradually replaced careful evaluation. Some early successes, under special circumstances, led to the assumption that this BOT approach could be universally applied. The expression BOT had become a shorthand for PSP in many countries by the mid 1990s; but by 1999 BOTs and often the associated power purchasing agreements had also become a shorthand for unacceptable government risk exposure, and of project isolation from customer and market pressures.

This optimism ended with the Asian financial crisis; itself brought on by a lack of sound investment policies, in particular, in relation to government guaranteed power purchasing agreements. The power purchasing agreements had inadvertently converted a shortage of power supply into an oversupply, secured by take-or-pay guarantees. The result of the crisis has been a sharp contraction in private sector investment and a significant exposure of government and private sector investors to contingent liabilities. This contraction not only limits the capacity of governments to stimulate economic growth but also has led to the deterioration or stagnation of many partially completed and privately financed public infrastructure projects. The rise and fall of private sector finance is clearly shown in the private finance data presented in Box 1.

The currency crisis has caused some dramatic revisions both to economic growth forecasts and to infrastructure investment programs. However, as the analysis in Box 1 shows that while forecasts for infrastructure are lower due to lower growth and the expected move to best practice, the magnitude of investment is still huge and efficient PSP will be required.

B. The Challenge for Private Sector Infrastructure Investment

As this difficult period unwinds, it is important to reconsider the comparative advantages of the public and private sectors and the critical role of improved regulation and governance including transparency, enforcement of contracts, and the adoption of viable commercial tariff structures. There is a need to review, sector by sector, the strengths and weaknesses of the process that has been used to implement these investments. The opportunities and risks of new approaches need to be addressed - e.g., the case for expanding the emphasis on customer focused and privately managed concessions. There is a need to develop bankable versions of these models, ideally backed by the security of customer accounts rather than government guarantees or public sector assurances. This series of volumes addresses these and other sectoral best practice concerns.

There are major challenges for governments and investors alike, emerging from this shift to a new model for infrastructure development. The new best practice model does not mean a total retreat by governments; on the contrary, moving to best or better practice involves a shift to good governance, and requires an upgrade of regulatory, restructuring, and monitoring roles. Without greatly improved governance, the shift to increased PSP could just mean monopoly powers being shifted to the well connected in the private sector. Moreover, without improved governance, PSP would eventually flounder and the demands for infrastructure will not be met, as risks would become unacceptable.

Box 1: Past Project Finance and Future Infrastructure Demand — East Asia

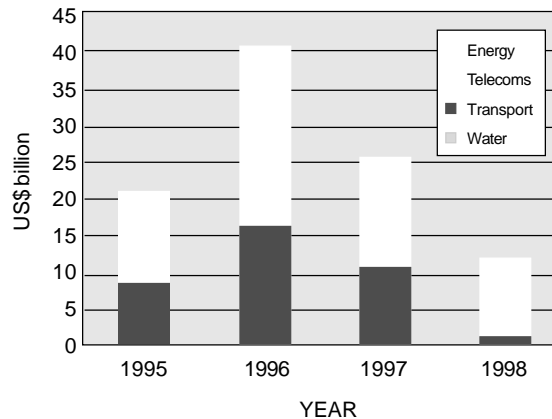
Project Finance — Opportunity and Volatility

Figure 1 draws on a Euromoney (CapitalDATA) database and highlights the dramatic growth, and subsequent decline of infrastructure funded through project finance in selected East Asian countries. The pre-crisis level of nearly US\$41 billion for 1996, contrasts sharply with the estimated level at the end of the 1980s, when the total market for funding projects was less than US\$5 billion per annum, as well as with the crisis figure of US\$12 billion for 1998. Clearly, in the 1990s and well prior to the crisis, the importance of the private sector in infrastructure development was rapidly increasing. As a result of the crisis, the telecommunications sector has shown the most dramatic decline, reflecting the fact that such projects are typically purely privately funded, and bear demand risk in a newly open environment. The energy projects, on the other hand, appear more resilient, but mainly because they have had some form of government support, in the form of guarantees in relation to bulk sales through PPAs.

Future Demand for Infrastructure Investment

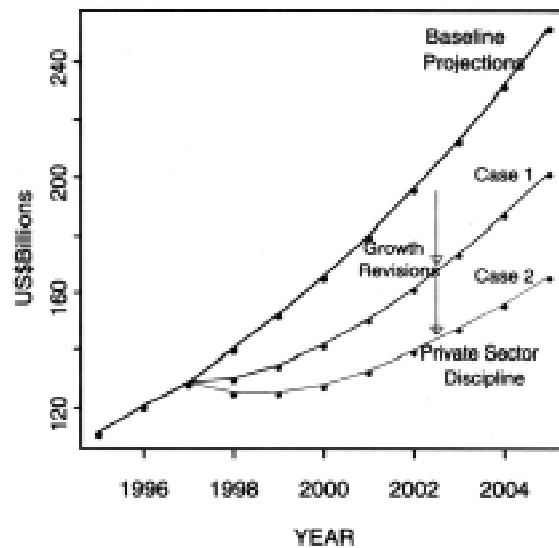
New infrastructure projections for selected East Asian countries: the People's Republic of China (PRC); Indonesia; Republic of Korea; Malaysia; Philippines; and Thailand for the period 1996-2005, adjusted to allow for both the phase-in of private sector market discipline/best practices and reduced economic growth. The revised projections are 23 percent below the pre-crisis (baseline) projections. They are based on establishing the value of the capital stock of infrastructure in each country and projecting infrastructure investments with varying gross domestic product (GDP) growth assumptions and varying infrastructure-to-output ratios. A summary is given in Figure 2. The pre-crisis projections are based on the 1996 GDP growth forecasts. Case 1 is based on the current GDP growth forecasts while Case 2 adds the impact of a transition to a lower infrastructure-to-output ratio and assumes a gradual 25 percent increase in efficiency in each sector in each country. An important factor to note in the projections for this region is that the PRC is assumed to maintain its relatively high GDP growth rate, which accounts for about two thirds of the infrastructure spending in the region. The results for Case 1 indicate a fall of 14 percent from the pre-crisis projections. If the PRC is excluded, the reduction is 33 percent. Case 2, which assumes a transition to best practices, with a resulting change in the underlying infrastructure-to-output and efficiency parameters, indicates further reductions in the level of needed investments. The analysis clearly shows the relative impact of lower growth and the potential benefits of moving to best practice models of infrastructure development. It also highlights the magnitude of investment requirements, in excess of \$120 billion per year, and the need for PSP.

**Figure 1:
Project Finance**



**Figure 2:
1996-2005 Infrastructure Investment Projections**

Scenario	US\$ trillion	%
Baseline	1.78	100
Case 1	1.53	86
Case 2	1.37	77



Source: "Private Sector Participation and Infrastructure Investment in Asia", Asian Development Bank paper prepared for the Finance Ministers Meeting, Asia Pacific Economic Cooperation, May, 1999; prepared by M.G Porter and C. McKinlay (Macquarie Bank and Tasman Asia Pacific).

III. CROSS-SECTORAL ISSUES FOR PRIVATE SECTOR PARTICIPATION

There are a number of cross-sectoral issues relating to promoting private sector investment in infrastructure that were identified during the study. The review of best practices in each of the five sectors highlighted the importance of competition, transparent tendering, and effective regulation. There was broad agreement that:

- Government should specialize in planning, structuring, and regulation while the private sector should specialize in management, investment, construction, and financing;
- The transfer of responsibility to the private sector should be accomplished through deregulation and open competition or well-established contractual arrangements including management contracts, capital leases, concessions, sale of assets and rights to operate;
- Economic regulation should be applied where there is insufficient competition but it should be transparent and predictable while still accommodating the concerns of the affected parties;
- Long-term domestic financing sources must be developed; and
- Commercial risks should be assigned to the private sector but other risks should be assigned according to which party is able to mitigate the risks.

The cross-sectoral issues are discussed in more detail below.

A. The Need for Reform and Role of Government

PSP in infrastructure development still requires the government to play a key role in planning, policy, and regulation. The reason that infrastructure industries have remained so long in the public sector is that they have components that are natural monopolies; e.g., the costs are lower with only one provider and the services are often essential (water, power and transport). These infrastructure monopolies also typically have a relatively high proportion of capital costs, have long-lived assets with low unit variable costs, and exhibit significant economies of scale. It had been a common judgement that state ownership of such monopolies, rather than state regulation of privately owned assets, was likely to deliver the best outcomes.

Existing service providers in these infrastructure areas have also had a considerable competitive advantage over potential new entrants, because of the relatively long time required to construct expensive new networks and to build up the market for their services. The scarcity of land, rights-of-way and airspace suitable for development of the network also act as an additional barrier to competition. Sites for airports and seaports, dams, power plants, and rights-of-way for roads, rail lines and transmission systems had become increasingly difficult to acquire. Another common argument for retaining these industries within the public sector was that they must provide common (or universal) access to their services and that subsidies are required.

It turns out that public ownership and management is neither necessary, nor the best way to ensure universal access. Subsidies can easily be a requirement of a competitive tender or can be directly financed by government. A key advantage of having the private sector provide public services is that it allows public administrators to concentrate on planning, policy and regulation. The private sector, in turn, is empowered to do what it does best (i) invest capital; (ii) manage the businesses; (iii) manage and create appropriate incentives for staff and management; (iv) deal with customers; and (v) improve the efficiency and quality of service; more recently, under the spur of benchmark competition - competition by comparison.

Governments should allow the private sector to provide infrastructure services to the maximum extent possible, with governments concentrating on planning, policy and regulation, and with the private sector on efficiently investing capital and improving the efficiency and quality of such services.

B. Institutional Reform

The organization of the infrastructure sectors (i.e., ministries, regulatory agencies, and utilities) has remained largely unchanged with the introduction of PSP. With financial transactions being the primary mechanism for transferring infrastructure services to the private sector, insufficient attention has been given to the broader issue of institutional reforms. It has been implicitly assumed that the introduction of private management into the ownership or operation of specific assets would obviate the need for such reforms. Instead, the weaknesses of existing institutional structures have limited the effectiveness of the private sector initiatives. In most countries, the piecemeal transfer of infrastructure components has proceeded slowly and the controlling bureaucracies that add overhead costs and often limit improvements in infrastructure performance, have remained relatively unaffected. The currency crisis has emphasized the importance of institutional reforms but government bureaucracies rarely reform themselves. Governments should carefully review the structure, size and responsibilities of state-owned utilities and other entities in the infrastructure sectors and establish special reform units reporting directly to top level ministers to spearhead the necessary reforms.

C. Strategic Planning

Governments' acceptance of private sector investment in infrastructure has been due, in part, to their failure to anticipate future bottlenecks and make timely strategic investments to prevent shortages in capacity. The increased role of the private sector in developing infrastructure has caused many governments to neglect their responsibility for sector planning. Instead, governments have offered assets and public services to the private sector in an *ad hoc* manner, often failing to ensure that individual investments were complementary. In certain circumstances, unsolicited proposals have been used as a surrogate for planning. For its part, the private sector has selected projects that had already been identified in government plans, giving preference to those which offered the highest rate of return, the lowest risk or the greatest short-term benefit. The private sector has had neither the interest nor the capacity to consider the network implications of its proposals. Governments have failed to subject these proposals to rigorous financial analysis to determine their sustainability in the absence of major increases in user charges or government guarantees. Governments have also often overlooked the Complementary investment required from the public sector to make the private investments successful. The results have been unsolicited proposals that involved little commercial risk (government guarantees, wrap-around provisions, transfer of existing assets, granting select rights of way) or politically generated proposals. Governments should maintain and strengthen

their role in strategic planning of the infrastructure sectors and in the process identify where PSP should be encouraged and the level of complementary support that should be provided.

D. Legal and Regulatory Framework

The effectiveness of PSP has suffered from the lack of adequate regulatory structures to control both technical and economic performance. Regulation of tariffs and other economic factors is particularly undeveloped. The basic objectives of autonomy, accountability, transparency and predictability have been difficult to achieve. More importantly, the mechanism for consultation between the public and private sector and for dispute resolution between the providers and users of the network has not been fully developed. A further problem has been the failure to separate regulation from administration in order to avoid conflicts of interest. Most countries have been slow to establish autonomous regulatory agencies with independent funding and professional staff.

Unbundling the network into competitive and monopolistic components can significantly reduce the need for regulation. The competitive components can be transferred to the private sector in a way that promotes competition and allows deregulation. The monopolistic components can then be transferred to the private sector once an effective regulatory framework has been established. This regulation should create a situation where the businesses derive their profits from increased efficiency and the attraction of additional demand.

Effective economic regulation covers also deterrence of anti-competitive practices. Most of the developing countries lack laws or agencies for dealing with anti-competitive practices. Economic activity continues to be concentrated in large conglomerates. The currency crisis has provided new impetus for breaking up the monopolies and introducing anti-monopoly laws.

The lack of established legal and regulatory procedures applies to contract law as well. The means for enforcement of contracts and the resolution of disputes are not well established. Political interference in the award of contracts has also been a problem.

PSP without a well-developed legal and regulatory framework increases the level of risk to investors. It also encourages investors to rely on special situations and political relationships rather than their merits as a means for securing and implementing contracts. The transfer of infrastructure services to the private sector should not lead to privileged deals or profits secured by government guarantees. They should be businesses with regulated income streams which derive their profits from increased efficiency and the attraction of additional demand. These income streams should be capable of securing substantial private sector funding, both because their semi-regulated nature makes them much like a government bond, and because the essential and often monopoly nature of the service lowers demand risk. Such assets are also long-lived and thus attractive to pension and similar long-term funds.

E. Unbundling and Introducing Competition

Experience in a number of countries has shown that unbundled infrastructure sectors with individual components managed separately can perform better than centrally-controlled networks. The additional costs of unbundled networks due to increased communications and transactions among components have been reduced by improvements in technology. At the same time, the unbundled management has been able to better focus on the capacity and productivity of the individual Components and their interface with other Components.

The unbundling of the infrastructure sectors is an important technique for reducing their natural monopoly and promoting competition. Many parts of the network can support competition. Where it is not possible to create direct competition between suppliers of network services, it is often possible to create competition among providers of complementary network services. For example, in the power sector, many countries are separating the networks into generation, transmission, distribution, and in some cases, a fourth segment responsible for retailing power to customers, with different companies responsible for each segment.

Where competition cannot be created, it is often possible to establish contestable environments e.g., a market for the business. One method is through effective competitive bidding for the sale or lease of assets and licensing or franchising of services. Another is to reduce the period of the contractual agreements or to provide for a periodic review of performance. A third is to introduce performance targets related to the quality of the service, the range of services, the prices charged for the services and overall market share. The ability of the private sector to achieve these targets is then linked to penalties, or provisions that may lead to early termination of the agreement. A fourth method is to require comparable performance vis-a-vis other networks. This may be in the form of requirements for increasing market share relative to other providers of similar services, or requiring a quality of service and price that is comparable to other networks serving similar markets.

Most infrastructure sectors are composed of profitable and unprofitable components. One practical, but not ideal, strategy for transferring the components to the private sector is to bundle profitable and unprofitable components to produce a combination that has an acceptable level of profitability. Another is to tender the profitable components through techniques ranging from operating agreements and franchising to sales of assets and to transfer the unprofitable components using management contracts; in effect, bidding out the government support for that component. A third strategy has been to transfer the profitable components to the private sector and to retain the unprofitable components in the public sector, but under control of local government units rather than the national government.

F. Sources of Financing

Private sector funding of infrastructure usually brings the risk of foreign currency mismatches in the financing package; income is in local currency, but the need to resort to foreign debt and equity markets means that debt service requires substantial foreign currency. The root problem is inadequate depth in capital markets in most DMCs which prevents a tailoring of local currency debt to long-lived assets. The need to resort to foreign debt (and equity) creates substantial risks, which have been exposed in the recent crisis. Few infrastructure consortia can withstand an exchange rate depreciation of 40 to 50 percent, let alone the 80 percent decline experienced in Indonesia when their product is sold for local currency. Hence the priority on programs to deepen the domestic capital market.

In principle, currency matching requires that the bulk of debt funding of infrastructure services such as transport, water supply, electricity and other urban services should be in local currency. In the absence of the necessary capital market reforms, it is hard to see how private sector provision of infrastructure can proceed on the scale required to meet future demand. A priority, therefore, given the recent experiences, is that international development agencies such as ADB expand their role both in facilitating political risk insurance and in fostering the development of domestic capital markets in Asia, particularly bond markets.

Direct foreign investment will remain an important source of funds for the development of the infrastructure sectors. However, it will take time to restore investor confidence and, given the experience of Indonesia, Pakistan, Philippines, Republic of Korea and others, governments will naturally seek to limit their exposure to these funds in preference to local sources of capital, if possible. The development of domestic long-term capital markets will be critical for private sector investment in infrastructure, but these markets must have much better regulation as well.

G. Risk and Risk Mitigation

In order to reach financial closure, governments have often accepted commercial risks that should have been assigned to the private sector. This includes not only the foreign exchange risk but also demand/traffic (volume) risk. The most obvious example has been the take-or-pay provisions in power purchase agreements. These guarantees have had three negative impacts. First, they have isolated the private sponsors from the influences of the market. Second, they have created a large amount of contingent liabilities for governments that now add to their fiscal problems. Third, they have encouraged price rigidity leading to distortions in the market and reducing the potential of the private sector to improve efficiencies in investment and operations. Other examples are build-lease-transfer agreements and volume guarantees for toll roads, airports and seaports.

Because governments have had limited contract-related knowledge or experience, the private parties have been frequently able to convince them to assume some of the commercial risks. Also, because governments have often not been able to engage suitable legal, technical and financial experts to assist during negotiations, they have been at a disadvantage in arguing with foreign proponents concerning international practices such as take-or-pay contracts, or with international lenders concerning guarantees to protect their loans. Bureaucrats who have gone through a long, often contentious bidding process have been willing to accept some commercial risks during negotiations rather than to face rebidding. Alternatively, private parties frustrated with drawn out negotiations and the continuing renegotiating of clauses have accepted risks that should have been borne by the government.

Governments should build up capacity to negotiate and deal with the private sector. Commercial risks should be assigned to the private sector and other risks should be assigned to the party best able to mitigate them.

IV. SUMMARY OF SECTORAL BEST PRACTICES

The challenge for governments is to encourage an appropriate form of private sector investment in infrastructure. The study has identified significant differences among the infrastructure sectors concerning the appropriate balance between private and public participation in ownership of assets and provision of services. Only some of the sectors have well defined models for PSP. Other best practices are still evolving and the menu will continue to develop as experience grows. The decisions on which infrastructure components should be transferred to the private sector are of a strategic nature. They depend not only on the characteristics of the sector and the market it serves but also on government objectives. There was consensus among the experts that the primary objective should be to benefit consumers. However there were a number of additional objectives which governments should consider: (i) reduction in national debt; (ii) stimulation of domestic capital markets; (iii) reduction in capital and operating subsidies; (iv) investment in new infrastructure or rehabilitation of existing

infrastructure; (v) improvements in the quality of service; (vi) increased range of services; (vii) reduced prices for services; (viii) client-oriented operations; and (ix) more effective marketing.

Governments have at their disposal a number of means for effecting the transfer of infrastructure components to the private sector. The pace and sequence of such a transfer depends on the: (i) size and complexity of the infrastructure sector; (ii) rate of growth in demand and the competitiveness of the market; (iii) options for unbundling by function or geography; (iv) legal regime regarding ownership of land and other critical assets; and (v) capacity for economic regulation. The established mechanisms, which range from management contracts to unregulated competition, are not new and have proven effective. The key is to have a vision of where the sector is going, and to carry through the reforms as quickly as possible so as not to allow the interim change to become the final state of affairs. The findings of the sectoral experts for each sector are summarized below.

A. Power

In the electricity sector, IPPs provided a quick solution (in the Philippines, for example) by offering generation capacity needed for rapid economic growth. However, the costs were often high because the new capacity was not consistent with the least-cost expansion path and the private sector required high rates of return. However, these costs have been decreasing as the IPP market has matured. The focus on production rather than efficient distribution put the public sector in the position of retaining that activity in which it was least effective and restricting the private sector from performing the customer focused activities (distribution and supply) where it had real expertise. At the same time, it isolated the private sector from the market through a combination of regulated pricing and guarantees against commercial risks.

The power sector expert advocates restructuring to achieve a competitive market model with wholesale and retail competition. Such reform will encourage sustainable PSP and maximize the benefits to consumers. The expert suggests five major steps in implementing this approach, and their order of precedence. To some extent, these steps may proceed in parallel, but they should be considered sequential actions that will lead to the implementation of a competitive power market:

1. Getting the investment framework right.
2. Deciding on the goals of restructuring and the ideal industry structure.
3. Preparing the players to participate in a competitive market.
4. Privatizing existing and new assets.
5. Ensuring that the competitive market is implemented properly.

Best practices for power sector restructuring would include the following:

- Create an enabling legal and regulatory environment to support competitive markets in electricity.
- Unbundle the power sector into separate generation, transmission, distribution, and possibly retailing sectors to achieve the maximum benefits for customers.
- Privatization should include the sale of power distribution utilities as well as generation, and should include existing assets as well as new projects, using a transparent process.
- Open access to transmission and distribution wires, and the ability to trade power between buyers and sellers in an open market, are critical to achieve a competitive framework.
- Operate the generation and retailing markets competitively, with a large number of generators selling into a wholesale electricity market at prices which balance demand and supply throughout the day.
- Operate the transmission network as a concession on the basis of competitive bidding, or privatize it within a tight regulatory framework, controlling rates of return, prices or gross revenue.
- The independent regulator should mainly oversee prices and incentives for transmission and distribution operations.
- Restructuring should proceed at a pace consistent with the development of a competitive and unbundled system.

B. Water

The water sector has moved more slowly towards private sector investment, relative to electricity and telecommunications for example, not least because of the jurisdictional, environmental and sensitive social concerns about water supply, and its affordability. While major private sector involvement has now been achieved in distribution (Manila and Jakarta), the bulk of transactions were BOT models with take-or-pay clauses guaranteed by governments. Adding to these difficulties was the lack of knowledge about the location and condition of the (underground) networks and aquifers in many countries.

The volume on the water supply sector addresses the question of why, given the alternatives, the private sector should seek to invest in a sector with so many uncertainties, natural, governmental and financial. Water, unevenly supplied as rainfall, is often wrongly deemed a free public good, despite the costs of treatment and retail supply. Thus, there is often an ill-informed community constraint against private sector involvement in water supply, which in most countries has prevented the sorts of best practice referred to in this report.

The water expert makes the point that when it comes to best practice in the case of water supply. Most of the messages are for government - to install sound and independent

regulatory regimes, catchment management policies and enforceable laws on tariff setting and collections. Once in place, best practices such as water supply concessions can be implemented. If not in place, then best feasible practice may simply relate to contracting out some services under government guarantee, or BOOT bulk supply to public sector water supply companies. It follows from this that since the particular features of the water supply situation and regulatory and privatization policies differ greatly across countries, so, too, will the feasible best practice.

One misunderstanding regarding the scope for bringing commercial practices to water supply is the issue of affordability. The report notes that the poor often pay more for water than the cost from efficient commercial piped supplies. Experience has shown that low-income families will pay for quality water supply - and are not averse to PSP - if it delivers.

The key points recommended were:

- The benefits of PSP in the water sector must be explained to win public acceptance.
- The starting point in any reform process for water supply is to form a high-level reform unit to drive and manage the process. It would be responsible for coordinating and facilitating the entire reform and PSP process. The reform unit may be a crosssectoral unit.
- While not essential to commence reform, the introduction of tradable water rights leads to efficient use of water, particularly when it is scarce and has alternative uses.
- The water sector should be unbundled to the extent possible. The private sector concession model is most likely to achieve the greatest benefits to the community and the economy as a whole. The government continues to own the network while the private operators lease the long-term right to use the assets and collect revenue from service delivery. The benefits accrue due to strong financial incentives to reduce water losses and expand service.
- If politically difficult, then the next best strategy is to use BOT, BOOT, and rehabilitate-operate-transfer arrangements to bring expertise and finance to urgently required water supply projects. The bidding procedure should be carefully managed to ensure reasonable cost and the contractual arrangements should not constrain subsequent progression to more competitive models.
- Commercialization/corporatization of water supply utilities together with tariff reform is advantageous as an interim step if the introduction of PSP is to be phased.
- Tariff reform to achieve full cost recovery is essential for PSP. Cross-subsidies for the poor can still be considered in a transparent manner.
- Critical to the success of PSP in the water supply sector is for the government to create sound and independent regulatory regimes, catchment management policies, and enforceable laws on tariff setting and collection.

- Risks are likely to vary between countries and even between different water utilities in a country. They should be managed by the party best able to minimize and manage each risk most effectively. Where no party has a clear comparative advantage to manage the risk, it should be shared.

C. Roads

In Asia's roads sector, PSP has been equated with major BOT toll roads. These have been targeted where traffic is greatest - in and near the capital city and sometimes along major inter-city corridors. This private investment has produced some successes but also many failures. After more than a decade of concerted effort, implementation experience has not matched expectations. Indeed, surprisingly little has been implemented outside the PRC.

The road sector expert has advanced three reasons for modest progress in roads. First, governments have not defined their policy, often leaving the private sector to identify projects. Secondly, almost everyone involved has expected such toll roads to be profitable without government support, but this has only rarely proved to be the case (outside the dense PRC market, which is deemed a 'special case'). Thirdly, it has proved difficult to introduce promised tariffs and tariff increases in a sector where roads have become to be regarded as free.

What is clear is that private construction and maintenance of public roads produced better results where there was adequate competition and effective methods for enforcing contracts. Efforts to substitute private sector management for public sector officials in the management of the public network are in their early stages, even in the developed economies, but the preliminary results are encouraging.

Worldwide experience identifies a broad range of PSP modalities, in which BOT is close to being the most difficult to implement. Other modalities include maintenance management contracts, turnkey, operate, and maintain or rehabilitate-operate-transfer concessions. Many of these modalities target improved maintenance, and rehabilitation of the network (rather than solely network capacity expansion). They have potentially much greater application than BOT projects. Looking ahead, the requirements are to both improve the BOT process, and to extend the modalities that are applied. The key points to emerge are:

- Governments must prepare the PSP environment. Institutions may need to be restructured with the objectives of controlling the PSP process in the public interest, and creating a regulatory body, separate from vested interests. A sound legal framework and a predictable regulatory regime are essential.
- Governments must identify priority PSP projects. This will almost always require an independent feasibility study, which focuses on traffic and tariff policy, project staging, network integration issues, risk allocation, finance and implementation issues.
- The best prospects for BOT projects are in middle-income countries (where the willingness-to-pay tolls exist) along existing congested corridors, or where there are missing links (e.g., estuarial/river crossings). A regulated income stream from a tolled public toll road is capable of securing project financing of an appropriate kind (i.e., suitable to pension funds and other long-term investor groups).

- Private sector modalities other than BOT exist, e.g., concessions, and should be applied more widely, as they can address many of the sector problems, and in the process create a new high growth industry for transport management companies.
- Traffic risk is the major risk and may be shared. The core risk being taken by the private sector, with government taking a share of the upside benefit and providing a downside guarantee in the event of low traffic.
- Transparency and competition are essential in the procurement process.
- Government support should be defined upfront as a maximum so that the private sector can prepare realistic bids.

D. Ports

In the port sector, the transfer of cargo-handling activities to the private sector has been, in most cases, extremely successful in replacing inefficient government bureaucracy with commercially-oriented management. Improvements in productivity and maintenance has increased the quality of service. However, where there was no competition, these arrangements were less likely to sustain these improvements. Private investment in port infrastructure has generally been limited to new and existing cargo terminals. Trans-shipment terminals were the most successful, since they were less dependent on local markets and land transport. Greenfield ports were slower to develop because they were further from their markets and the transport access was less developed. Basic infrastructure offered few opportunities for full cost recovery.

The ports sector expert, noted that the private sector has always been actively involved in port affairs. The land and water transport services that use the port are almost entirely private sector. Nearly all of the cargo shipped through ports is privately owned. The private sector provides an array of complementary trade facilitation and logistics services for this cargo. Within the confines of the public port, cargo owners, forwarders, and ship agents actively participate in decisions concerning the handling and storage of cargo. The public sector's role is to own, develop, and manage basic port infrastructure and common-user facilities.

The process of port privatization has rarely involved pure privatization, since land and infrastructure are rarely sold. Instead, the process involves PSP in operations and investment in equipment and facilities. The process is not a monolithic effort because of the diversity and complexity of ports and the services they provide. It can be divided into three components: (i) institutional reform, (ii) divestiture of existing services and assets, and (iii) investment in new facilities and services. These can be implemented individually or in combination. For each port component, there are many possible public-private partnerships. The main points regarding moves to best practice were:

- The bidding process should encourage unbundling not only of the network but also for the services within the ports. Where ports are not financially viable, they should not be bundled with profitable ports, but treated as stand-alone facilities that are turned over to local government or put under management contract using a competitive tender.

- The landlord model is the best structure for promoting PSP because it accommodates different forms of public-private partnership while recognizing that the only fixed responsibility of the public port is the ownership of the site.
- The most effective and efficient procedure for promoting PSP in the port sector is to lease existing facilities with relatively short-term agreements that allow for reorganization and improvement in productivity. Subsequently, concession agreements can be used to encourage private investment in additional capacity. Where this capacity is required immediately, or labor problems make it difficult to lease out existing facilities, then concessions might precede lease agreements.
- Continued public investment will be required, as it is difficult to recover the costs for basic infrastructure in a time period reasonable to the private sector. Public investment may also be required to reduce the barriers to entry. This is important where a new entrant would otherwise have to make a large investment before competing with existing service providers.
- The best form of tariff regulation is market regulation; the second best is through the terms of the contract that identify the non-competitive services requiring regulation, state the maximum rates, the formulae for escalating these rates over time, and the arbitration procedures for discriminatory behavior in excess of that justified by commercial pricing. The third best is the establishment of a regulatory agency outside of the port which would apply a pricing formula related to cost recovery. All of these are preferable to a vague procedure for negotiating future changes in tariffs.
- The private sector should assume all commercial risks. Other risks should be negotiated, based on which party has the capability to mitigate the risk.
- The critical element in any effort to promote PSP is competition, or at least the potential for competition. This can be provided through direct competition between private sector service providers, between public and private service providers or between bidders in the case of an activity that does not allow competition.

E. Airports

For the airport sector, PSP in terminal operations produced significant improvements in financial performance and the quality of service. Private sector investments have increased substantially over the last five years. During the previous twenty years, there was little capital investment in airports, despite a five-fold increase in traffic. The airports coped with the higher levels of traffic through a combination of larger aircraft, better air traffic control, improved runway design, and the addition of second runways and additional terminal space. This period has now ended and most countries need to invest in new airports. These are proving to be costly, complex and often controversial investments.

The key policy questions concern how best to structure airports and groups of airports to obtain maximum customer benefits. The discussion in the volume on airports and air traffic controls indicates that there is little evidence of significant scale benefits flowing from multiple airport operation; equally, however, there is little evidence of significant scale diseconomies. The case for significantly reducing the concentration of airport ownership at privatization

therefore depends on the trade-off between the up-front and visible costs of re-structuring, and the possibly less tangible benefits of increased competition resulting from break-up. The competition benefits in this industry are not clear-cut, primarily because major airports mainly serve distinct regional markets.

In the United Kingdom, the authorities took the view that any potential competition gains from breaking up the British Airport Authority prior to privatization would have been offset by restructuring costs. In Australia, in contrast, the Government has preferred to restructure and reduce industry concentration radically, emphasizing the public policy benefits of inter-airport competition for long haul international traffic. The benefits of fragmented ownership also include those that flow from yardstick competition, enabling regulatory agencies to assess individual operator performance more effectively; and from introducing a limited element of competition by emulation between operators. The airport expert found the benefits from the Australian model to be greater. Key recommendations for the airport sub-sector are as follows:

- Airport privatization will be encouraged by the existence of legislation in the form of a BOT law or similar, signaling the government's recognition of the need for PSP in infrastructure provision. It is also important to ensure that the government is able to demonstrate that any projects offered to the private sector are economically viable.
- Regarding the optimum approach, full privatization based on asset transfer or acquisition through long-term leases is preferable to more restricted forms of PSP (but is also more demanding in terms of legal and regulatory frameworks).
- As to airport industry restructuring, there is no evidence of significant economies of scale in airport operation other than those associated with increased traffic density at a particular location. Hence, PSP can be based on individual airports (although facilities may need to be bundled to assist financing of major new developments or extensions to capacity).
- The existence of unprofitable airports does not justify the maintenance of a highly concentrated industry structure to facilitate cross-subsidies.
- Limited sharing of traffic and revenue risk (between the private sector partner and government) is justifiable in airport BOT or concession contracts.
- Denomination of some, or all, airport charges in US dollars is an effective way of hedging against currency risk and may significantly reduce the risk premium required by private investors;
- The benefits of PSP in airports are likely to be maximized by regulatory frameworks that incorporate good regulatory governance practice. The price-cap approach to constraining airport charges is likely to encourage better performance outcomes than one based on rate of return regulation.
- Competition for the market, whether through sale or leases, or BOT/concessioning, will be maximized by transparent bidding/sale processes.

V. THE ROLE OF THE ASIAN DEVELOPMENT BANK

The crisis has focused on the urgent need for institutional strengthening and governance reforms in both the financial and infrastructure sectors, areas where ADB can play a major role. There are a number of ways identified in the study in which ADB can assist in the reforms associated with increased PSP in infrastructure. The most obvious is to provide technical assistance to define policy objectives, develop network master plans, identify and evaluate projects, define the role of new regulatory institutions, and train regulators to handle their new responsibilities, prepare contracts and negotiate with the private sector. ADB's efforts to promote financial sector reform and develop long term capital markets will also be important. This would include efforts to improve the bankruptcy laws, and the regulation of domestic debt and equity markets.

In order for ADB to have a significant role in promoting PSP, it should link this promotion with on-going project lending. ADB can provide support for private sector investment directly through its private sector window and through its guarantee operations. More importantly, ADB should provide sovereign loans to complement but not compete with private sector investment in the form of public-private partnerships. Public sector project lending should also be used to finance basic infrastructure that cannot be packaged into financially viable investments for the private sector but provides significant economic benefits and improves sector efficiency. Program lending is another key modality to promote the necessary reforms where ADB provides financing for the adjustment costs in stages, upon the satisfactory achievement or fulfillment of government actions that will promote PSP and sector restructuring. This modality allows ADB to exercise some leverage on government decisions and actions to support reform. Country strategies should address which areas of development are to be financed by government using sovereign loans, general revenues and government bonds and which are to be financed by private investment and should ensure a coordinated approach to all forms of ADB assistance.