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PRIVATE-PUBLIC PARTNERSHIPS IN INFRASTRUCTURE DEVELOPMENT:

THE UNITED STATES' EXPERIENCE

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## ***INTRODUCTION***

In the United States, as in most other countries, increased participation of the private sector is essential to meet growing demands for infrastructure and "public services " The ability of government agencies alone to provide adequate water, sewerage, and wastewater treatment facilities, roads and highways, air, rail and water transportation networks, telecommunications and utilities systems, and schools, hospitals and other social service facilities, is becoming more limited Even if governments are financially able to raise the capital needed for infrastructure investment, they would depend on the private sector to undertake most of the construction and much of the maintenance But because of their limited financial and operational resources, the Federal government and state and local governments are deregulating many industries, allowing the private sector to expand services and infrastructure for telecommunications and air transport, for example, and to compete or cooperate with public agencies in providing other types of services and facilities, such as water, energy and waste disposal They are also encouraging businesses, community groups, private voluntary associations, small enterprises, and other non-governmental organizations to offer services and to provide facilities for education and health care In addition, governments at all levels in the United States are providing financial assistance and guarantees for private investment in physical infrastructure, creating new types of public-private partnerships, and contracting with private organizations to manage a larger range of public facilities and services

Government policies to promote private sector investment in infrastructure and encourage private-public partnerships assume that many goods and services for which people can pay

directly can be produced and delivered more efficiently and effectively by private firms than by government agencies. Private sector provision of infrastructure and services -- either directly or through cooperative arrangements with government -- has a long history in the United States, dating from the pre-colonial period to the present. The private sector's participation is motivated not only by the ability to make a profit but also by recognition of the importance of public infrastructure and services for economic development.

This report has four objectives: first, it identifies ways in which the private sector participates in infrastructure investment and in private-public partnerships with national, state and local government agencies in the United States; second, it explores the alternative institutional, financial, and regulatory arrangements for public-private partnerships in infrastructure development; third, it assesses lessons of U.S. experience that may be useful to Asian governments in eliciting private sector participation in infrastructure development; and, fourth, it outlines the concessional financing and prefeasibility assistance available from the government of the United States for American companies seeking to participate in infrastructure development in Asia.

Although this report focuses primarily on physical infrastructure development -- that is, on capital facilities and equipment -- the private sector's participation in these investments is often inseparable from the provision of the services that are delivered through physical facilities. Private companies in the United States can only provide water treatment or drinking water facilities, for example, if they can obtain a contract to deliver treated water to a government entity or directly to consumers on a profit-making basis. Therefore, any serious analysis of private-public partnerships must examine both the physical facility and service provision aspects.

of the private sector's participation in infrastructure development

Another factor that must be kept in mind is that government in the United States is highly decentralized and that the opportunities for private-public partnerships occur at many different levels and in different combinations at each level of government. Although the national or federal government plays a large role in promoting and financing infrastructure investment, in many sectors it provides only grants or imposes requirements on state and local governments. The 50 state governments and the more than 86,000 local governments in the United States have the authority to develop many types of infrastructure on their own or in cooperation with the federal government. Moreover, even at the local level, counties, townships, cities, villages, and special district governments can undertake infrastructure investment or regulate the private sector's provision of services and facilities. This highly decentralized system creates a broad base for private sector participation in infrastructure development that might not otherwise occur in unitary or centralized political systems.

***SCOPE AND MAGNITUDE OF PRIVATE PARTICIPATION IN  
INFRASTRUCTURE DEVELOPMENT IN THE UNITED STATES***

Although the trend toward privatization of infrastructure and services and the interest in private-public partnerships for infrastructure development has gained increasing momentum throughout the world over the past decade, it is important to remember that private-public cooperation is not a new concept<sup>1</sup>. The private sector has delivered public services and helped build infrastructure in the United States on its own and in conjunction with government agencies for

more than two hundred years

### ***History of Private-Public Partnerships in the United States***

Throughout the history of the United States, private organizations were heavily involved in building toll roads, turnpikes, canals, waterways, railroads, highways, and airports <sup>2</sup> Indeed, during the colonial period prior to 1776 entire cities and towns were built along the eastern seacoast of North America by groups of settlers who received charters or rights from private trading companies in Europe These chartered companies invested heavily in the infrastructure needed to create the towns that would support trade and commercial activities in the "New World " What are now the city of Albany and the borough of Manhattan in the State of New York, for example, were constructed in the 1620s under the direction of the Dutch West India Company, which sent detailed instructions to settlers on the design and construction of the cities and on the development of infrastructure William Penn, a British landowner and merchant, invested heavily in the design and construction of the city of Philadelphia in 1681 Other land proprietors privately developed cities in Virginia, the Carolinas, and Georgia as well as in other east coast colonies beginning in the 1660s <sup>3</sup>

Moreover, the private sector played an important role not only in building infrastructure but also in providing public services well before the American colonies became a sovereign nation Private firms, for example, had contracts from the municipal government to clean the streets of what is now New York City as early as 1676, a hundred years before the American Revolution <sup>4</sup> Municipal governments have been contracting with the private sector for the provision of services and infrastructure ever since

The tradition of private sector participation in developing infrastructure for towns and cities continued throughout the early history of the United States. Large land development companies created "pioneer towns" as trading centers in Kentucky, Ohio, Indiana, Illinois and other midwestern states in the late 1700s and early 1800s. During the 1800s "company towns" built by railroad and mining companies and by private land owners dotted the American landscape from California and the Northwest territories to Louisiana. In the northeastern United States textile companies invested not only in infrastructure but in housing and commercial facilities to create new towns around their mills. The Boston Manufacturing Company built Lowell, Massachusetts in the 1820s, for example, and the Pullman railway-car company was largely responsible for developing the infrastructure and facilities of the city of Pullman, Illinois in the 1880s.<sup>5</sup>

The private sector also participated significantly in the construction and extension of other infrastructure systems in the United States. From the 1840s to the late 1860s large amounts of private capital were invested in telecommunications. Private investment in electromagnetic telegraph systems increased the number of places in the United States connected by telegraph from 450 in 1852 to more than 800 by 1857.<sup>6</sup> The Western Union Telegraph Company invested heavily in extending telegraph networks throughout the United States in the mid- to late-1800s.<sup>7</sup> Throughout the early 1800s, state governments provided most of the capital for transportation infrastructure, but often through "mixed enterprises" that combined public and private construction and operation. Large private corporations built and extended railroads, first among eastern coastal cities and commercial centers in the mid-1800s and then progressively into the midwestern, southern, and western states later in the century. Large numbers of smaller

companies built trunk rail lines connecting cities and towns throughout the United States in order to link them to main rail networks. The federal government provided land and other subsidies to help private companies extend rail lines across the country while state and local governments often issued bonds that helped private companies to build trunk and connecting rail lines.<sup>8</sup> Wherever new rail lines were extended and formed junctions with roads, canals, ports, or other means of transportation, these "transport nodes" attracted private capital for the construction and development of new towns and cities.

The private sector also played an important role in providing many community services and the facilities needed to deliver them. Until the mid-1800s, solid-waste disposal was mainly the responsibility of private citizens and small-scale businesses.<sup>9</sup> During much of the early- to mid-19th century both urban and rural households in the United States obtained water from privately constructed wells or cisterns or from private water companies. Until the late 1800s more than half of the nation's waterworks were privately owned and operated. In the early 1900s municipal governments took greater responsibility for solid waste disposal but used a variety of public-private partnerships, including contracting with private collectors.

Private sector partnerships with government in developing infrastructure continued to flourish in the United States during first half of the 20th century. Large steel companies provided much of the infrastructure for cities such as Gary, Indiana, and Fairfield, Alabama in the early 1900s, textile mill and tobacco processing towns were developed by private companies in the southern part of the United States well into the middle of the 20th century. Electricity, telephone services, and other types of utilities were extended through facilities built and operated by private companies. In Chicago, 45 companies provided electric lighting at the turn of the

century Private companies provided nearly all of the incorporated cities in the United States with populations of more than 4,000 with telephone services and facilities Municipal transit systems were largely privately owned and operated until World War II and mixed public-private construction and ownership was common in large cities even after the 1950s <sup>10</sup>

Although the Great Depression of the 1930s weakened the participation of the private sector and increased the responsibility of federal, state and local governments in extending infrastructure and services, private organizations continued to play an important role both in investment and operation of public-service facilities Private companies played a crucial role as contractors in building one of the most ambitious infrastructure projects ever undertaken in the United States beginning in 1955 the interstate highway system The construction industry was responsible for creating the 39,000-mile system of highways spanning the entire country with federal and state government financing This enormous infrastructure project that later proved to be so valuable for the economic revitalization of the United States took 30 years and more than \$75 billion dollars to complete And although it was financed by federal and state governments through gasoline taxes its construction by private companies through contracts was an important feature of infrastructure development and a strong generator of "multiplier effects" that fueled economic growth during its construction

The current worldwide surge in privatization and private-public partnerships in infrastructure development had its roots in the period of deregulation in the United States and Canada in the late 1970s and in the movement toward divestment of public transport and utility companies in Great Britain, France, and Germany in the early 1980s By the early 1990s, the private sector was providing a substantial portion of the infrastructure and services in many

American municipalities Surveys of cities with over 50,000 population show that the private sector was involved in solid waste collection in about half of the cities, in health care in about 27 percent, in transportation in about 26 percent, in street maintenance in 24 percent, and in wastewater treatment in more than 8 percent <sup>11</sup> U S environmental protection legislation enacted during the 1970s and 1980s increased the technological requirements for waste disposal and created substantial new opportunities for private businesses specialized in constructing and operating waste disposal facilities

### ***The Importance of Infrastructure in Economic Development***

Throughout the history of the United States both government and the private sector have emphasized improving physical infrastructure because they saw it as one of the most effective instruments of promoting economic development Experience in both North America and Europe indicates that public infrastructure investment is a crucial factor in national, regional, and local economic development in three major ways first, by contributing to regional economic development potential, second, by contributing to regional economic output and investment, and third, by contributing to the productivity of individual firms

1 Infrastructure's Contribution to Regional Economic Development Potential The Commission of the European Communities has found from its studies that a region's infrastructure endowment is one of the most crucial factors contributing to its economic development potential "Among a group of regions having a similar endowment as to location, [population] agglomeration and sectoral structure," the Commission concluded, "basically a region with a better infrastructure endowment will in general also be able to have higher income,

productivity and employment "12 Insufficient or poor quality infrastructure, or its overutilization, create bottlenecks to economic development and limit the capacity of private enterprise to benefit from potential location advantages or to change the sectoral mix of regional economic activities On the other hand, in some regions, investments in new infrastructure or improvements in existing infrastructure quality can overcome other limitations such as unfavorable location or low levels of population agglomeration Vast regions of the United States were opened to new economic activities by the extension of canals, roads, ports, and railways in the 1800s and by air cargo and passenger facilities and the interstate highway system in the 1900s In the United States, entrepreneurs and skilled workers and managers are more likely to be attracted to places with high quality social services and efficient physical facilities where they can make use of the other factors of production more effectively Studies undertaken in the State of Tennessee, for example, showed that the presence of the interstate highway system in various locations throughout the state has had a positive and significant effect on the location of individual business establishments 13

2 Infrastructure's Contribution to Economic Output and Investment American experience also shows that investment in infrastructure contributes to development by expanding economic output Public investment in infrastructure contributes directly to higher levels of output as do the multiplier effects from private sector participation in facilities construction Some infrastructure, such as efficient highway networks, air, rail and port facilities, telecommunications, and utilities increase regional economic output by making an area more attractive for private investment The Commission for European Communities also points out that "regions with a comparably low degree of infrastructure capacity utilization need more

private capital and qualified labor in order to more fully exploit the existing development potential "14 The study noted that regions with insufficient infrastructure suffered not so much from bottleneck effects, as from not being able to attract and maintain mobile factors of production and to pay competitive remuneration for entrepreneurs and labor To the extent that private investment creates new jobs and higher levels of income, and to the extent that public infrastructure investment provides greater accessibility, they can also increase private consumption and gross regional product Studies undertaken in the State of New Jersey showed that each additional \$100 million of highway spending would generate about 2,500 new jobs and \$136 million of added goods and services 15 The value of the multiplier from infrastructure development depends, of course, on how government expenditures are financed, on how extensively the private sector is involved, and on the ability of consumers and investors to respond to changes in infrastructure endowment

3 Infrastructure's Contribution to Private Sector Productivity. Finally, investments in infrastructure contribute to economic development by helping individual firms and productive enterprises expand their output Investments in infrastructure such as airports, highways, utilities, telecommunications, waste disposal, water treatment, and transport facilities contribute directly to the output of private enterprises by reducing the costs of obtaining inputs or supplies, of production and distribution, and of access to larger market areas Studies in the United States have shown that since World War II, "a core infrastructure of streets and highways, mass transit, airports, water and sewer systems and electric and gas facilities bears a substantially positive and statistically significant relationship to both labor and multifactor productivity "16 Other studies estimate that each 1 percent increase in public capital increased private sector

output by 34 percent, that is, a \$1 increase in the stock of public capital would yield about 60 cents of additional output. This was nearly double the marginal productivity of private capital investments.<sup>17</sup> These studies also showed that on a state-by-state basis investment in public capital had "a significant, positive impact on output at the State level. In other words, States with more public capital, all else equal had greater levels of private output."<sup>18</sup>

In the future private-public partnerships for infrastructure investment will become even more important in the United States -- and in other countries as well -- as a larger share of manufacturing and service activities shift to just-in-time production and distribution processes and as more companies become more heavily engaged in international trade. The United States Department of Commerce estimates that nearly one-third of all American shipments will be in accordance with just-in-time principles by 1995, requiring efficient transport and communications infrastructure. Just-in-time production and distribution cuts inventory costs, forces companies to seek the most efficient shipping modes, reduces manufacturing costs, and increases productivity. For all of these reasons, private-public partnerships in infrastructure and service provision will remain crucial in the future.

### ***Current Pressures for Private-Public Partnerships***

The interest in private sector participation has been increasing in the United States largely because of the increasing demand for infrastructure development, but also because of the rising costs of investment for federal, state, and local governments and because of decreasing public support for higher taxes to finance and maintain many types of infrastructure and services that could be provided less expensively and more efficiently by the private sector.

Both the demand for and the costs of public infrastructure and services have grown enormously over the past half century. By 1989, the United States had a stock of public nonresidential capital valued at \$2.6 trillion and private sector capital valued at \$4.6 trillion. Between 1970 and 1991, total government annual capital outlay for non-defense functions -- that is, for highways, air transportation, water transportation, education, health and hospitals, housing, natural resources and others -- increased from \$33 billion to \$131 billion.<sup>19</sup> State and local capital expenditures for similar functions, as well as for sewerage and utilities, grew from about \$30 billion in 1970 to nearly \$132 billion in 1990. State and local governments' outstanding debt for public highways alone increased from about \$19 billion in 1970 to about \$47 billion in 1992.

Direct federal expenditures for new infrastructure investment has exceeded \$20 billion a year since 1964 and between 1970 and 1990 totaled nearly \$500 billion.<sup>20</sup> The largest share of direct expenditures by the federal government for infrastructure since 1970 has been for highways, but it has also invested heavily in sewage treatment, water programs, transit, aviation, and rail. Over the 20-year period more than half of all federal expenditures for new infrastructure investment (\$262 billion) went for construction of the interstate highway system, of other primary roads, and of secondary and urban roads, and for maintenance and rehabilitation of interstate highways. About 16 percent (\$82 billion) was allocated to sewage treatment facilities and reflected the expansion of federal subsidies for building municipal wastewater treatment systems.

The demand for and the costs of infrastructure and services began to increase rapidly just as financial constraints on governments at all levels in the United States have become

tighter The total amount of state and local government debt issued through long-term obligations for public highways alone increased from about \$2 billion in 1970 to nearly \$6 billion in 1992, and the total outstanding debt of state and local governments for public highways increased from \$19 billion in 1979 to \$47 billion in 1992 Total state and local government indebtedness, largely for short-term and net long-term obligations related to the provision of infrastructure and services increased from \$335 billion in 1980 to \$915 billion in 1991 <sup>21</sup>

But, as one group of observers points out, "as taxes have been increased to finance essential services, the demands made by citizens for higher quality of service also have grown, as have the number of complaints when expectations have not been met " Private-public partnerships, especially those that rely on contracting services to the private sector by local governments "has afforded cities an option for insuring quality services while minimizing or perhaps eliminating the direct involvement they would have in resolving citizen complaints if they were providing the service "<sup>22</sup>

The increasing difficulties that all levels of government have had during the 1980s and early 1990s in financing infrastructure and service expansion through tax increases or long-term bonds that raise tax levels have also fueled their interest in working with the private sector The strong potential for cost savings for governments by privatizing services and increasing the participation of the private sector in infrastructure development has been a driving force for privatization <sup>23</sup>

***INSTITUTIONAL ARRANGEMENTS FOR PRIVATE PARTICIPATION IN  
INFRASTRUCTURE DEVELOPMENT***

Given the crucial role of the private sector and of private-public partnerships in infrastructure development, it is important to understand how the private sector works together with national, state, and local governments in the United States to develop infrastructure and provide services, and how it mobilizes capital and other resources. This section looks at the current ways in which private and public sectors work together and draws examples from a wide range of infrastructure and services including transportation, telecommunications, power and energy, water and waste water, environment, and human resource development. Special attention is given to wastewater treatment and water distribution systems.

***Institutional Alternatives***

Public service delivery and infrastructure development in the United States takes place through four major institutional arrangements: 1) by government as the primary provider, 2) by government contracting with the private sector, 3) by joint activities of the public and private sectors, and 4) by the private sector as a business. Perhaps the most frequently used mechanism is contracting by state and local governments with private companies to provide facilities and services, but increasingly governments are looking to others such as joint investment by government agencies and private companies. Table 1 summarizes the responsibilities of the public and private sectors under alternative institutional arrangements for service provision. In addition, government has created "markets" for private development of infrastructure through

**TABLE 1 RESPONSIBILITIES UNDER ALTERNATIVE INSTITUTIONAL ARRANGEMENTS FOR INFRASTRUCTURE & SERVICE PROVISION**

Activity	Government Provision	Contracting with Private Sector	Joint Provision		Private Provision		
			Turnkey	Joint Investment	Regulatory Requirement	Merchant Facility	Profit-Making Business
Decision to Provide	Public	Public	Public	Public	Public	Private	Private
Financing	Public	Public	Public	Both	Private	Private	Private
Design	Public	Private with Public Performance Requirements	Private	Both	Private with Public Standards	Private	Private
Construction	Public	Private with Public Specification Requirements	Private with Public Specifications or Requirements	Private with Possibility of Public Requirements	Private	Private	Private
Ownership	Public	Public	Public	Either	Private	Private	Private
Operation & Maintenance	Public	Private	Private	Private	Private	Private	Private

Source Adopted from U S Environmental Protection Agency, *Public-Private Partnership Case Studies*, Washington Environmental Protection Agency, 1990

deregulation or simply by leaving some types of infrastructure development to the private sector or by providing guarantees or subsidies or incentives for the private sector to provide facilities and services. The private sector has become a partner in developing infrastructure by regulation as well. Increasingly cities and states are requiring private developers of residential, commercial and industrial facilities to provide infrastructure or to pay for it through impact fees, and environmental protection laws require commercial and industrial plants to invest in equipment and facilities that prevent or clean-up environmental pollution.

#### 1 Service and Infrastructure Provision by Government

Many types of infrastructure and services, of course, are still provided directly by local, state, and federal levels of government in the United States. However, even when government is the primary provider, citizens and private organizations can play important roles. State and local laws often require public hearings before governments can allocate resources to large-scale infrastructure projects or to significant extensions of service. Voters must often approve bond issues or large tax assessments before governments can go ahead with investment plans, and often nongovernment and private organizations are invited to participate in the planning, design, and location of infrastructure projects. Private organizations can also influence the size, scope, and timing of infrastructure investments or delay their implementation through legal or political means. Thus, many local governments seek out citizen and private sector participation on a voluntary basis in the early stages of infrastructure planning in order to prevent or reduce opposition or delays and in order obtain valuable advice and assistance.

## 2 Government Contracting with Private Companies

The most frequently used form of private-public partnership for infrastructure development and service provision at the local level in the United States is contracting. Federal, state and local governments contract with private organizations to help provide infrastructure and services that public agencies cannot offer efficiently or effectively on their own. Contracting for infrastructure and services allows governments to arrange with private companies to provide services or facilities that meet government specifications.<sup>24</sup> Generally, governments contract with private organizations to provide a service through three mechanisms: service contracts, management contracts, and lease contracts.

a Service Contracts Through service contracts private firms are engaged by government agencies to provide a specific service for a specified period of time. It is estimated that in the United States municipalities on average contract out about 25 percent of their services to the private sector.<sup>25</sup> Among the services local governments in the United States most frequently contract out to private companies are street light maintenance, solid waste collection, street repairs, hospital management, mental health facilities, day-care facilities and programs, ambulance services, bus operations, and drug and alcohol treatment programs.

Contracting has become one of the most important forms of private-public partnership for water and wastewater treatment projects in the United States. One example is a service contract signed between the city of Hood River, Oregon and a private company, Operations Management International (OMI), to operate and maintain the city's wastewater treatment plant.<sup>26</sup> Private operation of the plant eliminated the city's effluent quality problems and saved about 10 percent a year in operating costs compared to public operation. The city paid the

company a yearly fee for operating the treatment plant by charging users fees. The company also contracted with nearby towns and cities to treat their wastes because the treatment plant had surplus capacity. OMI shared the profits from the external contracts with the city through a revenue fee.

The City of Seattle, Washington, also turned to a service contract with private sector companies -- Waste Management International (WMI) and Rabanco Inc -- to perform its curbside solid-waste collection and recycling when its landfill was closed.<sup>27</sup> Seattle's city government not only will save more than \$1 million a year in collection costs, but the private companies that received the contract agreed to purchase all of the needed collection and processing equipment.

b Management Contracts. Through management contracts private contractors can take over responsibility for operation and maintenance of a facility or provision of a service with the authority to make routine management decisions. In the United States and Canada, private companies routinely take contracts to manage municipal or public hospitals, several states and local governments have begun to contract with private companies to operate correctional facilities, and some local governments contract with private companies to manage public utilities. The town of Lititz, Pennsylvania, for example, solved its problems with wastewater and drinking water systems by contracting with PSC Engineering Inc. This private company operated and maintained the town's water supply system and operated its wastewater treatment plant.<sup>28</sup> Private sector managers brought in qualified engineering personnel, which the town could not afford to hire on its own, and improved the quality of water and the efficiency of both utilities.

c Lease Contracts. Lease contracts elicit private sector participation by

allowing a private firm to lease a facility providing public services from a public authority and assume responsibility for operation, maintenance, and replacement of non-fixed capital assets. In some cases, the government leases development rights to land, water or air space to private investors that will provide infrastructure and services. The state of California, for example, leases air space above public highways and freeways for the development of commercial buildings, hotels, and other infrastructure. In Washington D C , the Washington Metropolitan Transit Authority leases land and development rights to private companies and investment groups for the development of stations along the metrorail system in which office and commercial facilities can be built. The leases allow the private sector to develop both transport and commercial infrastructure and the revenues from the leases are used by the government to extend and maintain transportation infrastructure <sup>29</sup>

Two major approaches to revising contracts between local governments and the private sector are used in the United States. Under a "franchising" contract, the private company's facilities and services are reviewed periodically by both parties, usually every three to five years. Under a "concession" contract, the terms of service are agreed-upon for a fixed term and renewed through public bidding. Long-term concessions may have a provision allowing rates for services to be revised after infrastructure construction is completed.

### **3 Joint Provision of Infrastructure by Private and Public Sector Organizations**

In situations in which the contracting for services is not suitable, governments are experimenting with many other forms of private-public partnership. These partnerships vary in their characteristics and include turnkey projects and joint investment.

a Turnkey Projects Turnkey projects are usually build-operate-transfer (BOT) agreements in which governments buy or lease completed facilities constructed by private investors after the investors have recouped their investment and a reasonable return by operating the facilities for an agreed-upon period of time For example, the financing, design, construction, operation, and maintenance of a water treatment or wastewater treatment facility are done by a private company with a contract from one or several local governments for services until the company recovers its investment and a fair profit, and then turns ownership over to the government The drinking water supply system in Irving, Texas, for example, was extended by the city government by contracting with a private corporation to make the capital investments in developing new water wells and constructing distribution systems to supplement the city's already existing water supplies The private company obtained private financing to develop the system, with the city contracting to purchase water from the company for seven years on a per-gallon fee basis At the end of the contract, the city would take ownership for an agreed-upon transfer fee <sup>30</sup>

b Joint Investment Another means of jointly providing infrastructure or services is one in which both public and private organizations take an active role in financing public service facilities, utilities, low-cost housing, transportation facilities, or other types of development projects For example, joint investment by the federal government, the Fort Worth Texas municipal government, and a private company -- The Perot Group -- was used in the development of Fort Worth's Alliance Airport <sup>31</sup> This airport and industrial park was conceived as a large air-cargo facility to help aerospace and high technology firms ship finished and intermediate products and manufacturing equipment The U S Federal Aviation Agency

provided a grant of \$34 million to construct a runway, the city government of Fort Worth planned more than \$65 million in public infrastructure required to support Alliance Airport, and The Perot Group invested more than \$100 million in land acquisition. The city also authorized a property tax abatement for the project. A public authority was formed and authorized to issue \$800 million in tax-exempt debt to build private maintenance hangars.

Another notable example of joint investment in infrastructure is the Global Transpark Project being planned and constructed in the eastern part of the State of North Carolina.<sup>32</sup> The Global Transpark (GTP) is a multi-modal transportation complex combining air cargo and passenger, rail, highway, and other transport facilities with just-in-time manufacturing and distribution facilities, and the latest communications technology systems to produce a world-class logistics complex for companies interested in international business. The GTP will concentrate infrastructure and equipment on 15,300 acres of land that will support transport and logistics systems for speedy and reliable materials handling and manufacturing. The Global Transpark will facilitate the international business activities of companies that depend on speed-of-delivery of inputs and finished products in order to compete effectively in the global economy. The economic activities located in the GTP will have access to advanced telecommunications and computer systems and electronic data interchange (EDI) to track orders and shipments and to control sourcing, production and distribution.

The GTP is a result of joint investment by the federal and state governments, private companies, tenant firms, and 12 county governments in the eastern region of North Carolina. Federal and state governments have provided funding for the feasibility study, master planning and environmental impact assessment. A Global Transpark Foundation composed of

representatives of government and the private sector is raising \$30 million from corporate and other sources to help develop the GTP infrastructure. And the 12 county governments in the areas around the GTP will raise an additional \$35 million to provide supporting infrastructure. More than \$285 million in commitments from public and private sources had been made by 1993.

The joint investment in the GTP will give the private sector access to a state-of-the-art manufacturing, logistics, and communications complex linked to national and international markets. Plans for GTPs are being explored in Thailand and Germany that could link the North Carolina GTP into a network of logistics complexes in Europe and Asia. The local and state governments in North Carolina will benefit from increased tax revenues from the companies and workers attracted to the GTP, from the 23,000 new jobs expected to be created in the GTP after it is constructed, and from the generation of an additional 26,000 jobs in the area surrounding the GTP.

#### 4 Private Provision of Infrastructure and Services

Federal, state, and local governments in the United States encourage the private sector to provide some types of infrastructure and services on its own or simply leave some services and facilities to private enterprise and non-government organizations. The private sector primarily provides infrastructure and services that are mandated by government regulation, for which it can provide merchant facilities, for which financial support is required as the result of private development, and for which opportunities exist for making a profit.

a Publicly-Mandated or Regulatory Requirements Regulatory measures in the United States have often been used effectively to require the private sector to provide infrastructure if their operations lead to health, safety or security hazards for the public. Perhaps the best example is in the field of environmental protection where air and water pollution infrastructure and equipment is almost entirely provided by the private sector to both private and government organizations. Private sector organizations are required to invest in infrastructure and equipment that reduce or eliminate air and water pollution and to dispose of potentially toxic or hazardous wastes. Moreover, a strong private industry has developed to supply environmental protection technology, equipment and services to both the public and the private sectors as the result of more stringent environmental protection laws and their enforcement. The Clean Air Act, the Resource Conservation and Recovery Act, and the Comprehensive Environmental Response Compensation and Liability Act and state and local environmental regulations have stimulated investments in and production of environmental infrastructure in the United States.

Capital expenditures for air pollution abatement increased from \$1.5 billion to \$3.7 billion a year between 1988 and 1991, for water pollution abatement from nearly \$1.3 billion to \$2.8 billion, and for solid waste from \$0.6 billion to \$0.9 billion. American industry provided about \$13 billion worth of water and wastewater treatment equipment and services in 1992 -- about \$4.8 billion of which was treatment technology and facilities -- to the public and private sectors.<sup>33</sup> The Clean Air Act Amendments of 1990 are expected to increase private sector investments in infrastructure to achieve the goals of reducing 189 hazardous air pollutants. Utility companies are expected to be the largest investors in pollution abatement equipment,

followed by chemical, pulp and paper, and the petroleum refining industries. Clearly, investments by private companies in environmental protection technology and equipment relieves the public sector of cleanup costs and of increased public investment in the infrastructure required to cope with higher levels of air and water pollution.

Government agencies may offer guarantees or fiscal incentives to induce private organizations to provide infrastructure and services that contribute to economic development or provide loans or subsidies to individuals or groups to purchase services or equipment from the private sector.

b Merchant Facilities In this arrangement a private investor not only builds and operates a facility, but also sells the services it produces for a profit. In the United States merchant facilities have been developed for solid waste management infrastructure such as landfills, composting facilities, and recycling plants. Usually fees are charged to local governments and private industries for use of the facilities and the revenues accrue to the private owner.

The private sector has participated in infrastructure investment by providing merchant facilities for solid waste disposal in towns as small as Millbury, Massachusetts, with about 12,000 residents and larger cities such as St. Cloud, Minnesota with about 200,000 population. In the case of St. Cloud, a private company, RECOMP Inc., bought an existing solid waste composting facility and invested more than \$4 million with financing from industrial revenue bonds issued by the city. The company upgraded and expanded the facility to accept both solid waste and sewage sludge.<sup>34</sup> In the merchant agreement, the city and three surrounding counties agreed to provide waste to the composting facility in order to reduce the amount of waste going

into landfills by up to 20 percent. RECOMP Inc. redesigned the composting plant to generate an improved compost that it was able to market and sell along with recyclable materials in compliance with state environmental regulations. RECOMP also contracted with the St. Cloud Transfer and Recycling Corporation and a three-county Solid Waste Management Commission to operate a solid waste transfer station that accepts and processes solid waste.

c. Developer Provision of or Financial Support for Infrastructure. Increasingly, local governments in the United States are requiring private developers of residential areas, commercial facilities, or industrial sites to provide the infrastructure and services required to treat waste water and dispose of waste, and to provide access roads, utilities, and other types of facilities. The requirements for developers to finance infrastructure improvements directly may be a part of a local government's subdivision or building permit requirements or may be imposed through development fees, impact fees, purchase of sewer access rights, capacity credits, or other forms of exaction. States such as California, Florida, Colorado, and Texas that have experienced rapid population growth and large-scale residential, commercial, and industrial development in recent years have given municipal governments the authority to impose development and impact fees to cover the costs of infrastructure construction or extension.

The City of Orlando, Florida, for example, began requiring private developers to pay impact fees when the city's wastewater treatment systems had to be expanded significantly during the early 1980s as new residential subdivisions and commercial developments began growing rapidly in and around the city.<sup>35</sup> The government of Orlando enacted impact fees on private developers that paid for new wastewater treatment systems and increased fees on existing users to pay for upgrading the services. Based on estimated revenues from the impact fees, the

city was able to issue \$230 million worth of tax-exempt revenue bonds to pay for the infrastructure expansion. Developer impact fees were expected to pay for 72 percent of the expansion costs.

d Private Investment for Profit. Finally, the private sector invests in many forms of infrastructure in the United States to make a profit and for many private companies investment in infrastructure is a profitable business.<sup>36</sup> Housing units in the United States are developed by private companies and real estate firms and sold to consumers and investors. The federal government has various mortgage guarantee and concessional lending programs that help lower income families to gain access to the private housing market. In 1992, the private sector invested more than \$162 billion in residential housing construction. Private companies also build facilities that provide social services on a cost-recovery or profit-making basis. From 1989 to 1992, private investors constructed more than \$14 billion worth of educational facilities and more than \$33 billion worth of hospital and institutional facilities. During the same period, private investors were responsible for about \$12 billion in construction of privately-owned streets and bridges, parking areas, sewer and water facilities, parks, playgrounds, golf courses, and airfields.

Moreover, a good deal of the "public utilities" infrastructure in the United States is developed by privately-owned or shareholder-owned public utility companies. There are now more than 1,300 independent telephone companies in the United States. About 78 percent of the kilowatthours of electricity generated in the United States come from investor-owned electric utility companies. Privately-owned gas utility companies had operating revenues in 1991 of nearly \$64 billion. From 1989 to 1991 alone, these companies invested in nearly \$78 billion

worth of utilities infrastructure and equipment in the United States. This included nearly \$25 billion in telecommunications infrastructure, \$7 billion in railroad facilities, \$30 billion in electric and power facilities, and \$14 billion in gas facilities.

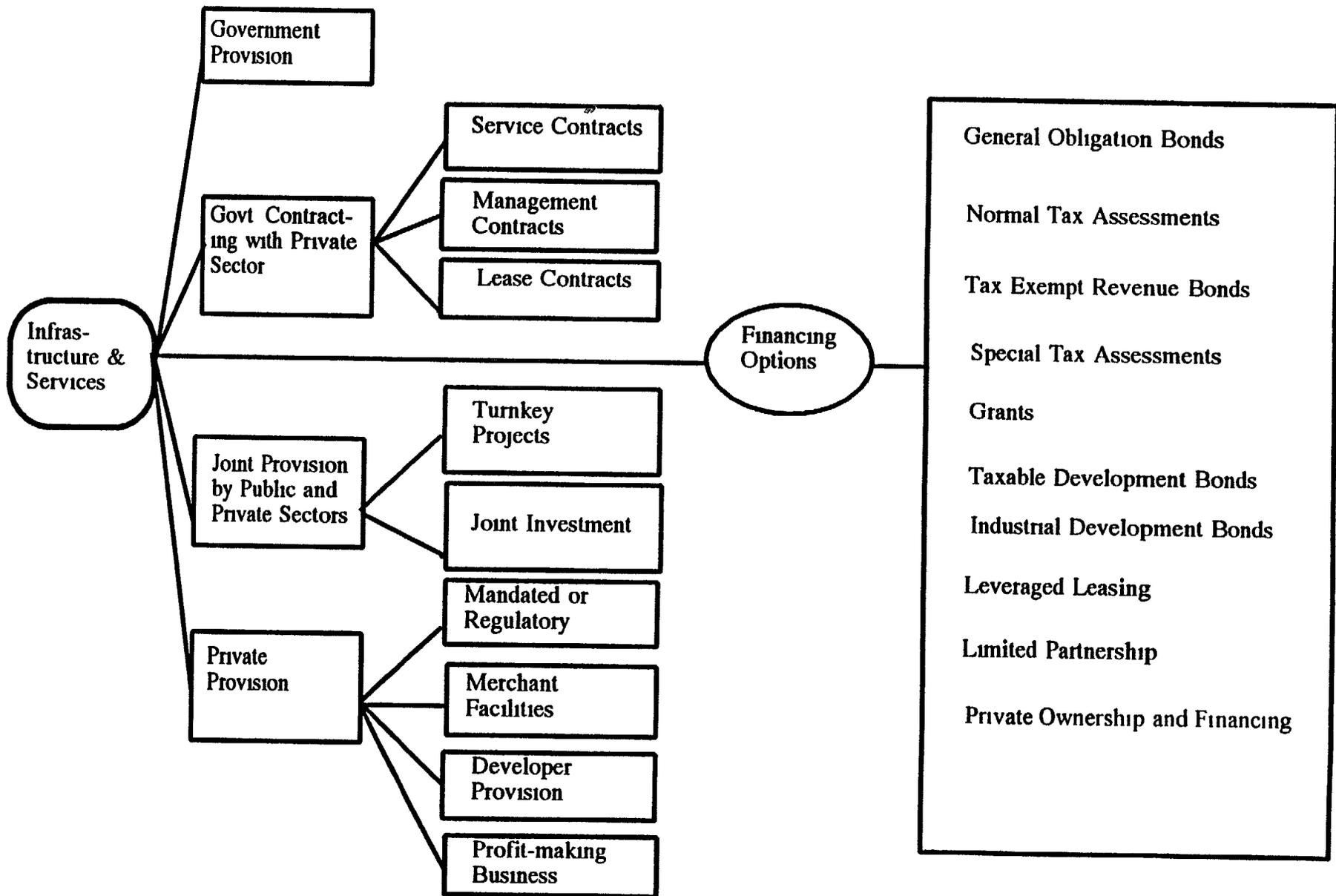
### ***FINANCIAL AND REGULATORY STRUCTURES FOR PRIVATE-PUBLIC PARTNERSHIPS***

As the role of the private sector has increased in developing infrastructure and providing services, changes have taken place in the United States in how infrastructure is financed, how capital is raised for private-public partnerships, and how governments regulate and supervise private sector participation. This section examines the financial alternatives for raising infrastructure investment capital and the regulatory structures through which government supervises private sector participation in sectors that are considered to be "public utilities" or "natural monopolies."

#### ***Capital Financing and Revenue Structure of Private-Public Partnerships***

In the United States there is a well-developed financial structure through which government and the private sector can raise capital for infrastructure investment and service expansion. The way in which infrastructure development and services provision is financed depends, of course, on the type of private participation that is used. Figure 1 summarizes the major institutional and financial options available to the public and private sectors. Among the most commonly used financing mechanisms are the following<sup>37</sup>

FIGURE 1 MAJOR INSTITUTIONAL AND FINANCIAL OPTIONS FOR INFRASTRUCTURE DEVELOPMENT



o General Obligation Bonds Municipal and state securities backed by the "full faith and credit" of the issuing government have been widely used by local and state governments to fund infrastructure and facilities. General obligation bonds are used most frequently when the government is the primary provider of infrastructure and services, although the issuing government may enter into a private-public partnership or contract with a private company. General obligation bonds are repaid from general tax revenues of the issuing government from any of its revenue sources but most frequently from property tax collections.

o Normal Tax Assessments Some portion of normal tax assessments -- especially property taxes, but also sales, business, or income taxes -- may be used to finance capital improvements. State and local governments may be required to set aside some percentage of annual revenues for capital construction. A portion of the tax revenues are placed in a capital reserve account or in a special fund to finance all or part of the costs of infrastructure and services provided by private-public partnerships or to guarantee loans for capital improvements.

o Tax-Exempt Revenue Bonds Revenue bonds are issued to finance the construction or improvement of infrastructure and facilities that generate revenues through dedicated user charges or special charges to the beneficiaries. The bonds are usually secured from the revenues of the project that they finance. Often, local or state governments will create special districts (e.g., school or water districts) or authorities (e.g., water and sewer authorities or transportation authorities) to issue the bonds that are restricted in their use to the jurisdiction of the district or for the special purposes for which they were created.

o Special Tax Assessments For some types of infrastructure expansion such as water, electric, sewage, waste disposal, or streets and roads, governments assess special taxes on direct

beneficiaries in the form connection, linkage, or collection fees to help cover the costs of extending the system to new users. Often these special tax assessments are imposed on people or businesses living on the periphery or outside of the government jurisdiction in which the service-providing enterprise or agency is located, but special tax assessments can be imposed on any identifiable users of capital infrastructure that provide services.

- o Grants. The initial capital for many forms of privately-provided infrastructure and services in the United States, especially in transportation, drinking water, and wastewater treatment, has come from grants from the federal government to states and localities and from states to local governments. These grants can help provide the bulk of the capital needed for infrastructure construction but they are not entirely "free money." The recipient governments must often "match" some portion of the total cost with locally-raised revenues and absorb substantial monitoring, management, and reporting costs mandated by the grants.

- o Taxable Development Bonds. Some infrastructure and service projects are capitalized through taxable development bonds, which are a form of industrial development bond on which the holders must pay taxes on the earned interest. These bonds carry higher interest rates and higher debt-service ratio requirements than tax-exempt bonds.

- o Industrial Development Bonds. Many state and local governments in the United States are authorized to issue industrial development bonds to provide tax-exempt debt for private companies building utility, sewer, water, or other infrastructure that will support new industrial activities in the jurisdiction. The tax-exempt debt provides a higher return to investors who do not have to pay taxes on interest to local, state or federal governments.

- o Leveraged Leasing. This form of financing is often used in private-public

partnerships and involves equity investment in infrastructure or facilities by passive third-party investors such as financial institutions, banks, or leasing companies. The financial institution acquires or builds the infrastructure through equity and debt at a "leveraged" 60 percent to 80 percent of the infrastructure's total cost. The financial institution then leases the infrastructure to an operating company that makes lease payments from service charges to customers.

- o Limited Partnership In other cases of private infrastructure or service provision investments are made by a general partner who takes primary financial, legal, and management responsibility for the project. Limited partners share in investment and equity. Projects financed through limited partnerships usually combine equity and debt. A limited partnership allows a company to obtain capital from a larger number of investors and to pass on tax benefits from the investment and cash returns from the charges for the services provided by the project.

- o Private Ownership and Financing In cases where infrastructure or services are being provided primarily through the private sector as a profit-making activity or through merchant facilities, single-vendor financial arrangements can be used in which one company finances the construction and maintains ownership of a facility that provides services to a community. The owner provides the equity portion after the facility is constructed. When commercial loans are used to finance the venture, the debt is usually secured by the project itself and the expected stream of revenues from a service contract with a local or state government is used to pay interest and principal.

A survey of municipalities in the United States using private-public partnerships in infrastructure and service delivery indicated that about 40 percent of the services were financed initially by a private firm using commercial financing or internal resources. About 25 percent

of the municipalities used normal tax assessments to provide initial capitalization, and only about 8 percent used special tax assessments or special bond issues <sup>38</sup> However, most of the services included in the survey involved relatively small facilities and equipment and did not require heavy capital investment in infrastructure For larger projects, governments and the private sector use a combination of the options described earlier

State and local governments in the United States also use a variety of ways of compensating private sector organizations for providing facilities and services on a contractual basis These include contracts with firm-fixed-price, fixed-price-with-escalation provisions, fixed-price-with-incentives-for-efficient- performance, unit price, cost-plus-fixed-fee, and cost-plus-incentive fee About 43 percent of all municipal governments in towns and cities with more than 50,000 population have reported using a firm-fixed-price contract to obtain services A little more than 25 percent used a unit price contract, especially for street maintenance and transportation A smaller percentage used a fixed-price-with-an-escalation-clause contract that allowed the price to be adjusted if circumstances changed significantly from those prevailing when the contract was signed Relatively small numbers of cities reported using other forms of contracts such as fixed-price-with-incentive, cost-plus-fixed-fee, or cost-plus-incentive <sup>39</sup>

### ***Regulation of Utilities Companies***

Much of the service-providing infrastructure developed by private companies in the United States are in sectors considered to be "natural monopolies" and are regulated by federal commissions or executive agencies, or by state public service commissions or local governments Legally, a public utility company is one that provides a good or service considered to be a

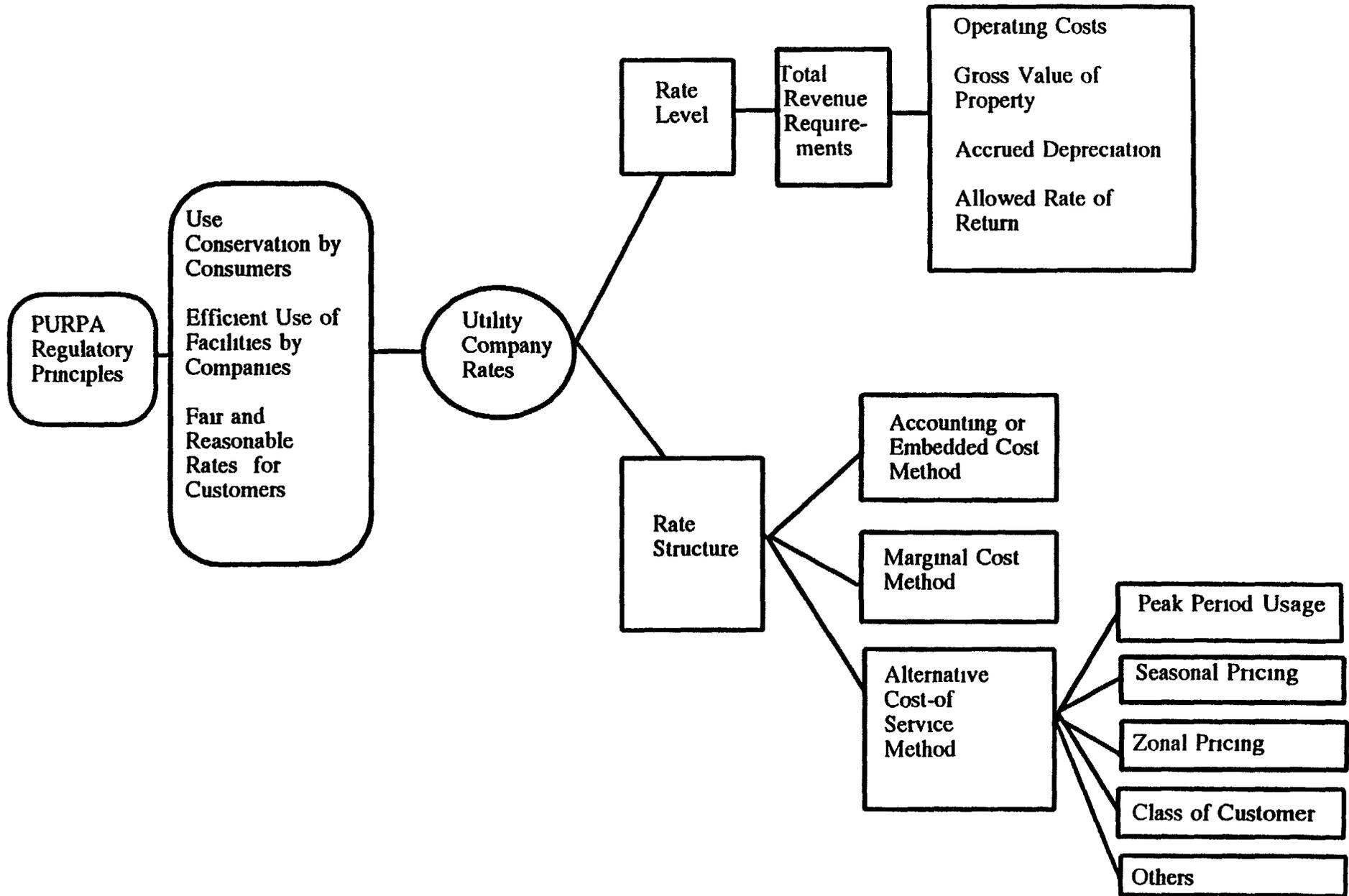
necessity for all or most people, for which there are few if any substitutes, and for which an "extortionate price or a harmfully inferior standard of service" could be imposed upon the consumer in the absence of government supervision <sup>40</sup> Generally, the delivery of such a good or service to the consumer requires of companies delivering them a large "sunk cost" in capital investment

As noted earlier, many telecommunications, transportation, electric and gas, and water supply and other utility companies are owned by shareholders and their shares are traded on the stock exchange. However, these industries are regulated or supervised by governments for five major reasons. First, government regulation is justified because of market failures arising from the fact that economies of scale in some industries -- such as water distribution or electricity -- are so great that the largest firm with the lowest costs could drive all other competitors out of the market. Second, regulation is used in the United States to prevent destructive competition, such as allowing railroads or electricity or water companies to operate at a loss over a long period of time in order to drive other companies out of the market and thereby gain a monopolistic position. Third, regulation is used to control or ameliorate the adverse effects of externalities, that is, the actions -- such as air or water pollution -- of one party that impose costs on or that create negative or unintended consequences for others. Fourth, regulation is used to allocate limited commonly-owned space or resources such as rights-of-way for transportation infrastructure or airspace for airlines among competing users. Finally, regulation is used in the United States to protect the public health, safety, and welfare and to minimize inequitable or unfair practices by private companies. Regulation seeks to prevent consumer fraud, protect consumers from excessively high increases in electricity or water prices, and protect the rights

of access to privately-provided "public" services and infrastructure for all groups of people within society <sup>41</sup>

Although federal government agencies play a role in supervising the activities of private companies that build infrastructure and offer services in sectors such as rail and highway transportation, telecommunications, environmental protection, air transport, and other areas, the strongest regulatory controls are exercised by public utility regulatory commissions at the state and local government levels. They are concerned specifically with supervising the activities of privately-owned or shareholder-owned companies that provide public utilities and services. Prices (the rate structure) that the utility companies can charge their customers, the conditions of service provision, and the returns (the rate level) on their investments in facilities and equipment are usually determined by public utility commissions. The elements that are considered in setting rate levels and rate structures are summarized in Figure 2. Regulatory commissions usually have three, five, or seven members who are either appointed by the state or local executive branch (the governor or mayor), selected by the legislature, or elected by popular vote. Appointed members usually have professional backgrounds in the legal or engineering fields, but most states only require appointees to be qualified citizens or residents of the jurisdiction who do not have a financial interest in the regulated industries <sup>42</sup>. Public utility commissions allow utility companies to recover operating costs and the opportunity to earn a "fair return" on investment, assuming that financial requirements are "just and reasonable" <sup>43</sup>. Regulatory rate-setting has become complicated in the United States, but the purpose of regulations are generally determined by the federal government's Public Utility Regulatory Policies Act (PURPA) of 1978. PURPA sets three primary objectives for the pricing of utilities

FIGURE 2 U S RATE-SETTING PRACTICES FOR UTILITIES COMPANIES



25

first, conservation in the use of services by consumers, second, efficient use of facilities and resources by utility companies, and third, equitable rates to consumers. Regulatory commissions also try to assure that utility companies do not operate like monopolies. Regulation becomes a surrogate for competition or reinforces pressures from shareholders and directors to make the companies effective in building infrastructure and efficient in operating and maintaining it. Regulators must also consider that utility companies face market pressures; they must compete in the general marketplace for labor, capital, and materials with other private companies.

In the United States, regulatory objectives are based on widely accepted principles of rate setting that are described by Bonbright as follows:

- o Practical attributes of simplicity, understandability, public acceptability, and feasibility of application,
- o Effectiveness in yielding total revenue requirements for utility companies within standards of fair-return,
- o Revenue stability from year-to-year for utility companies so that they do not encounter unexpected financial problems,
- o Stability in the rates to minimize unexpected changes that are adverse to existing customers,
- o Freedom from controversies over proper interpretation of rate regulations,
- o Fairness in apportioning total costs through different rates to different types or classes of customers,
- o Avoidance of undue discrimination in rate relationships,

- o Efficiency of the rate classes and rate blocks to discourage wasteful use of services while promoting all justified types and amounts of service use <sup>44</sup>

All of these principles fall within the legal tradition of the United States whereby government has the power and obligation to protect the public interest

### *U.S Rate-Setting Practices for Utilities Companies*

Within these broad guidelines, public utility commissions use different approaches to set rates for different types of utility companies. The two components that regulatory commissions consider are the rate level and the rate structure

1 Rate Level. The most common approach to setting the rate level -- that is, the overall earnings of a company -- is by calculating its total revenue requirement. This is usually determined by the following equation

$$R = O + (V - D)r$$

where

R = total revenue required

O = operating costs

V = gross value of tangible and intangible property

D = accrued depreciation of tangible and reproducible property

r = the allowed rate of return

Allowable operating costs are usually specified by the regulatory commission and include such expenditures as wages and salaries, benefits, advertising and public relations, contributions and donations, merchandising and jobbing expenses, replacement resource costs, and others. The

gross value of tangible and intangible property is generally measured by general price indices, construction costs, or unit-cost pricing. Accrued depreciation of tangible and reproducible property is determined differently in different states depending on the type of property valuation used. However, public utilities generally make depreciation charges to their plant, equipment, and other capital property using approved accounting procedures. The allowable rate of return is estimated by determining the cost of capital for the utility in current financial markets. As Phillips notes, "at a minimum, a public utility must be afforded the opportunity not only of assuring its financial integrity so that it can maintain its credit standing and attract additional capital as needed, but also of achieving earnings comparable to those of other companies having corresponding risks."<sup>45</sup>

2 Rate Structure. The most common approaches to setting the rate structure -- that is, the prices companies can charge consumers for services -- are accounting or embedded costs and marginal costs. Most regulatory commissions also allow alternative cost-of-service methods.

a Accounting or Embedded Cost Approaches. Accounting or embedded costs are based on average or sunk costs over a specified period of time. The costs of producing a kilowatt of electricity or a thousand gallons of water are calculated by averaging the costs of providing capacity that were incurred at some time in the past (e.g., ten years ago) with the costs of providing the most recent capacity plus the known operating costs.<sup>46</sup> Both utility companies and regulators have found advantages in using accounting costs: revenues from cost pricing generally are equal to the utility company's revenue requirement, the costs are known, and they are relatively easy to calculate. However, accounting costs also have disadvantages. Because they are historical they do not anticipate or reflect forward-looking costs, they do not

correspond to a company's planning horizon and do not address the objective of economic efficiency

b Marginal Cost Approaches Marginal costs are the additional costs of producing one more unit of output, that is, the cost of generating and selling a single additional unit of service (e g , a kilowatt or kilowatt hour of electricity or a thousand gallons of water) Short-run marginal costs are used when some factors of production or inputs are variable and others are fixed, long-run marginal costs are used when all inputs or factors of production are variable Advocates of using marginal costs as the basis for utilities pricing argue that it is more appropriate for pricing services in a peak-load or time-of-use structure Marginal costs are forward-looking and allow a company to project the real costs of providing additional quantities of service, and they help both the utility company and consumers move toward an efficient allocation of limited resources However, revenues derived from marginal cost pricing do not necessarily equal a company's revenue requirements, calculation of marginal costs is more complex and difficult, and theoretical issues associated with second-best pricing rules have not been entirely resolved in industries such as electricity and energy

c Alternative Cost-of-Service Approaches Regulatory commissions also allow utility companies to modify the rate structure with alternative cost-of-service methods For electric and gas utilities, for example, alternative forms might include time-of-use rates that increase the cost of each unit of electricity during peak hours of usage, declining-block rates, flat rates, or inverted rates For water utilities, alternative forms may include seasonal pricing to raise costs during times of the year when greater demand may be placed on water resources, or zonal pricing that allows companies to charge higher prices per unit for users that are located

farther away from main pumping or generation stations. Most utility companies are also allowed to charge different prices to different classes of customers -- residential users may be charged less per unit of service than industrial or commercial users.<sup>47</sup>

### *Implications for Government Supervision in Non-Utility Areas*

Although regulatory procedures have been well developed in the United States for the private provision of utilities infrastructure and services, government supervision of private participation in other areas of service are far more discretionary and less stringent. Surveys of municipalities with more than 50,000 population in the United States found that for all non-utility services that were contracted with private companies, nearly 43 percent of the municipalities had no control or only slight influence on pricing, while about 41 percent had major influence or total control. However, 53 percent exercised total or major influence on the types of services to offer and an additional 18 percent had a major influence. Most municipalities involved in private-public partnerships did monitor contractors' responsiveness to citizens' complaints. In nearly three-fourths of the municipalities complaints go to government officials who track contractors' performance. However, less than 2 percent of the municipalities assessed monetary penalties for complaints or offered bonuses to companies whose performance received no complaints. Only 10 percent of the municipalities used a formal inspection system to follow up on complaints about the services.<sup>48</sup>

## ***LESSONS OF EXPERIENCE***

Given the long history of private participation in infrastructure development and public service provision in the United States, there are many lessons of experience that may be useful to governments in Asia that are attempting to develop private-public partnerships. The U S experience suggests that special attention should be paid to the advantages and benefits of private-public partnerships, but at the same time, governments must be aware of and take actions early to overcome potential obstacles to their effective implementation. National and local government officials must understand in which sectors private participation is most appropriate and feasible, and recognize that in some sectors the private sector may not be able to make a fair and reasonable return on investment without an adequate legal and financial structure. Governments must create an effective set of procedures and conditions that allow the public and private sectors to work together. This may require national and local governments to reorient the roles and behaviors of their managers and employees in order to participate effectively in private-public partnerships.

This section draws out the most important lessons from the U S experience that may be of value to Asian governments.

### ***Advantages to Government of Private Sector Participation in Infrastructure Development***

Private-public partnerships have been and are being used extensively in the United States and in other countries to develop infrastructure and provide services for a variety of reasons.

Among the most common advantages of private participation and private-public partnerships are that they <sup>49</sup>

1 Allow Timely Response to Infrastructure-Service Needs The private sector can often mobilize the financial and other resources more quickly than federal, state or local governments in the United States to provide infrastructure and services where demand is growing rapidly. Governments must often go through a long and protracted budget process or an even longer process of issuing bonds to finance infrastructure, whereas private companies can often raise capital more quickly.

2 Reduce Higher-Level Government Involvement State and local governments often prefer to work in partnership with the private sector because it reduces their dependence on federal government funding and supervision and allows them more flexibility to develop infrastructure without accepting mandates and restrictions that usually come with higher-level government grants or loans. Local governments working with the private sector or private sector provision of infrastructure sometimes permits greater flexibility in designing the size of the facilities or infrastructure projects and the types of services that will be offered.

3 Reduce Direct and Overhead Costs to Government Private provision or private-public partnerships often reduce direct costs to government and allow local and state governments to preserve their debt capacity for other purposes. Private provision can often relieve local or state governments of indirect costs of grant administration and expenditures related to construction financing, maintenance, operations, and revenue collection. When the private sector participates in or assumes financing of a facility or service, local and state governments can often reduce or eliminate the costs of administering grants from the federal

government and do not have to comply with federal procurement regulations that can substantially increase the capital costs of infrastructure

4 Offer Greater Predictability of Costs and Revenues For state and local governments, contractual or turnkey arrangements offer greater predictability in estimating costs and revenues because fees are set in the contracts with private companies. Governments know how much they will pay for services for a three-to-five-year period into the future and how much revenue they are likely to collect from private companies operating facilities and providing services on their behalf.

5 Allow More Productive and Efficient Delivery of Services Market pressures stimulate private firms to find ways to cut their costs and increase their competitiveness and productivity. Private participation allows governments to take advantage of specialized skills in nongovernmental organizations. Studies of the productivity of private sector contractors for infrastructure and services in the United States report that productivity and efficiency are higher in the private sector than in the public sector because private contractors provide less paid time-off for their employees, use part-time workers when necessary, are more likely to give managers authority to hire and fire workers based on job performance, are more likely to use incentive systems, are less labor-intensive in their operations, and have more workers per supervisors.<sup>50</sup> By contracting competitively for services, governments can determine the true costs of production and thereby eliminate waste. Contracting also permits governments to adjust the size of programs incrementally as demands or needs change.

6 Encourage More Reliable Maintenance of Facilities Unlike many governments, private companies have a strong financial stake in the maintenance of facilities and equipment.

and are often less restricted budgetarily than governments in allocating resources to maintenance. Many government agencies can more easily obtain capital expenditure authority than the budgetary resources to maintain infrastructure and equipment after it is procured. Private organizations can often calculate maintenance into their costs and allocate financial resources more easily to regular maintenance activities.

7 Allow Better Access to the Latest Technology Because private companies can often obtain access to capital more easily and are usually less restricted by procurement regulations than government agencies they can often obtain more modern and higher quality technology and replace obsolete equipment in the facilities they build or operate.

8 May Help to Reduce NIMBY Resistance If private sector contracts or concessions generate revenues for local governments it may help to reduce the "not in my back yard" (NIMBY) resistance to waste disposal or treatment facilities or other forms of infrastructure development, at least on the part of local government officials. If the private sector's participation reduces costs, generates local revenues and protects or creates jobs for the local community, these pressures may offset citizens' fears that the location of waste processing or waste disposal facilities will lower the quality of life in their community.

9 Avoid Many Restrictions in Work and Hiring Practices Private firms are less restricted in work and hiring practices than most public agencies and can use labor more productively. Businesses can adjust the size and composition of their work force more easily than governments can when it is necessary, and can lower labor costs per unit of output. Private companies may not have to comply with restrictive and unproductive civil service regulations and can use their work forces more effectively.

10 Generate Revenues for Governments Private participation in infrastructure development and service provision can often generate new revenues for government as well as cost savings Through taxation of profits of private companies providing infrastructure and services, fees and revenues from private-public partnerships, and taxation of incomes of employees of private companies providing infrastructure and services, private participation can increase the amounts of revenues government derive from service provision

### ***Potential Obstacles to Effective Private-Public Partnership Implementation***

Despite evidence that private participation in developing infrastructure and providing services can reduce costs, increase efficiency and coverage, and reduce the financial and management burdens on government, problems can impede the implementation of private-public partnerships <sup>51</sup> If government officials are not aware of or choose to ignore the potential adverse effects of private sector participation, opposition or resistance to privatization of infrastructure and services can undermine its effectiveness If not carefully designed, arrangements for private participation can lead to unemployment for public sector workers, raise the price of public services for some consumers, create opportunities for corruption, and contribute to environmental deterioration It can result in lower wage levels and less employment security for those previously working in the public services industry There is also a danger that private enterprise will reduce or eliminate necessary but unprofitable services, restricting access to only those who can afford to pay market prices Moreover, privatization can reduce public control over the types and quality of services available It can convert public monopolies into private monopolies and give greater economic and political influence to big businesses

Among the most frequent obstacles to effective implementation of private-public partnerships for service delivery or private participation in infrastructure development are inadequate organization and procedures within government for eliciting the participation of the private sector effectively, the inability of financial markets to provide the large capitalizations needed for private investment in infrastructure, and political opposition from civil service unions or powerful interest groups. Some opposition may also come from social or political group leaders who fear that the poor will be excluded from services or will not have the income to pay for adequate services at market prices. Opposition may also arise among those who fear that privatization will allow governments to ignore serious social problems that cannot be addressed adequately by private organizations and from those who fear that private businesses will eliminate services that are unprofitable, provide inferior quality services in an attempt to maximize profits, and leave poorer parts of cities unserved.

In some cases, there may be insufficient numbers of companies with the ability to provide services and infrastructure at affordable prices or management skills to provide services efficiently and effectively. There is a danger that when contracts or participation procedures are not designed or monitored carefully some private companies may attempt to take unfair advantage by underbidding the real cost of the project in their proposals and substitute lower cost materials or services than those that were bid. These dangers can usually be offset by developing clear and detailed specifications and requiring that performance standards be met.

### ***Conditions Under Which Private Participation is Feasible and Appropriate***

In the United States, private companies are willing to play a large role in infrastructure

and service provision in those sectors in which individual users can be identified, the political or social costs of excluding some groups of people who cannot or will not pay are low, and the social and territorial spillover effects are weak. The prospects for private sector participation are especially good in those areas of infrastructure or service provision where consumers are able and willing to pay for basic service provision or for higher levels of quality, the quantity and quality of the services on which value is determined can be measured, and a high level of technical or technological sophistication is required and cannot easily or efficiently be developed in public agencies. Private organizations can find opportunities to provide even collective goods at a higher level of quality than the government can offer. In the United States the private sector often provides specialized health care, for example, much more effectively than public institutions.

The private sector is likely to play a more limited role and governments are most likely to retain responsibility for those services and infrastructure that are considered by society to be "collective goods," including services that meet basic social needs that all citizens should have access to at a low cost or for which political leaders feel an obligation to maintain or expand coverage regardless of the economic costs. It may be more difficult to get the private sector involved in those types of infrastructure or services that the public considers to be essential to the health, safety and welfare of the community and that might be compromised by private sector involvement. It may be more difficult to get the private sector involved in projects that require huge "lumpy" investments for which capital must be raised through bond issues or public borrowing or for which it may be difficult for political or economic reasons for government or the private sector to levy user charges. Governments are usually more reluctant to leave to the

private sector the provision of services that have potential spillover effects from one local jurisdiction to another -- e g , water pollution and disease control In some sectors, the long pay-back period and the large amounts of sunk costs may deter the private sector from responding enthusiastically to some types of infrastructure development

However, if governments have clear and well-defined objectives for infrastructure development and understand the requirements of the private sector to participate profitably they can usually identify the sectors in which private sector participation is appropriate, feasible, and effective

### ***Appropriate Procedures and Structures for Private Sector Participation***

The success of private-public partnerships and arrangements to increase the participation of the private sector in infrastructure development and service provision depends heavily on creating a fair, transparent, and flexible set of procedures through which government and the private sector can work together effectively The experience in the United States suggests that the following elements should be taken into consideration

- 1 Enabling Legislation Successful participation by the private sector depends on adequate enabling legislation to allow various levels of government to enter into private-public partnerships or contractual arrangements with the private sector The enabling legislation should clearly specify the responsibilities and conditions of the public and private sectors for infrastructure development and service provision Legal reforms are especially important in countries where laws or regulations have been intolerant of or hostile to the private sector in the past Changes must often be made in labor laws, protectionist policies, restrictions on access

to credit, wage and price controls, and the system of property rights before private enterprise is willing or able to participate effectively in infrastructure development <sup>52</sup>

2 Regulatory and Supervisory Procedures An effective system of government supervision and regulation is needed to prevent corruption, ensure social equity in the distribution of services and access to infrastructure, and assure fair and reasonable charges for the use of privately-provided infrastructure or services A system of land-use controls, development guidelines, and regulations of rate structures and levels should be formulated to maintain public accountability and to protect the public interest as private sector participation in infrastructure and service provision increases

3 Bidding and Contracting Procedures Fair, transparent and effective bidding and contracting procedures must be formulated to assure that all qualified companies can participate in infrastructure development or service provision without favoritism or undue legal challenges to the process The bidding and contracting procedures should cover all aspects of an infrastructure development project from prefeasibility analysis to design, construction, operation, and maintenance

4 Tax Incentives Adequate tax incentives are required to help private investors overcome potential differences in the costs of capital in the public and private sectors and to offset differences in potential returns on investment between infrastructure development and other commercial investments

5 Social Safety Net Social equity measures should be established through which governments can allay fears that the poorest households that they will be excluded from services provided by private companies Governments can offer assistance or subsidies for unprofitable

but essential services for the poor. Privately-operated utility companies, for example, can be allowed to charge high enough rates to commercial and industrial customers to provide "cross subsidies" for their poorest household customers. These partial subsidies may be far more economical for governments than continuing to underwrite the costs of inefficient and ineffective public enterprises or agencies.

6 Employment Protection Measures Measures and procedures are often needed to protect current civil service employees and prevent inequitable or socially undesirable effects of private-public partnerships, if for no other reason than to reduce opposition or resistance to more efficient approaches to service delivery. Options include allowing employees of public enterprises or agencies to form their own companies to contract for service provision or requiring private companies that take over infrastructure development or services to give preference in hiring to displaced public employees. Phased-in privatization by geographical district or by stages could help to reduce opposition. The hostility of public employee groups may be contained by ensuring that fair wages and working conditions are provided by private companies that take over from public agencies.

7 Financial Institutions The financing of private-public partnerships in the United States depends heavily on a variety of debt instruments and government tax-exempt securities that require a strong municipal bond market and set of financial institutions. In order to elicit private sector participation in Asia, governments must create and support strong stock exchanges, authorize municipal and sub-national administrative units to issue debt, and provide appropriate incentives to financial institutions that participate in private-public partnerships. Tax incentives may also have to be given to individual investors to purchase public debt.

Experience in the United States suggests that while private-public partnerships are not a panacea, under appropriate conditions the private sector can play a valuable and cost-effective role in meeting growing service and infrastructure needs. The advantages of private participation can be maximized when government assures a competitive environment, has adequate procedures for promoting cost reduction and service quality, and performs an effective "watch-dog" role to minimize corruption and social inequity. Clearly, the most important aspect of the success of a partnership of any kind is to assure that the objectives of both parties are compatible and that responsibility is structured to achieve results that serve both partners' interests.

### ***Reorientation of Government Functions and Roles***

For the public sector to participate effectively in private-public partnerships and to supervise effectively the private sector's participation in infrastructure development and service provision, the government must usually redefine its roles and responsibilities and seek to change the behavior and orientation of its officials and employees.

The U.S. National Academy of Public Administration insists that a fundamental distinction must be made between "government as a financier, authorizer and overseer of services, and government as a producer or provider of services." The Academy emphasizes that "the broad definition extends the term privatization to the wide set of arrangements under which government remains involved as the financier or authorizer of services but relies on the private sector or the market for the actual provision and delivery."<sup>53</sup> When government acts as a facilitator of service provision rather than as the primary provider it must shift from a control-oriented to an adaptive approach to administration.<sup>54</sup> In a market-oriented system of service

provision, government cannot operate effectively using a hierarchical command system of management, effectiveness depends more on negotiation, persuasion, participatory decision-making, and coordination

In order to make private-public partnerships work effectively, government officials must develop the capacity to manage contractual relationships. Government takes on more responsibility for enforcing regulations that protect the collective welfare, ensuring open competition, and promoting the advantages of market discipline without strangulating the market with unnecessary or unrealistic controls. Public officials and employees must be trained in adaptive management, negotiation, and regulation, and should understand how private companies operate.

### ***CONCLUSIONS***

More than two hundred years of experience in the United States with private participation in infrastructure development and public service provision has created a broad and deep capability in the U S private sector that can be of benefit to other countries, especially those in Asia. American construction companies, environmental firms, and utilities companies are now working closely with Asian companies and in consortia of international firms to provide infrastructure and services in East and Southeast Asia.

The United States government provides a great deal of assistance and support to American companies, to joint venture firms with U S partners, and to projects in which U S contractors play a significant role. The Government of the United States offers four major types

of support to U S companies and joint ventures seeking to participation in infrastructure development and service provision in Asia These include 1) information services, 2) support for the export of U S goods and services, 3) financial assistance for prefeasibility analyses, and 4) loan guarantees and concessionary lending <sup>55</sup> A summary of the major programs offered by United States Government agencies is found in Table 2

### *Information Services and Technical Assistance*

A large number of U S government agencies provide information and technical assistance to American companies seeking to become involved in trade and investment in Asia U S companies can obtain trade leads and information on potential business opportunities, including infrastructure development, from the U S Department of Commerce, the State Department, and the Departments of Agriculture and Energy, as well as from the Overseas Private Investment Corporation and the U S -Asia Environmental Program (US-AEP) Most of these organizations and the U S Department of Labor, the U S Trade Representative, the Small Business Administration, OPIC, and the U S Agency for International Development also provide American companies with market information for nearly all countries in East and Southeast Asia, and they and the Export-Import Bank of the United States and the U S Trade and Development Program provide export counseling services

The U S Agency for International Development maintains a Center for Trade and Investment Services (CTIS) that provides individual counseling and information to companies

TABLE 2 MAJOR U S GOVERNMENT ASSISTANCE PROGRAMS FOR TRADE AND INVESTMENT IN ASIA

Agency	Export Consulting	Trade Leads	Overseas Trade Shows	Domestic Publica- tions	Loan Gurantees	Technical Assistance	Market Informa- tion	Overseas Trade Missions	Domestic Trade Shows	Direct Loans	Export Risk Insurance
	U S Dept of Commerce	X	X	X	X	X	X				
U S Dept of State	X	X	X								X
U S Treasury											X
U S Dept of Agriculture	X	X	X		X						X
U S Dept of Labor		X									
U S Dept of Transportation											X
U S Dept of Energy	X	X	X						X		
U S Trade Representative	X	X									
Environmental Protection Agency											X
Small Business Administration	X	X						X	X	X	X
U S Agency for International Development	X	X							X	X	X
Export-Import Bank	X								X	X	X
Overseas Private Investment Corporation	X	X	X	X					X	X	X
U S Trade and Development Program	X			X		X			X		X
U S -Asia Environmental Program	X	X	X								X

Source Compiled by Kenan Institute of Private Enterprise, University of North Carolina--Chapel Hill

interested in environmental, energy, and other types of projects that are supported by the foreign aid program in developing countries. CTIS also operates the Environmental Technology Network for Asia on behalf of the US-AEP that matches environmental technology trade leads with appropriate U.S. environmental firms and trade associations. The U.S. Small Business Administration provides advice for small companies on the legal aspects of exporting technology, equipment or other goods abroad.

The U.S. Department of Commerce, through its International Trade Administration's (ITA) Office of International Major Projects helps U.S. firms to obtain the assistance they need to compete for large infrastructure and industrial projects outside of the United States. ITA identifies and provides information about proposed or scheduled infrastructure projects, provides individual business counseling, and monitors developments in specific sectors.

The U.S.-Asia Environmental Partnership Program (US-AEP) assists U.S. companies to identify the markets in Asia for environmental products, services and technologies in the areas of solid and toxic waste disposal, industrial and transportation pollution, water and wastewater treatment, energy efficiency, and forestry. It also provides assistance for policy and regulatory reform in Asian countries. US-AEP supports an information service through its network of business representatives in Asia, an information clearinghouse in Washington, and a trade leads system that informs U.S. companies of business opportunities for environmental infrastructure and services in Asia. US-AEP provides companies with advanced notice of infrastructure project opportunities, assistance in identifying and obtaining financing from public and private sources, and access to U.S. government assistance programs. US-AEP has also created an "Infrastructure Project Promotion Fund" to support creative public-private partnerships that will develop new

forms of financing arrangements and reduce the risks of U S technology transfers in energy and environmental infrastructure projects The infrastructure finance advisory service provides a one-stop clearinghouse for financial advice and assistance to American companies seeking to participate in Asian environmental infrastructure projects The services are aimed at U S equipment manufacturers, contractors, project developers, and service providers that are interested in bidding on public tenders in Asia, developing private build-own-operate (BOO) or build-operate-transfer (BOT) projects, or establishing joint ventures

The U S Trade and Development Program (TDP) provides grants for U S technology experts to work with government and private sector organizations in Asia to plan and develop infrastructure and commercial projects, conduct technical seminars, workshops and training programs, and assess the feasibility of high-priority infrastructure development project proposals TDP can also provide experts for orientation visits and review missions to assist appropriate agencies to develop ideas for new projects in which U S firms may be able to participate

The U S Department of Transportation in cooperation with the U S Agency for International Development provides technical assistance to developing countries for transportation policy, aviation, rail and ports The Environmental Protection agency assists Asian governments to develop sound environmental policies and solve environmental problems In addition, EPA promotes the adoption and sale of U S environmental technologies that can be part of infrastructure systems in Asian countries

### ***Support for Export of U.S. Goods and Services***

Other forms of support are also available to U S companies interested in following up

on trade and investment opportunities in Asia. The U.S. Department of Energy helps energy sector exporters to identify overseas opportunities and discriminatory trade barriers, identify financing alternatives, and work with U.S. government agencies to find markets for energy technology and equipment. The U.S. Department of Commerce and the Overseas Private Investment Corporation (OPIC) both support overseas trade missions that can help American companies explore opportunities for participating in infrastructure development projects or for transferring technology and equipment that can be used in infrastructure systems. The Department of Commerce also supports overseas and domestic trade shows.

The US-Asian Environmental Program follows up on specific environmental infrastructure projects and coordinates the appropriate U.S. government technical and financial resources that are available to help U.S. companies with technologies, equipment, or services enter markets in Asia. Contractors and exporters seeking to expand their activities in developing countries can obtain political risk insurance and other forms of specialized insurance and financing services from the OPIC. The U.S. Agency for International Development's commodity import program and its project procurement activities can open new opportunities for companies interested in participating in infrastructure development projects in Asia.

### *Prefeasibility Analysis Assistance*

Several U.S. Government agencies also assist Asian governments and private organizations to assess the feasibility of proposed infrastructure development projects using U.S. expertise. The U.S. Trade and Development Program (TDP) provides non-reimbursable grant funding to Asian countries eligible for U.S. bilateral assistance for studies and consultancies to

determine the technical, economic, and financial feasibility of projects in which U S technological expertise can help to accelerate the development process. The grants focus on a wide range of infrastructure including telecommunications, energy development, transportation and waste management. The TDP sends U S technical specialists to Asian countries to gather information on the proposed project, work with local authorities to develop the scope of work and budget for the feasibility study or consultancy, and make recommendations concerning TDP support for the study. The host country grant recipient organization (a public agency or private sector organization) selects the U S firm to conduct the study under approved competitive bidding procedures. The TDP pays grantee-approved invoices for the expenses of the feasibility study directly to the contractor. Up to 20 percent of the grant can be used to enlist the participation of host-country private sector expertise to work with the U S contractor, a provision that encourages joint venture cooperation.

The TDP can also share the costs of feasibility studies that are being undertaken by U S private sector investors or suppliers that are proposing to develop a project on an unsolicited "sole source" basis. TDP has provided grants to study the feasibility of the Java-Sumatera high voltage interconnection project, the Central Java telecommunications system, the Jakarta mass rapid railway transit system tunnelling project, and the integrated air transport project in Indonesia. It has also funded feasibility studies for geothermal and oil fired energy projects, data communications networks, and power plant rehabilitation projects in the Philippines, power projects, sludge management plans, industrial water treatment facilities, and energy infrastructure projects in Thailand, and wastewater, power plant, and communications system projects in Singapore.<sup>56</sup> The Trade and Development Program also maintains technical assistance trust

funds to finance consultancies and feasibility studies by U S consulting firms through the World Bank for financing, preparation, and appraisal activities, and through the International Finance Corporation for a variety of project-preparation activities

The Export-Import Bank of the United States also funds feasibility studies in conjunction with its insurance programs, loan guarantees, and exporter credits Fixed-rate, medium-term loans to help finance feasibility studies and preconstruction design and engineering services for up to \$10 million are available through the Eximbank's "Engineering Multiplier Program," which can be used to cover up to 85 percent of the U S costs

The U S Overseas Private Investment Corporation (OPIC) and the US-AEP jointly operate the "Environmental Enterprises Development Initiative" (EEDI), which provides pre-investment assistance to American companies that are establishing or expanding environmental infrastructure projects in Asian and Pacific countries EEDI offers assistance to private sector companies that are at least 25 percent U S -owned and whose activities in Asia do not result in diversion of U S jobs or negative environmental impacts in the host country The activities eligible for funding include market-entry assessments, investor reviews, business plans, technology reviews, prototype or pilot project implementation and other types of preinvestment analysis Funding through US-AEP comes from the U S Agency for International Development OPIC's participation is limited to \$100,000 for each project The U S company must contribute at least 50 percent to the cost of the study and small businesses must contribute at least 25 percent If the project proceeds on the basis of preliminary studies funded by OPIC, the company is required to pay a success fee in the amount of the assistance provided by OPIC

### *Concessionary Lending and Loan Guarantees*

Finally, the U S Government can assist in eliciting the participation of the private sector in infrastructure development projects in Asia through concessionary lending and loan guarantees. The Export-Import Bank of the United States offers financial assistance to promote the exports of U S companies with capital equipment or services related to infrastructure development projects that are normally financed for a period of longer than one year. Eximbank will provide credit or guarantees for up to 85 percent of the U S export value of each transaction. Repayment terms range from two to ten years. Eximbank assistance comes in the form of direct loans to public or private organizations abroad purchasing U S equipment or services, loans to financial intermediaries who re-lend to international buyers, and guarantees to those who lend to foreign buyers.

The Eximbank's "Working Capital Guarantee Program" gives U S exporters of equipment and capital goods that can be used in infrastructure development projects access to working capital loans from financial institutions. Eximbank issues its guarantee to a lender for 90 percent of the principal amount of a loan plus interest for a line of credit or loan to an eligible credit-worthy exporter. The Eximbank also offers loans and guarantees for up to 85 percent of the export value of U S companies' operations and maintenance (O&M) contracts. This is an effective means of promoting the participation of American companies with the technical expertise in maintaining infrastructure or in establishing maintenance systems for infrastructure projects.

The U S Small Business Administration (SBA) also provides long-term financing guarantees to independently owned and operated companies with no more than 500 to 1,000

employees (depending on the industry) to establish or expand international operations. The small business must show that the loan proceeds will expand significantly existing export markets or develop new export markets for its products. The SBA can guarantee up to \$1 million for facilities and equipment under its "International Trade Loan Program." Small business construction and service contractors can also receive assistance from the Overseas Private Investment Corporation (OPIC) through its "Small Contractor's Guarantee Program." OPIC will guarantee up to 75 percent of an on-demand standby letter of credit or other form of performance or advance payment guarantee issued by an eligible financial institution to a contractor.

American companies exporting equipment or parts from U.S. ports may also be eligible for U.S. Agency for International Development forfait guarantee programs. USAID also provides market-term financing for projects in developing countries through its "Private-Sector Revolving Fund" for companies with substantial local ownership that are sponsored by host-country nationals, U.S. firms, or U.S. citizens. The loans can be used to capitalize a new enterprise or expand an existing company that is transferring technology and equipment or engaging in other profitable activities with a strong developmental impact.

In brief, the extensive experience of American companies with infrastructure development and public service provision can be transferred to Asia through international private-public partnerships, joint ventures, contracting, and various forms of trade and investment. U.S. Government support through information services, inducements to expand the export of American goods and services, prefeasibility analysis funding, and concessionary lending and loan

guarantees can help to forge international partnerships between the U S private sector and Asian governments and private organizations as they develop their infrastructure and expand their services in the years ahead

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