EMERGING MARKETS EXPERIENCE IN INFRASTRUCTURE FINANCING: LESSONS FOR SOUTH AFRICAN LOCAL GOVERNMENT

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India: Long Road To Becoming Next Tiger Economy **reads the headline from a Dow Jones Newswire release August 13, 1997. "From [Minister of Finance] Chidambaram on down, everyone agrees that infrastructure is India's Achilles' heel – from its chronic power shortages to its clogged ports…India is facing an imminent crisis in infrastructure warns a World Bank report released in May. 'Unless investment in infrastructure expands significantly, India's emerging infrastructure crisis may prevent the country from sustaining the high levels of growth that the last few eyars have shown to be within reach."**

Wall Street Journal Interactive Edition, 13 August 1997

INTRODUCTION

The captioned material above merely dramatizes what has become commonplace throughout most emerging market countries – infrastructure is a key bottleneck to reaching and sustaining reasonable rates of economic growth. Furthermore, the traditional sources of infrastructure investment capital in these markets – central government budgets and multilateral development agencies – are not adequate to meet the demand. This paper takes as given several starting points:

- the demand for capital to finance urban infrastructure services exceeds the capacity of traditional sources of capital;
- private capital markets, both domestic and international, one way or another will become the major source of investment capital for urban environmental services.

Set against that situation are sometimes heroic efforts to develop new financing and to attract savings being generated in the capital markets to infrastructure financing needs. The menu of financing choices that municipal governments and municipal enterprises can take advantage of is rapidly expanding. Service suppliers (municipal governments, local enterprises such as water authorities) may be able to access private capital markets through a variety of mechanisms - issuing bonds, borrowing from an intermediate financial institution such as a municipal development fund or municipal bank, and securing equity investments in a variety of ways from private investors.

Making good choices among these options requires that central government policies, local government authority and capacity, and the interests and incentives of private capital market investors come together. The first prerequisite is that projects to be financed are economically viable. As a simple statement, many may consider that a truism, but it masks several complexities. For example, for South Africa, projecting the revenue flows from a local government project that presumably would be self-financing through rates or tariffs charged to users of the services is very difficult at this time (See Box 1).

Box 1: Rate paying for basic services remains a problem

Rate payers are seriously in arrears; the rate boycotts earlier this decade are still affecting the willingness of taxpayers to meet their rate obligations. In part it is a chicken and egg question with a need to see service improvements to encourage meeting tax obligations, but a need for revenue streams to enable service improvements. In some poor areas, fewer than 5% of residents pay any fees. In other areas, reaching even 25% collection is difficult.

Bob Drogin, *Los Angeles Times*, 1 January 1996, p. 1.

Projects are economically viable when they generate benefits that are judged to be worth the costs required to complete the project, and that means in the case of self-financing projects, the individuals who will enjoy the benefits must perceive the benefits as worth the rates they will have to pay.

Traditional infrastructure finance has relied on central government to make that judgment, and has relied on central government's access to society's resources, mainly through taxation and exploitation of natural resources, to provide the investment capital. In turn, central government has had to decide whether:

- to rely on current revenues, including perhaps deficit finance, to provide the investment capital or to organize an explicit project financing facility, such as an international donor agency loan, borrowing from private capital markets, etc.; and/or
- to require the beneficiaries to pay part, all, or none of the financing costs.

In most emerging market countries, central governments traditionally chose to finance infrastructure projects through current revenues and deficit finance in the central budget, along with a significant role for multilateral financing agencies such as the World Bank. Increasingly, however, central governments are making different choices including:

- decentralizing much greater responsibility for financing urban infrastructure to local governments;
- privatizing state-owned enterprises, including municipal enterprises such as water authorities;

- seeking private equity investments in urban services, but less than full privatization.

South Africa has examples of all these choices with townships now responsible for a much greater share of financing services, and private equity funds being established, such as the South Africa Infrastructure Fund sponsored by Standard Corporate and Merchant Bank.

When these types of choices are made, however, the nature of the financing arrangements change dramatically. Without central government access, at least in principal, to all of society's resources, a project to be financed not only has to yield benefits that exceed costs, there also must be mechanisms to capture those benefits. This "benefit capture" has to yield revenue that is sufficient to repay the financing, operate and maintain the facility, and, if private investors are involved, return a profit on their investment that is competitive with other investment opportunities (see Box 2 example). This means if user charges are the expected source of finance, effective means for setting rates and for persuading people to pay have to be in place.

Box 2: Return on Equity in Private Investments

Private equity investment in urban, and other, services has drawn considerable attention in this decade. Electric power has been the early target for private sector assuming financial and managerial responsibility for power generation, with government continuing responsibility for transmission and customer service. However, urban services such as water and wastewater are attracting increasing attention. To be attractive to private investors and concessionaires, the revenue streams from user charges have to yield competitive returns with other equity investment possibilities. Lyonnaise des Eaux, the French water company that is active throughout the world in major private concession projects expects an overall 15 percent return on equity in their investments in water and wastewater projects.

Lyonnaise des Eaux Jakarta Deal ROE Seen Below 15%, *Dow Jones Newswires*, 6 June 1997.

In this paper, I first examine the importance of urban development to overall economic development. This sets the context for the critical role of urban infrastructure financing. If urban development does not generate the economic gains necessary to finance the infrastructure services, then financing mechanisms that rely on local governments to be responsible will not work.

Second, I consider how urban governments finance and manage urban services, first traditional financing systems and then transitional financing as it is being experienced in many emerging market countries. The paper concludes with a discussion of the issues and constraints and lessons learned so far in new mechanisms for financing urban services, and the likely directions for infrastructure financing.

ECONOMIC DEVELOPMENT IS AN URBAN PHENOMENON

We have been accustomed to think about economic development as a largely national or country-level phenomenon. International organizations, national governments and pundits alike collect, publish and comment upon national economic statistics and speak of national income, national balance of payments and terms of trade, GDP per capita measured at the national level, and so forth. National governments make investment decisions to stimulate and guide economic development at the national level. Sovereign debt ratings are carefully monitored, and nurtured.

Regional and local governmental institutions, while thought to be important to delivering many public services, have not until recently been thought of as key economic actors in a new world economy. National economics has dominated thought, and nations competing against other nations for economic markets has been our primary metaphor.

Increasingly, the national economy is an inadequate and ineffective metaphor. It directs the attention of policy makers toward policies intended to control, or at least to affect, economic circumstances and trends that increasingly are outside the ability of national government to influence. To replace that metaphor, attention now needs to be directed to such *new/old* concepts as Citistates, region-states, and the global economy. Figure 1 illustrates the importance of the relationship between urban center size and economic production. Those new metaphors (not new to this paper) have begun to capture a lot of attention, although we still have much to learn about what it means.

Several economic and social trends shape this sea change:

- An increasing proportion of financial resources are controlled by global capital markets that respond to market forces rather than the actions of nation states;
- Access through telecommunications to ideas, culture, concepts from all parts of the world, tends toward a greater universality of culture, beliefs, attitudes and preferences among young people that make them as attuned, or more so, to the rest of the world as to their own countries and regions; and
- The rapid rate of urbanization and industrialization in countries previously dependent primarily on western industrial economies for technology and finished goods is shifting manufacturing and even technology development to countries previously labeled developing.

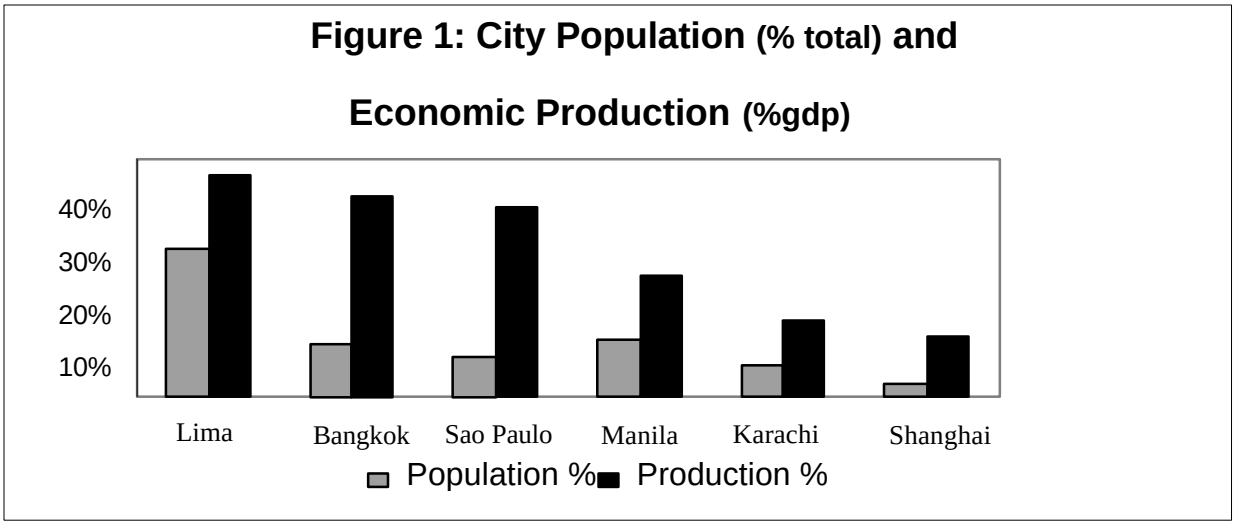

Figure 1: Contribution to GDP, Selected Cities (source: ***Economist***, "Survey of Cities," July 29, 1995)

If today's cities fail to change the way urban development is managed and financed, then it is at least arguable that those who do not change will fall behind in the economic competition, regardless of their geographic location or dominant culture. An OECD sponsored conference on local development noted: "With the globalisation of the economy, some local areas have become centres of innovation and have internationalised their activities; others, however, have been left behind."[1] Figure 2 from a Survey of Cities in the Economist[2] compares the time required to obtain a building permit among major cities, most of whom also appear on any list of cities contributing far greater shares to economic production than their population, as those in Figure 1.

Couple the impact of city administration from Figure 2 with other indicators of inefficiency such as unaccounted for water rates in excess of 40 percent, less than 50 percent of solid waste collected, less than 20 percent of tax rates and user charges collected, and so forth, and you can picture the difficulty some cities will have in achieving job growth, business growth and succeeding in the new economy. Competition in the next century will not be among Northern and Southern Africa, Asia/Pacific, Europe, North America, South America, and so forth, but among the world's major urban centers. Success in this competition will depend in part upon the economic and political management of those cities and in part on the network of smaller and medium-sized townships and cities linked to those larger urban centers.

Every urban area, be it a large metropolitan area serving a national and international market or a small township serving largely agricultural-based economic activities must pay

[1] Andrew Davies, "Local Economies and Globalisation," (Paris: Organization for Economic Cooperation and Development, 1995).

[2] ***"SURVEY OF CITIES***," *Economist*, July 29, 1995.

attention to management of its urban services and its decisions on how to invest in infrastructure to support basic services and economic activities. Also within every country, local governments will vie with each other to be attractive places for businesses to invest and people to live. In every country, there will be leading cities, and lagging cities. What will matter most is whether the local institutions that evolve to produce and deliver urban services do so in a manner and at a cost that economic and social development is enhanced and not thwarted.

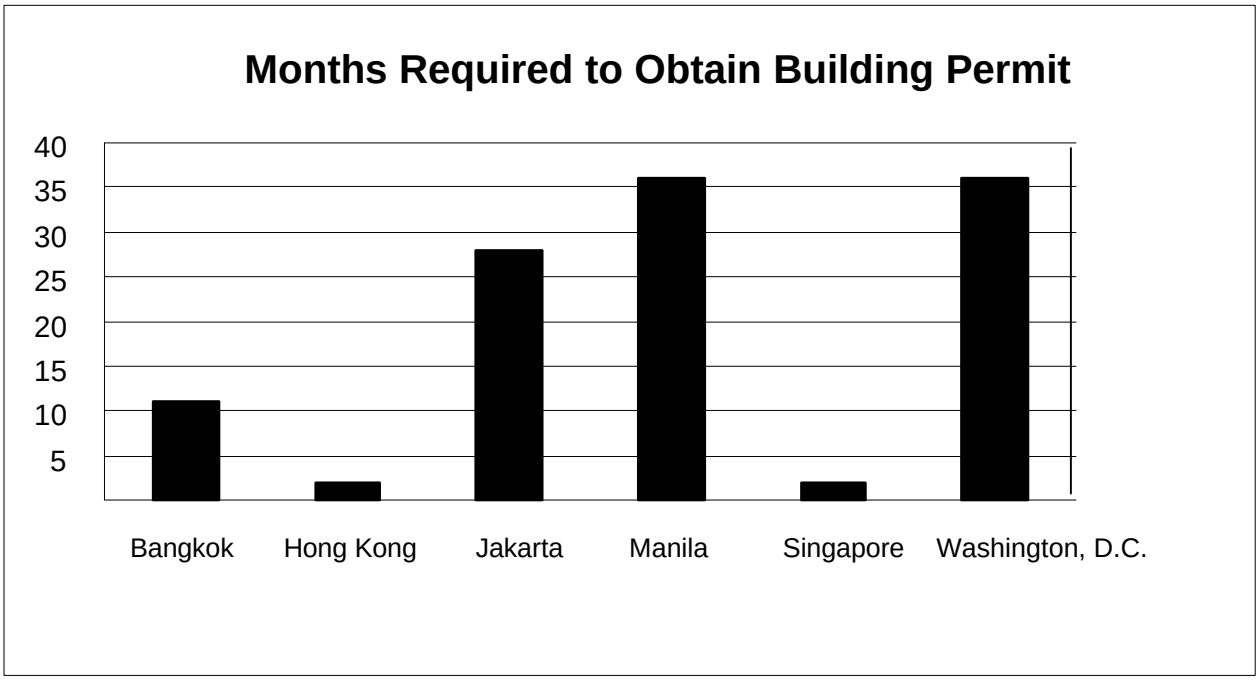

Figure 2: Months to Obtain Building Permit (source: *Economist,* "Survey of Cities," July 29, 1995)

THE ECONOMIC ROLE OF URBAN GOVERNMENTS: FINANCING AND MANAGING URBAN SERVICES

The mechanisms through which urban governments affect economic markets are those of finance and management of urban services. In this section I discuss these mechanisms, focusing on infrastructure finance.

Traditional Financing Systems

Financing systems consist of two elements:

- Systems to mobilize revenues for the recurrent (operations) expenditures and debt service requirements of local governments; and

- Systems to mobilize finance for long-term capital investments, such as water and wastewater, roads, urban transport systems, markets, terminals, and so forth.

These actually are not distinct elements. To the extent local governments borrow for long-term capital investments, then the sources of revenue for recurrent expenditures must also meet the debt service requirements for the long-term borrowing. However, because the issues involved in capital financing are more complex than the issues involved in revenue mobilization for recurrent expenditures, I discuss them separately.

Sources of local government revenue

Local governments, and for that matter any government, have five basic sources of revenue:

- Exploiting the value of assets owned by government (such as local governments that receive a share of the central government's taxes on mining and forestry, as is common in Asia and South America);
- Intergovernmental transfers (grants and other assistance, mainly from central to local, but sometimes regional or provincial to local also);
- Taxing wealth privately owned (such as property tax rates);
- Taxing income (and/or its uses, such as consumption taxes); and
- Charging users or beneficiaries for the costs of services provided.

For local governments, the first revenue source has not been significant in most developing and emerging market countries, although urban governments often own considerable land assets. Similarly, most central governments either prohibit entirely or severely limit the authority of local governments to tax wealth and income, although in industrialized countries, consumption taxes (sales taxes) are an important local government source. User charges, in both emerging markets as well as the United States and Western Europe is the fastest growing local revenue source.

Use of publicly owned assets. Central governments derive considerable revenue from exploitation of publicly owned assets. Indonesia, for example, finances a considerable proportion of the national budget through oil revenues. Timber, minerals, fisheries and a wide variety of other valuable assets are important sources of national government revenue throughout the region, either through exploitation by state-owned enterprises, leased rights to privately-owned enterprises, or outright sale. Urban governments for the most part have yet to tap this source of revenue, although they can develop publicly owned land much more than at present, and some are beginning to. Keare in a paper for the Asian Development Bank's 1996 Urban Infrastructure Finance Seminar points out that urban governments' failure to address supply side problems of land availability, inadvertently or deliberately withholding land from the market, results in higher prices for private development and at the same time deprives urban governments of badly needed

revenues.[3] The greatest impact local governments can have on land issues, however, is not on exploiting it for direct revenues but in assisting in making it available for private development, subsequently deriving the benefits of more rapid economic development.[4]

Intergovernmental transfers. Transfers from higher levels of government constitute an important revenue source for urban local governments throughout the world. In the United States, where local governments are responsible for a major share of their own revenues, intergovernmental transfers still account for around 30 percent of total revenues, although most of that is from state governments rather than the central government. Transfers from central government throughout the Asian Pacific region constitute from 60 percent to 80 percent of local revenues. With few exceptions, these transfers are criticized as too unpredictable for urban governments to plan for and as a mismatch for the extent of expenditure assignment involved in decentralization and devolution policies.

The Philippines' Internal Revenue Allotment formula is the most codified in the region, but it has begun to be criticized as fostering local government dependency on transfers and retarding the development of own-source revenues. A concluding recommendation of the Asian Development Bank's Urban Infrastructure Finance seminar was that local governments' in the Philippines should rely less on the IRA and develop much more extensively the own source revenues that the Local Government Code already permits. The working group developing that recommendation noted that some Philippine local governments are much more effective than most in developing their own source revenues, and these local governments are taking greater advantage of urban economic development opportunities.

Wealth taxes. Taxes on wealth apply to accumulated value, regardless of the time during which the wealth was accumulated, in contrast to taxes on income which apply to the time period when income is earned.[5] For urban governments, property taxation is the most important source of revenue from taxes on privately held wealth. It has been the largest single source of revenue for local governments in the United States, even though its contribution to total local own source revenue has declined in the last decade, largely due to taxpayer perceptions of it as the most unfair of all taxes. In countries in the Asian Pacific region, the property tax has been disappointing. While revenue from property taxes has risen rapidly in Indonesia, for example, the increase has been from a low base. Property taxes there still account for less than 10 percent of local revenues.

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[3] Keare, Douglas. Resource Mobilization and Financial Management for Urban Infrastructure, Urban Infrastructure Finance Concluding Seminar (Asian Development Bank: 1996, p. 37ff.)

[4] Brisbane, Guy William. Case Study on Land Development, Urban Infrastructure Finance Concluding Seminar (Asian Development Bank: 1996).

[5] Lee, Robert D. Jr. and Ronald W. Johnson. *Public Budgeting Systems* (Gaithersburg, Md.: Aspen Publishers, 1994), p. 53.

In the Philippines, more than a decade of government and donor effort has gone into developing a property tax system. There the effort has focused on developing a fairly complex tax base assessment system and computerization. However, informal assessments suggest that for every 10 Pesos in property tax collected, collection costs may range from 8 to 12 Pesos. Most of the weakness in the system is attributed to attempting to apply complex assessment procedures developed in western industrialized countries with well established land titling and property registration systems.[6] Simplifying the system to allow for easy to apply, transparent and rapid reassessment is probably the key to making property taxes a real source of local revenue in most emerging market countries, at least for the next decade or two.

Sales or consumption taxes. Central governments in the emerging market and developing countries typically do not allow local governments to apply consumption taxes, such as sales taxes. Surcharges on such nationally imposed taxes (usually the value added tax) can be a critically important source of revenue for urban governments, but central governments have been reluctant.[7] Where central government, or in some federal systems, state governments, already levy sales or consumption taxes, a local add-on is simply administered. Sales taxes also have the advantage (to government) of imposing most of the costs of administration on the private sector. Sales taxes are the most important source of revenue for U.S. state governments (37 percent of own source) and hence the transfers from state to local governments. Sales taxes are highly correlated of course with economic activity, and while they are criticized as regressive when applied to basic necessities, they are a seriously neglected source of revenue for urban governments throughout the region.

User charges. User charges are receiving the most attention among emerging market countries, especially in connection with services that require extensive infrastructure investment and typically long-term capital borrowing. They comprise the fastest-growing local government revenue source around the world, in both the industrialized and developing countries. User charges are based on fee for service or fee for value and fall into three broad categories:

- Charges for services rendered, such as water supply and garbage collection;
- Fees for permission to engage in certain occupations or activities (license fees); and
- Income from the use of local government property (e.g., market and land rentals).

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6 Conversations with U.S. Agency for International Development staff involved in local government strengthening programs for almost two decades.

7 Bahl, Roy W. And Johannes F. Lynn. *Urban Public Finance in Developing Countries* (New York: Oxford University Press, 1992).

Local governments in most countries make some use of all three types of charges, with the first type (user charge) being the most important financially. The best example in this category is the charging for water supply, the most basic of local government services around the world.

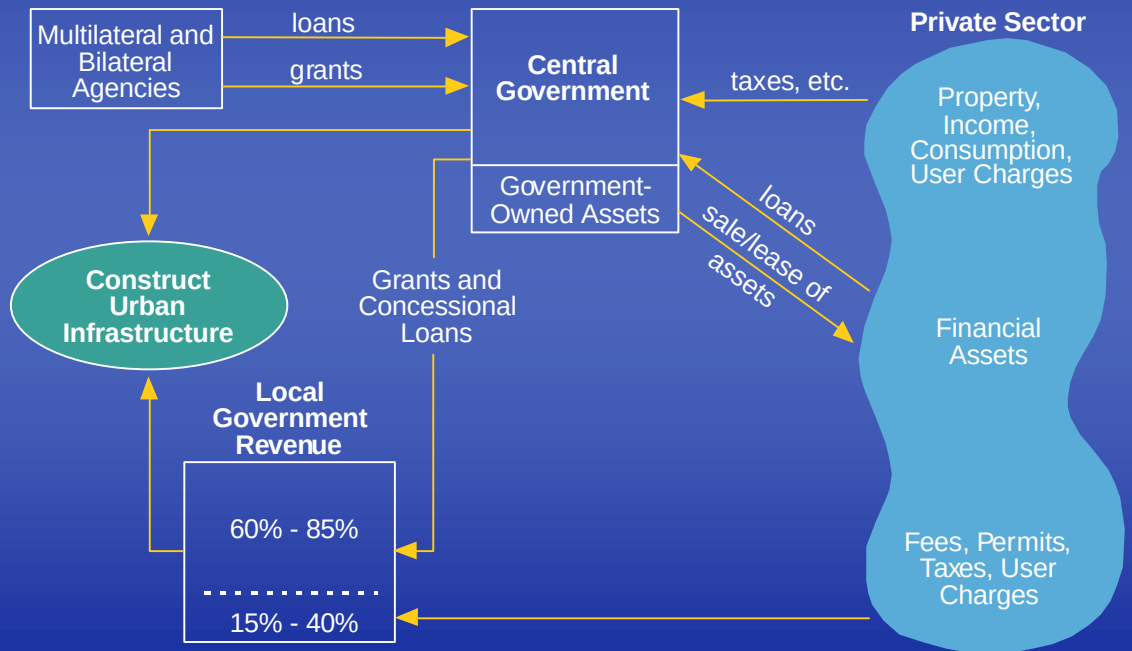
Water supply is often set up as a separate local enterprise to facilitate cost recovery from user charges and to permit the service to be run on a commercial basis. Much of the creation of local water enterprises in Asia has been stimulated by lending agencies who are providing debt financing to the sector. Although the water supply sector is often considered a separate sector apart from local government, it is in fact a basic local service. The following case example from the Philippines illustrates how the local enterprise model works to facilitate cost recovery and sound financial management of water supply services.

User charges are based on a fee for service or a fee for value. The best examples are from water districts. In the Philippines, urban water facilities built in the past by the central government and/or by donor projects were owned and operated by urban local governments which largely were directed by the central government. The central government's Local Water Utilities Administration (LWUA) historically has been responsible for assisting in creating relatively autonomous local water utility administrations in the larger urban areas and increasingly in the middle and smaller urban local governments. There they appear as autonomous authorities with independent boards with local representation, including the local government. All revenue operations are separate from local government budgets. The LWUA retains broad supervisory control, and it is the chief financing source for a water district's expansion.

Long-term Investment Capital Mobilization

Traditional finance for urban infrastructure investments has come from central government direct construction, grants to local governments, and in the last decade concessional loans to local governments from central government financial intermediaries such as the Municipal Development Fund (Philippines), the Regional Development Account (Indonesia), and specialized subsector intermediaries' such as the Local Water Utilities Administration (Philippines). Figure 3 on the following page illustrates traditional financing. Private sector taxes, central government sales or other use of assets (e.g., oil) and multilateral and bilateral loans and grants to central government are the traditional source of finance. These sources reach urban infrastructure projects directly through central government expenditures, and indirectly through grants and subsidized loans to local governments.

Exhibit 3: Traditional Urban Infrastructure Financing (supply driven)



Traditional capital financing systems for urban services share a common approach:urban infrastructure has been financed from central government budgetary resources;[8]

- Generally the urban middle and upper income classes account for most of those who are best served;
- In few cases are the costs of services borne directly by the service consumers; and
- External donor financing as long-term loans to central governments has played a major role in the last two decades in supplying significant proportions of the financing capital.

I define a financing system as the mechanisms by which financial capital (financial assets) accumulated by savers is transferred to implementing agencies who use the financial capital to purchase and construct the physical facilities of an infrastructure project (physical assets)-- a water source development project, a treatment facility, a sanitary landfill, and so forth. Traditionally, central governments have played a key role in obtaining financial assets and directly constructing physical facilities.[9] This is true of European industrialized nations and today's developing and newly industrializing countries. The bulk of the urban infrastructure assets of European cities was built with central government agencies playing a predominant role in providing financing capital. However, privatization of water systems in Great Britain and a greater reliance throughout most of Europe on the private capital markets as the primary source of credit has either reduced central government involvement or transformed it into more of an intermediary between the capital markets and implementing agencies.

State and local governments in the United States, and private entrepreneurs, historically have played a larger financing role than central government than in any other country. Municipal water and sewer systems, transportation and communication networks, and power generation and distribution networks in the United States have been significantly financed by state, local and private parties by comparison with other countries. This is not to say that the U.S. federal government has not had a major role either in financing or in creating incentives for state and local governments and private entrepreneurs. The railroad expansion throughout the U.S. was financed largely by European investors in private business ventures organized by a few wealthy barons, but a, perhaps the, major incentive

[8]The term "central budgetary resources" throughout the paper means funds that flow through the central government budget, are subject to central planning and budget decision processes, and if loan proceeds, remain the obligation of the central government to repay. In some cases, central government decisions to borrow from external sources -- mainly the IBRD and ADB -- have been passed on through subsidiary loan agreements to local authorities without the knowledge or consent of the local authorities. To the extent that the default rate on these subsidiary loans is high, it probably is appropriate to consider them central budgetary resources also (Note: not all subsidiary loan agreements are characterized this way).

[9]By direct construction we mean either by central government public works employees themselves or by contract with private firms for the actual construction activities.

to these barons was the gift of land along either side of the right of way to the entrepreneur willing to build the railroad.

Worldwide, we can describe four generic financing systems. There really are no pure types, so I will describe the major characteristics and illustrate how they serve the function of intermediary between savers and implementers.

- Central government direct access to financing capital
- Local indirect access through a governmental financial intermediary
- Local (provincial, regional, municipal) direct access to financing capital
- Direct private investment in infrastructure

The first two are depicted in Figure 3; the latter two I have labeled transitional, and discuss in subsequent sections.

Intermediaries play a role in all of the four types listed above, so the use of the term direct access is a matter of emphasis rather than a precise definition. For example, when the central government issues bonds on the capital markets (domestic or external or both) to finance the central budget or a central government agency builds a water treatment plant in a city before turning it over to the city for operation and maintenance, I classify that here as central government direct access to financing capital, although in fact the central government may sometimes use the services of financial institutions to obtain the funds (as when a central government borrows from a commercial bank that actually has mobilized the funds from individual savers/investors). I consider it direct access here in the sense that the agency implementing (purchasing materials and labor and constructing the project) is the same agency that obtains the funds from the source of capital.

Central government direct access to financing capital. This is the traditional financing system in most countries as noted at the outset of this section. Central governments worldwide have played the major role in using both their borrowing and their tax capacity to finance urban environmental infrastructure. They have historically financed most of their infrastructure by raising revenues through taxes and by borrowing from both donor agencies and the international capital markets. This was also common in earlier periods in most European industrialized countries.

The central government direct access system has had several advantages:

- Central governments typically have greater taxing authority, so they can raise more revenue through taxes and charges than any other governmental authority;
- Central governments typically have access to the lowest cost capital—they can borrow at less cost either from within the country or on the international capital markets than most other institutions;
- Central governments have made investment allocation decisions that incorporate concerns for regional equity and other, nonmarket criteria.

Against these advantages have been advanced several critical arguments that suggest that having central governments as both the institution to access financing capital and to implement infrastructure investments does not make the best financing system:

- Central governments are not efficient at identifying real demand for infrastructure and investing in the quantity and quality of services consumers actually want;
- Central governments are captives of middle and upper income classes and in fact have built systems that cater to their needs while not requiring consumers who can afford to pay to meet the actual cost of service;
- Infrastructure systems designed, financed and built by central governments and turned over to local institutions for operation and maintenance have not been well maintained, and so the realized value of the assets is far below its designed value.

In all countries, the direct central government financing system is not adequate to meet all needs in that the central taxing and borrowing authority is simply not sufficient to meet the level of investments required.

Local indirect access to financing capital through a financial intermediary.[10] The most common financing system in European industrialized countries and the system being explored in many developing countries is local implementing institutions borrowing from financial intermediaries. Two forms exist:

- Local governments or local enterprises borrowing from commercial banks, which may be privately owned or government-owned commercial banks;
- Local governments or local enterprises borrowing from special purpose financial intermediaries, established specifically for municipal or other development finance lending.

Most local governments borrow at some time or another from commercial deposit banks, most often for short term needs such as line of credit borrowing to cover timing differences between when local revenues are acquired and local expenditure obligations must be met. Some commercial banks also lend longer-term to local authorities to finance capital purchases or construction. However, few commercial banks are willing to lend to municipalities for any longer term than to any other commercial borrowers, typically five to ten years even in countries with well-established commercial banking systems. Commercial investment banks and merchant banks in countries with well-developed banking systems are more likely than deposit banks to lend on a five or more year basis because the structure of their own liabilities (the period in which they are likely to have to pay out funds) is typically longer than deposit banks whose liabilities include many demand deposits that could be called any time. Commercial banks without special systems being put in place to encourage long-term lending to local authorities are not likely to be a major source of financing capital for long-term infrastructure financing.

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[10]Material in this subsection was first published in Johnson, Ronald W. "Asia Urban Environmental Infrastructure Financing," Prepared for Workshop on Urban Environmental Infrastructure Financing Systems, Calcutta, India, April 5-7, 1995.

More common are either special financial institutions created explicitly for long-term lending or systems created to help long-term lending by commercial financial institutions. Development finance corporations, municipal loan funds or municipal lending accounts, and communal or municipally-owned banks are typical examples of special purpose financial institutions. Many developing countries have, or have had at one time, some form of local authority development or loan fund. Some have been allowed to become inactive, as the Local Authorities Loan Fund of Malawi; some have been created with external development agency financing explicitly to channel loan funds to local authorities.

The Municipal Development Loan Fund of the Philippines and the Regional Development Account of Indonesia are two examples of loan funds established to provide credit to local authorities. In addition, other central government owned financial institutions also lend to local authorities as part of their financial activities. The Development Bank of the Philippines, the Housing and Urban Development Corporation of India, the National Housing Development Agency of Sri Lanka, and provincial (regional) development banks in Indonesia are examples of development finance institutions not focused specifically on municipal infrastructure projects but that do lend to municipalities.

Some municipal development loan funds (or accounts) are intended to operate as essentially commercial financial institutions. They are established often with initial capitalization coming as central government budget transfers and donor agency loans. Where the central government retains the obligation to repay the donor loan, as in the Philippines' Municipal Development Agency and Indonesia's Regional Development Account, the initial capitalization allows loan repayments to be retained for future lending and the Fund to become a revolving fund. We use the word may in both the Philippines and Indonesia examples in that the Department of Finance in the Philippines is still considering the question of whether the loan repayments from municipalities should be retained in the future for further lending or should be used by central government to repay the external donor loans coming due. Similarly, some donor loans that Indonesia has borrowed to finance local infrastructure have become subsidiary loans to local authorities whereas repayments by local authorities of other loans may reflow into the Regional Development Account for further relending.

Other municipal loan funds have not been operated as commercially viable lending institutions. They have typically lent to local authorities at rates below the cost of capital and have been very forgiving with respecting to rescheduling loan repayments or even canceling debt owed by local authorities. The Municipal Development Fund of Thailand seems to operate in this category with local authorities either forgiven debt or allowed to postpone, sometimes indefinitely, repayments. Municipal loan funds commonly begin by lending at below market rates and then become more commercially-oriented over time. Indonesia's Regional Development Account is an example.

The role of the explicitly created municipal lending institution is to serve as an intermediary between the local authority needing financing and the domestic and/or

international capital market. In the municipal development loan funds established with central government budgetary resources and donor agency financing, there are multiple tiers of intermediation. The IBRD, for example, serves as an intermediary securing financing on the world capital market and lending to sovereign governments. The sovereign government in turn lends or assigns the loan to the municipal development agency that is the municipality's financial intermediary. In long-established municipal financial intermediaries in industrialized Europe and in the United States, there normally is not a tiered structure of intermediation. The municipal lending agency secures capital in various ways, such as borrowing from investment institutions or directly from the private market through issuing bonds or other debentures and lends to local authorities at typically a full cost-of-capital rate.

Several variations on municipal financial intermediary institutions exist. Some are in fact owned by municipal and provincial authorities themselves. This is the case in which communal banks set up to serve as full service banks to local authorities have become the primary means by which municipalities access indirectly long-term financing from the capital market. Others have been set up by national governments, or in several cases in the United States by state governments, to help local authorities secure financing from the capital markets. Table 1 characterizes four types of ownership and management structure for municipal financial intermediaries found in various developed and developing countries.

Credit Communal de Belgique (CCB) and Caisse des Depots et Consignations (CDC) in Belgium and France, respectively, are two of the oldest municipal lending facilities in the world. Both operate as banking institutions, generally subject to their countries' banking regulations, accepting demand deposits from individuals and/or institutions, and usually raising capital through normal banking operations. A variety of ownership structures are possible, including a wholly-owned state bank, a bank with local governments as owners and shareholders, or some combination of central and local ownership. Long-term loans may be at full market terms for some of these institutions; others may be below full commercial rates if the institution enjoys tax-free status or if it is perceived by investors as less risky than other investment options.

Table 1. Financial Intermediaries

Institution	Ownership/Management Structure	Source of Capitalization
1. Banking Institution		
Credit Communal de Belgique (CCB) (Belgium)	Shareholders (provincial and municipal government)	Private demand deposits from individuals (savings bank)
Caisse des Depots et Consignations (CDC) (France)	State-owned banks	Deposits from public and social institutions, tax-exempt savings accounts
2. Bond Banks		
Various state governments (United States)	State government institution	Borrowing requirements packaged for individual local governments and authorities; bond issues
Danish Credit Institution for Local Authorities (Denmark)	Provincial and local membership cooperative	Individual loans financed with specific issues
3. Rediscount Facilities		
Financiera de Desarrollo Territorial (FINDETER) (Colombia)	Autonomous financial institution supervised by Ministry of Finance	Donor loans to central government, central budget
4. Loan Funds		
Public Works Loan Board (PWLB) (United Kingdom)	Independent agency	Funded from central government (mainly bonds issued to support PWLB)
State infrastructure revolving funds (several states in United States)	Varies from units of state agencies to autonomous institutions	Funded from federal grants, state bond issues
Local Authorities Loan Fund (Malawi, under consideration)	Public and private commercial bank/Board of Directors	Local authority deposits, donor loans and grants, relending on market terms

Sources:

Alternatives for Local Authority Financial Intermediation: A Comparative Analysis with Applications in Turkey (Washington, DC: Europe and Central Asia Infrastructure, World Bank, 1992); Municipal Development Sector Review: Decentralization and its Impact for Urban Service Delivery (Washington, DC: Urban Development Division, World Bank, 1993); author's field work/interviews.

CCB was founded in 1860; it is wholly-owned by provincial and local authorities. Besides providing long-term loans to municipalities, it also channels central government grant assistance to local authorities. It is a full-service commercial bank in that it operates as a normal banking facility for municipalities. All local authority borrowers in Belgium borrow at the same rate from the CCB. In other words, each municipality in effect is rated as equal to the pooled credit risk of all municipalities in Belgium. CCB issues its own bonds on the capital market to generate funds for its lending operations, in addition of course to using its deposit capital. Full cost of capital and administrative costs of the CCB's operation is reflected in the interest charges to municipal borrowers.

A second category illustrated by various state governments in the United States and the Danish Credit Institution for Local Authorities is the bond bank. Generally not truly a bank, these institutions exist as units within state government agencies and as member owned institutions. They differ from CCB and CDC in that they do not maintain financial assets and then engage in lending operations. They package borrowing requirements from one or more municipalities and then go to the capital markets to secure financing. The interest rate and terms charged the individual or group of municipalities then depends on what the bond bank has secured on that particular foray into the capital market.

Generally, local governments submit applications to the bond bank; the bond bank packages several borrowers' requirements, and offers a single bond issue to cover the needs of several borrowers. Whereas the municipal banks such as CCB use capital generated in a variety of ways to make long-term loans to local governments, bond banks ease access to bond financing without the local government having to issue the bonds. In the United States, state bond banks have usually been established to help smaller, higher risk municipal borrowers obtain bond financing. Larger cities in those states can usually do as well, or better, with their own bond issues.

A third category, illustrated by Financiera de Desarollo Territorial (FINDETER) of Colombia is unique. It is something like a rediscount facility. Instead of direct lending to municipalities, FINDETER rediscounts up to 85% of commercial banks' loans to municipalities. Commercial financial institutions typically are not interested in lending for long-term projects, whereas municipal infrastructure projects require long-term financing. FINDETER brings commercial financial intermediaries into the picture through the rediscount facility. Once a financial institution makes a long term loan, FINDETER will "purchase" (rediscount) up to 85% of the institution's loan to the municipality, enabling the commercial bank to have access again to most of the capital tied up in the long-term loan. The municipality repays the commercial institution, and the commercial institution repays FINDETER at a discounted interest rate.

The commercial institution's profit is generated from the spread between the borrower's interest and FINDETER's charges, and also from the other uses to which the capital made available by the rediscount operation. The municipality has access to credit, at interest rates that are commercially viable for the lender, that it otherwise would not have had

because of the unwillingness of commercial lenders to tie up their capital for the length of time required by infrastructure projects.

FINDETER's main capitalization sources have been bond issues sold to commercial banks, central budget allocations, donor loans and loan repayments. Loan reflows are now the main source of lending capital; central budget allocations have not been featured since the 1970s. FINDETER originated as a revolving fund in the central mortgage bank. As a rediscount operation it is relatively new. However, the loan repayment history by municipal borrowers under the predecessor Fondo Financiero de Desarollo Urbano (FFDU) is excellent.

FINDETER is a more specific example of a financing system that uses incentives designed to encourage commercial banks to participate in long-term lending. Commercial banks in all but highly developed capital markets have difficulty lending long-term for municipal infrastructure projects. Commercial banks' capital comes mainly from deposits and from loans secured from other institutions, including central banks. Most of the commercial bank's capital is potentially required to meet the short-term requirements of its borrowers. If the commercial bank lends long-term, say twenty years, it runs the risk of having its capital tied up when it is needed to meet the demands of its depositors, or its creditors. In a highly developed capital market, the commercial bank can assume that it will be able to secure capital to meet current requirements in various ways, and it can lend long-term knowing that it can secure funds from capital market sources as needed. In a developing capital market, commercial banks do not have that assurance. FINDETER is one means of lengthening the term at which commercial banks can lend by assuring them of a means to sell at least 85 percent of their long-term municipal loans to FINDETER.

The fourth category is illustrated by state infrastructure revolving funds in several of the United States, the Public Works Loan Board in the United Kingdom, and other developing country municipal funds. These institutions operate as conduits for funds from a variety of sources to be on-lent to local governments or local public enterprises. Repayments from the initial loans and grants become the main source of future capital, although additional infusions of funds are common. In the United States, these funds have been designed to mix loans and grants together in a common pool to be on-lent to municipalities. Primarily used for wastewater financing after U.S. central government grant programs were cut, they typically lend below market rates of interest, although commonly the rates are comparable to highly rated municipal bond issues.

Some revolving funds operate simply by on-lending to local authorities from the capital provided initially by central and/or state budgetary resources. By on-lending as opposed to grants, the local authorities' repayments continue to capitalize future loans. Some U.S. state revolving funds, such as New York State's Environmental Facilities Corporation, use its capitalization from federal grants and state matching funds as security against bonds issued by New York municipalities for environmental infrastructure investments. These bonds, with the EFC's capital security pledge, can be sold at much lower interest rates

than the New York municipalities might otherwise secure if they went alone to the capital market without the EFC's security pledge.

All four illustrated types of intermediaries serve the same purpose—to channel private, commercial capital otherwise unavailable to long-term municipal infrastructure projects into those projects. All four types are structured to use the credit capacity of a larger governmental institution, such as the central government or state governments, to secure financing from the private sector at terms more favorable than otherwise would be available to individual local governments. These more favorable terms result in loans for individual infrastructure projects that are more favorable to the municipal borrowers than the municipalities themselves could otherwise secure.

One can look at these intermediary operations in two ways. One view is that the terms municipal borrowers can secure through the operations of an intermediary are subsidized compared with what the municipality otherwise could secure. Where the intermediary uses its own budgetary resources (central government, state or regional government taxes) to lower the financing cost to the local authority, we consider it a subsidy. The intermediary secures capital from various sources and repays that capital only partly through repayments from the ultimate municipal borrowers and partly from general revenue sources such as taxes.

The other case, however, is one in which the intermediary is required to operate solely within its own operations without free capital infusions from central government or other sources. Here, the financial intermediary must lend to municipalities at terms that are sufficient to generate the capital necessary to sustain the intermediary. Terms offered municipal borrowers still should be less than the local authorities could obtain on their own, but no revenues external to the intermediary are used to subsidize the terms to the municipal borrowers. The better terms depend on the intermediary's access to capital in larger blocks than any one infrastructure project and to spreading the risks among more borrowers. The perceived risks to those providing capital to the intermediary are lower.

Financial intermediaries' general advantage is this greater access to capital, and at lower cost, than individual local authorities can secure. This advantage holds if the individual municipal borrower is not perceived as a better, or at least equal, credit risk as the intermediary. This condition prevails in most developing countries and emerging market countries because local governments and enterprises do not have any established credit record. Financial investors then are likely to demand a higher risk premium from local authority borrowers than from a central government institution, or a financial intermediary with significant amounts of secured capital or other backing. However, some larger cities even in emerging markets may have sufficient worldwide recognition to enable them direct access to the market. That indeed was Prague's analysis of their situation, confirmed by the ease with which they sold their bonds, although remember that the bonds were short-term (five year) bonds and not long-term financing.

The potential disadvantage to intermediaries is that they may add a cost layer onto the debt secured by the local authority. Unless the central government absorbs the administrative cost of operating the intermediary, borrowing costs to the local authority will include the costs of operation. If the intermediary is allowed to act as a monopoly source of credit, as most central government intermediaries are, there are fewer incentives to efficient operation, and staff may multiply beyond what a competitive market-based intermediary might employ. It depends on the state of the capital market in each country at a point in time; it also depends on the structure and operating requirements of the intermediary; and it depends on the incentives for efficient operation. In the long-run one could argue that intermediaries add cost to the transaction because they stand between the borrower and the saver/investors.[11]

The argument that direct access will mean lower borrowing costs holds only in the circumstance in which saver/investors have sufficient information about their investment opportunities and the risk/returns from those opportunities such that they do not need intermediaries to help in that role. The U.S. provides some evidence that as the municipal bond market has matured, the prices bid for municipal bonds, controlling for more general market conditions, has dropped. When municipal bonds were purchased mainly on a local and state market, borrowers paid higher rates, and the buyers were mainly institutional investors, such as commercial banks who in effect are intermediaries between municipal borrowers and saver/investors. Since the emergence of a national market due to the spread of information technology and the development of the national bond insurance business, individual investors have readier access to direct information. Individuals and individual funds managers (mutual funds) now hold 75 percent of the municipal bonds issued in the U.S.. Institutional investors such as banks and insurance companies own less than 25 percent. This suggests that U.S. municipal borrowers are paying less and less cost for long-term financing, all borrowing and transactions' costs included, than they did in earlier times, controlling for other market changes.[12]

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[11]There is evidence that world financial markets are becoming sufficiently integrated that the role of the intermediary could be declining. McKinsey and Co. predicts that . . . world financial assets will rise from $35 trillion in 1992 to $83 trillion ($53 trillion in 1992 prices) by 2000.The McKinsey study notes that better communications, easier movement of capital across borders, and more accessible means for individual investors to place their capital directly in investments around the world reduce the opportunity for profit in intermediation. In addition, existing intermediaries increasingly will find more competition which even with continued roles for intermediaries will mean lower spreads earned by the intermediary. *The Economist*, 5 November 1994, p 16.

[12]Information on the changes in the U.S. municipal bond market come from Peter Wong, The U.S. Municipal Bond Market: Historical Overview with an Emphasis on the Municipal Bond Insurance Industry, consultant to Technical Support Services, prepared for the United States Agency for International Development, Bangkok, Thailand, January 25, 1995, and conversations with Peter Wong.

Transitional Financing Systems

Figure 4 illustrates transitional urban infrastructure financing systems. In comparing transitional with traditional, the local government assumes a more direct responsibility, directly accessing the private capital market by borrowing and seeking private direct investment in urban services. In transitional systems, there is still likely to be a role for specialized financial intermediaries. An important difference, however, is that these intermediaries may raise most of their capital themselves by going directly to the capital market rather than relying on central government and donor capital. Municipal financial intermediaries in Asia have not yet reached the stage of going directly to the capital market. However, individual local governments and local enterprises (e.g., water authorities) are beginning to issue long-term bonds.

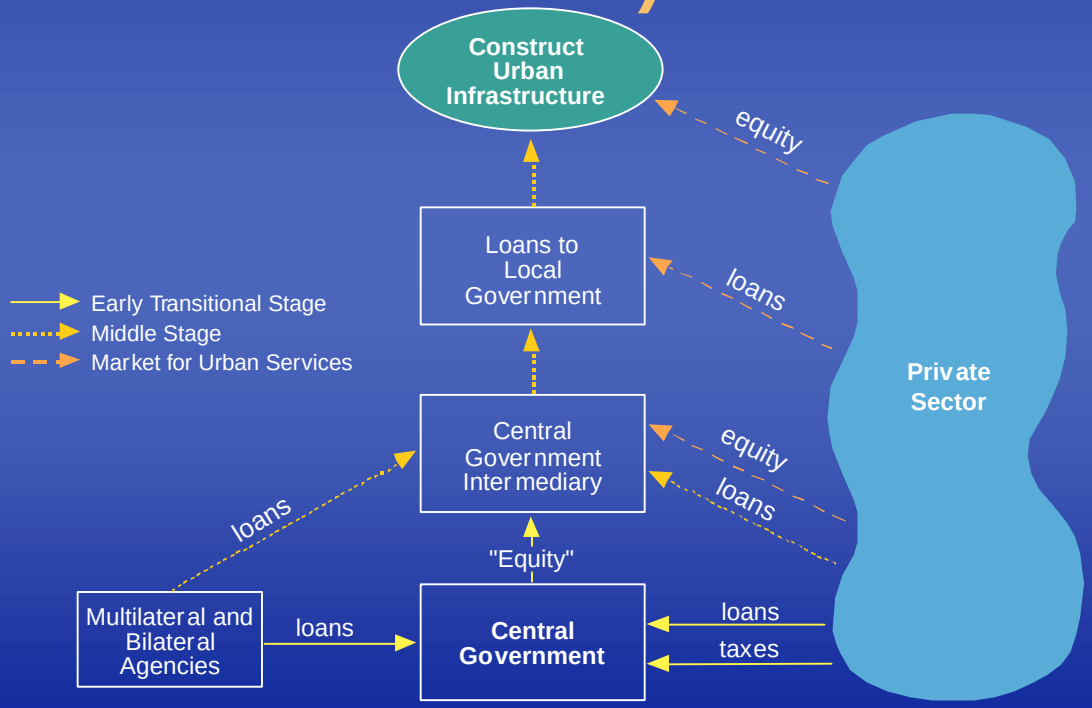
Local direct access to financing capital

Local authority direct access to capital can mean either a direct relationship between the local government or local enterprise, such as a water enterprise, and saver/investors, or it can mean a facilitated access to saver/investors in the capital market. In the former, a local authority may issue a debt instrument, typically called a municipal bond, for sale directly to saver/investors.

In the United States, about one-third of municipal bonds are private placements or negotiated sales, meaning the local issuing government negotiates directly with one or more financial investors for the purchase of the municipality's bonds. In facilitated direct access to saver/investors, the local authority engages an underwriter who places the bond for sale for the issuer. The underwriter may or may not be an investor in the bond; that is, the underwriter may retain part of the bond issue as part of its own investment portfolio and sell to other investors the other part, or the underwriter may act as the agent without retaining any of the bond issue. In facilitated direct access, there is no direct negotiation between the local authority and saver/investors, but it is nevertheless a form of direct access in that the local government is obtaining funds through the capital market with no central government, state or regional government or other agency performing an initial capital accumulation role.

While direct access by local implementing authorities to the sources of finance in the capital market is the primary means of infrastructure finance in the U.S., it is hardly the only means. European cities of varying sizes borrowed directly through bond sales or loans from commercial banks throughout this century. Several Polish cities issued bonds on the U.S. capital market in the 1920s. Recently, Prague, the capital city of the Czech Republic, issued a five year bond on the international capital market. Prague engaged Standard and Poors to assess the city's credit standing—it was rated investment grade quality, B—and the issue was fully subscribed before the actual date of issue.

Exhibit 4: Transitional Urban Infrastructure Financing (demand driven)



Getting market conditions right for individual bond issues in emerging markets is proving difficult, but viable. While there has been considerable effort in countries like the Philippines and Indonesia, lack of experience with capital markets and general capital market conditions have impeded finalizing individual municipal bond issues. On the other hand, individual city bond issues have rapidly developed in eastern Europe (see Box 3).

Box 3. Bond Deals in Asia and Eastern Europe

In the Philippines, considerable effort has been devoted to developing a few municipal bond issues, with so far limited success. Cebu Province successfully issued a bond to construct a commercial facility – the bond is convertible to equity ownership in the facility. The bond was fully subscribed, but has come in for subsequent criticism as "too good" a deal for the investors and not such a good arrangement for the province. Two water authorities in Indonesia have been on the verge of issuing revenue bonds to finance water treatment plant and distribution expansion and improvements. One has reached the stage of contract signing with an underwriter, after a competitive bidding process with several potential underwriters. Underwriting fees seem to be approaching 4 to 5 percent, considerably above such fees in fully developed capital markets. Polish municipalities have proceeded at a much faster pace. At least half a dozen municipal bonds have been issued or are being underwritten as of the middle of 1997. Polish financial institutions are less tightly regulated by central government than those in most of Asia, and they have been eager to participate in the development of the municipal bond market.

Direct access to the capital market has several advantages:

- If the local authority is perceived as a good credit risk—is perceived as a good investment—it can be the least expensive form of credit in that it avoids some intermediary charges, although other costs associated with bond issuance could offset this advantage (see disadvantages below);
- In a well-developed capital market, the issuing local authority has access to funds from a broad and deep pool of savers/investors, making it more likely that the issuing local authority can choose the timing of the issue without regard to the particular portfolio investment needs of specific lenders; i.e., the issuing local authority is not as dependent on a small subset of potential lenders/investors;

There also can be several disadvantages to direct access to the capital market:

If the local issuing authority is not perceived as a good credit risk, a common constraint to local authorities in developing countries who have no established credit histories based on previous borrowing, the local authority probably cannot attract investors to the debt issue

at all, or may be only able to attract investors at a premium well above commercial borrowing rates;[13]

- If the capital market is not both broad and deep, a sufficient pool of investment capital is unlikely to be available for the large, long-term financing requirements of major infrastructure projects.
- A typical local government bond issue includes several costs or fees to the borrower besides the market rate of interest the issuer can obtain;
- If an underwriter is engaged, they will charge a fee usually as 50 to 100 basis points (one-half to one percent) on the issue;
- Independent bond attorneys typically must be engaged, for a fee, to give a legal opinion on the statutory or constitutional authority of the issuing local institution to incur debt;

Bond insurance is an additional cost, usually priced at 30 to 40 basis points;[14]

Whether direct access to the capital market through sales of municipal debt instruments is more or less costly than indirect access through commercial financial institutions is an empirical question. Municipalities in the United States have access to cheaper credit because the interest earned by investors in municipal bonds issued for public purposes is exempt from federal income taxes, and within the issuing state from state income taxes for those states with income taxes. Systemic costs have to be captured by any financing system, and these costs in one form or another are passed on to the borrower as fees and interest charges. For a financing system based on direct access to the capital market by the local authorities implementing infrastructure projects, the capital markets themselves have to meet several characteristics:

- Saver/investors must have sufficient information about the creditworthiness of the borrowing institution to be able to offer an interest rate (or buy the debt at the proffered asking price) that provides an acceptable risk/return relationship. The less information available, the more likely the saver/investor will demand a higher interest rate. In the U.S., rather than investors actually evaluating directly the credit characteristics of the municipal bond issuer, investors rely on either or both credit ratings from such institutions as Standard and Poors or Moody's or the issuer's purchase of bond insurance;
- There must be a sufficiently large base of investment capital held by savers/investors that seek a long-term investment (fifteen or more years) -- i.e., saver/investors who are willing to tie up their capital for the length of time typically required by a major infrastructure investment. Alternatively, the capital

[13]This is the counterpart to the advantage central governments have in access to credit in that they often, except in the case of a severely indebted country, are perceived as a best credit risk and therefore have access to the best commercial terms.

[14]This could be listed as an advantage as well as a disadvantage. For a municipality with a low credit rating, the cost of bond insurance, which gives the municipality access to credit at the lowest commercial cost, is likely to be more than offset by the interest savings. For a municipality with a very good credit rating, bond insurance does not yield any benefit.

market must have a sufficiently well developed trading system in which the saver/investors have confidence that they can sell their long-term debt holdings to other saver/investors, thus allowing them to reobtain their invested funds for other purposes before the long-term debt matures. The secondary market in debt instruments serves this purpose in the U.S..

- There must be a clearinghouse system by which saver/investors and municipal debt issuers find each other. Private placements or negotiated sales, where the municipal debt issuer seeks one or more specific investors directly, can work for specific issues, but can make the transaction costs higher to the borrower by limiting the competition among investors. From the 1940s to the 1970s, commercial banks, usually local banks in the issuing jurisdiction or banks in the state of the issuer purchased almost 50 percent of the bonds issued. Since the 1980s, advances in electronic transactions have made information widely available across the country and underwriters and mutual funds make purchases for individual saver/investors on a national market; commercial banks now purchase less than 10 percent of municipal bonds.

Direct Private Investment in Infrastructure

The second transitional model for financing urban environmental infrastructure is through direct private investment. Various specific contractual arrangements have been implemented, or discussed, to involve private companies to provide the investment capital, construction implementation, and operating expertise. Although many variations produce many acronyms, I generally in this paper refer to concession contracts, build-own-operate (BOO), and build-own-transfer (BOT) arrangements. In all three cases, some investment capital is provided by a private company or consortium, that investment capital builds or improves an infrastructure facility, and the private group operates the facility at least for a specified period. These direct private investments contrast with the turnkey contract in which the private company may provide initial construction financing, but the government (central or local) operating agency pays the contractor in full during and/or after construction completion. Therefore, the operating agency must obtain the financing capital to pay off the turnkey contract.

There are a growing number of concession and BOT/BOO contracts. Success in the BOT type contract has been greatest in the power sector and toll road construction, although there now are several ultra-large water and wastewater projects around the world. Buenos Aires, Argentina, was the first major water and wastewater concession contract (see Box 4).

Box 4: Beunos Aires Water and Wastewater Concession.

An international consortium led by Lyonnaise des Eaux was awarded in 1993 a contract to run the Buenos Aires water and wastewater service (the federal capital and fourteen districts) for a period of 30 years. The consortium initial equity capital was $120 million. To date (1993-mid 1997), the consortium has invested approximately $1 billion in system expansion and improvements. 1996 income was approximately 13 percent (approximately 58 million on billings of approximately 377 million). Over the 30 year concession period, estimates vary from $3.5 to $4.0 billion in investments that will be required, almost entirely via debt financing. The concession contract was awarded on the basis of initial water tariff proposed by bidders, and escalation clauses proposed. In the Buenos Aires case, operating inefficiency was so prevalent prior to the private concession contract that the concessionaire has been able to provide water at user charges that are 17 percent lower than the previous public tariff, despite at least two tariff increases since the contract period began.

Aguas Argentinas to invest 240 Mln Pesos in 1997, *Wall Street Journal Interactive Edition*, 23 July 1997, and D. Rivera, *Private Sector Participation in the Water Supply and Wastewater Sector: Lessons from Six Developing Countries*, (Washington, D.C.: World Bank, 1996).

Private firms and consortia have collaborated to build several power generating stations in the Philippines and elsewhere, and private construction and operation of toll roads have occurred in Indonesia, India, Mexico and many other countries. BOT investments in water supply have occurred in Malaysia, and are being discussed widely throughout much of Asia, but few have come to fruition. The success of the Buenos Aires water concession has led to the proliferation of concession type contracts instead, with private concessionaires responsible for both management of the entire system as well as major private capital investments. Cancun, Mexico, Gdansk, Poland, and Santiago, Chile are other examples of completed concession contracts. The Metropolitan Manila Water system is undergoing concession contracting, and Jakarata, Indonesia is the most recently completed major concession arrangement in water and wastewater (see Box 5).

Box 5. Two Concession Contracts for the Jakarta Area Water System.

Lyonnaise des Eaux with a 40 percent stake and the Indonesian Salim group were awarded a 25 year concession contract for water supply and distribution for the western half of Jakarta and Thames Water and PT Keparpola Airindo were awarded the concession contract for the eastern half of Jakarta, also for 25 years. Both contracts allow the concessionaires control over capital assets, staff and all other operational aspects for the 25 year concession period, and both require the concessionaires to make direct capital investments in rehabilitation and new assets. In the eastern Jakarta contract, those capital investments will be approximately 160 million British pounds in the first five years. In the western Jakarta contract, capital investments are expected to be approximately $300 million in the first five years.

***Wall Street Journal Interactive Edition*, June 6, 1967.**

It is probably inappropriate to speak of a standard BOT/BOO or concession contract as each has unique features designed to fit the particular project and the particular private owner/operator. Most, however, share some things in common. Successful BOTs tend to be projects in which a divisible product or service can be produced and potential consumers can be excluded from enjoying the benefits. Power generation has been successful in part because private owner/operators have built a facility, provide a contracted amount of electricity generation to the grid, and receive an agreed upon schedule of prices with provisions for future price changes fully listed. The private owner/operator is easily able to control access to the power generated by the station and can identify the units produced and the cost of service. Toll roads also have limited access and are under the control of the owner/operator. Power generation also has been successful because BOT contracts typically have been negotiated in countries experiencing severe power shortages, as in the Philippines, and people have shown great willingness to pay the full cost of electricity. Demand for electricity has been easy to predict, or at least to predict that the demand is equal to or greater than the capacity being built under the BOT contract.

Toll roads have been less successful, mainly in that some toll roads have been built with estimates of demand higher than actually realized after opening. There is no doubt of consumer willingness to pay for the privilege of driving on less congested toll roads, but demand has been less than expected in some projects. In some cases this has caused not failure but a longer payout period for the investor to recover the equity investment. In Mexico, the central government has had to takeover 23 of 52 privately built and run toll roads. Estimates for the cost to the central government of the takeover of failed toll roads run as high as $7 billion.[15]

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[15] J. Millman, Mexican Government Rescures Ailing Private Toll Roads, *Wall Street Journal Interactive Edition*, 25 August 1997.

Water supply projects generally have been more difficult, with the exception of the large metropolitan concession contracts. Overall, of what the World Bank estimates as $80 billion in infrastructure investments in East Asia in the mid-1990s, only about $5 billion was in direct private equity investments, $3 billion of that in two power projects.[16] There may be several reasons for this. Household consumers in emerging market countries, even middle and upper income households, are accustomed to paying subsidized prices for residential water use. Where water rates are increased, lacking regulation (and enforcement) preventing it, residential and commercial consumers in some settings have resorted to developing their own individual wells. A BOT contract of course imposes full commercial costs on the purchasing party, and so far there have been few instances of local water authorities being able or willing to pay the cost per unit required by the BOT contract proposed. Typical water projects that have been discussed are usually the development of a source supply in which the BOT contractor can sell bulk water, much as in power contracts, to a single entity—the local government, the local water authority, or even a national water authority. This frees the BOT contractor from concerns about water loss to illegal taps and from collecting fees from individual consumers who are reluctant to pay the full commercial costs.

Possibly water supply projects have been slower to develop than power also because the demand is not as critical as in power. Often there still are alternate sources of ground water or surface water, whether it is as safe a source or not. In addition, demand estimates for water have often been overestimated, based either on a nationally defined standard of so many units of water per person per day or on current water supplied per consumer to the system. The former, national standards, typically have been higher than actual consumption in industrialized country cities where consumers pay the full costs. The latter are inflated by water loss due to poorly maintained lines, illegal taps, and failure to pay by some consumers. A BOT consortium enters a water supply project with many unknowns and risks, apart from conventional engineering and construction risks, and the inability so far to reduce these risks to a manageable level probably accounts for the slowness with which direct private investment in water supply has developed.

Where private water investment has been successful has been with mainly commercial users. Water enclaves where private developers—typically of tourist facilities and industrial estates—finance and install their own water and sewerage are common throughout the developing world. These are sometimes regulated by governmental agencies with environmental protective features such as reducing impact on ground water sources built in or not. In addition, some commercial enclaves also supply water to a small segment of residences in the immediate vicinity.

Direct private investments in sewage treatment facilities, except for similar commercial enclaves as in water, are almost nonexistent. Nowhere in the world have sewerage

[16] E. Thornton, Problematic Panacea: Build - operate - transfer Deals Remain Stalled Across Asia, *Far Eastern Economic Review*, 2 January 1997, p. 126.

facilities been operated regularly on a fully commercial basis, including the United States and industrialized Europe.[17] Wastewater treatment is a service harder to meet the terms of excludability and divisibility. Individual evaders/polluters nevertheless can benefit from the efforts of others to reduce contamination of waterways from untreated sewage. In addition, unit amounts of sewage created are harder to define and measure, although there is a strong correlation between water use and sewage created in that the volumes of both are highly correlated. However, the types of effluent released into the system can vary considerably between households and industry, so the definition and measurement of a unit of sewage are much more complicated than the definition and measurement of a unit of potable water. In more industrialized countries, sewerage facilities now typically are part of water supply provision, and full cost recovery financing is increasingly common. However, current full cost recovery for new construction is on top of a base of physical facilities—drainage lines and treatment facilities—that have been significantly financed from central government grant financing. Malaysia is now privatizing, on a national basis, its wastewater collection and treatment system.

The opportunity exists for direct private investment in wastewater treatment, but it is likely only under direct contract with a water and/or wastewater authority whose means of meeting a BOT or concession contract payment comes from both consumer charges and other sources of indirect revenues. It is important to emphasize direct private investment does not have to be linked to full cost recovery from individual consumers of the service. Direct private investment may be the source of the financing capital and the operations management expertise. This frees the governmental authority from the necessity of raising the capital and it gains the benefits of specialized management and operations expertise. The means by which the governmental authority chooses to meet the long-term payout of the BOT contract can vary.

The most extensive public service to benefit from direct private investment in both developed and developing countries has been solid waste collection and disposal. The entry costs of capital for collection vehicles are well within the capacity of many private companies, in contrast to the capital cost of water and wastewater facilities. Operation of disposal facilities such as sanitary landfills restricts the number of potential private investors because the capital costs are higher, but the number still is large. Perhaps the greatest barrier so far to extensive private investment in solid waste collection and disposal has been intransigence of local authorities to relinquish control, or labor laws that prevent a local authority from dismissing the workforce no longer needed, and reluctance of a private operator to take on the usually bloated labor force.

Direct private investment when it can be negotiated clearly has the key advantage of not requiring any financing capital from the public sector, whatever the source. Direct private investment in infrastructure means the governmental authority has to pay the financing

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[17] James S. McCullough, David H. Moreau and Brenda L. Linton, *Financing Wastewater Services in Developing Countries*, U.S. Agency for International Development, Water and Sanitation for Health Project (WASH Technical Report No. 80), October, 1993.

costs, through the contract with the private investor, just as it would have to pay the financing costs if it were building and operating the facility itself. In addition, the public authority through the BOT or concession contract obviously also has to pay a profit margin to the private owner/operator or concessionaire. Some would argue that the efficiencies gained by using the specialized expertise of private owner/operators and the incentive to efficiency produced by competition for the contract make the overall cost of direct private investment and operation lower than the overall cost of public investment and operation. Others would argue that the advantage the public sector has in lower cost of capital outweighs the benefits of private investment/operation As with direct access to capital markets versus financial intermediaries, it cannot be resolved deductively. It is an empirical question whether a private entrepreneur can in a specific situation secure investment capital and operate an infrastructure facility more or less efficiently than a public sector agency.

STRATEGIC DIRECTIONS AND LESSONS LEARNED

In this concluding section, I draw out the implications of the preceding sections, and become frankly speculative. As discussed in the introductory material, urbanization proceeded at a relatively modest pace in this century, compared with the urban growth rates expected for the next twenty-five years. I labeled this early in the paper as a sea change. If it truly is a change to what has yet to be experienced, then we cannot know with any certainty how cities and nations will govern themselves. But it is worth speculating in order to increase the policy debate and the invention that already is ongoing shaping the next century's cities.

In the 21st century competitive environment for the city, urban functions which largely have been devolved to local governments by default or design will no longer be subject to the guidance and direction of central governments. For the last decade and a half, the focus has been on what central governments will, or will not devolve to local governments, and what revenue sources central governments will, or will not permit local governments, or what transfers central will make to local. Over the next decade, the critical dimension will be the development of debt and equity financing mechanisms that local governments can access to finance infrastructure, and the development of effective financial management capacity in those local governments.

For South Africa, the challenges are large. The infrastructure investment needs are obvious; the mechanisms for financing are at an early stage. What is important for South Africa to capture is the development of a complete system of financing. To be seduced by exaggerated claims for either private equity or debt financing as the "best" solution likely will retard the development of solutions. Exhibit 5 illustrates where I see the major opportunities for improvement.

Exhibit 5 summarizes the urban finance and management features most susceptible and most necessary to being improved. The figure indicates five areas:

1. Central government financial intermediaries should begin attracting capital from the private capital market rather than relying on central government and donors;

2. Securitizing revenue streams from existing central government intermediary portfolios is an opportunity for private investors looking for long-term investments, such as insurance and pension funds;

3. Direct private capital market lending to local governments, through bonds and notes, should become increasingly attractive;
4. Direct private equity investments through BOT and concession contracts should become increasingly attractive; and

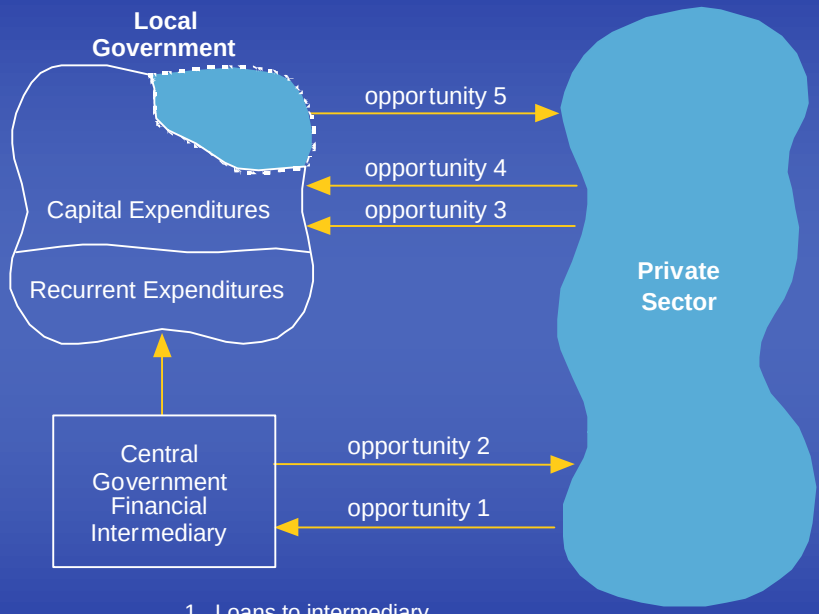
5. Some urban government functions may be contracted out on a permanent basis (privatized).

The issues involved in achieving these improvements are summarized in Table 2 below. The table identifies issues for both capital markets and investors that constrain the development of long-term capital market financing for urban infrastructure.

Debt Instruments

At this stage of development in the emerging capital markets, few long term debt instruments of any kind exist. Many central governments issue short term treasury bills, and they are gradually lengthening the term. Banks and other financial institutions invest in these central debt instruments. In addition, banks and other financial institutions issue lines of credit, extend loans for periods up to seven years, and government finance institutions extend some loans for up to ten years. There are few corporate bonds or other debt instruments traded on the market while equity issues are growing rapidly in the region.

Exhibit 5: Opportunities for Improvement



1 Loans to intermediary
2 Securitize expected repayment streams
3 Loans to local government
4 Equity investments, concession contracting
5 Privatization (divestiture)

Table 2: Constraints and obstacles affecting private capital investors willingness and ability to participate in urban services financing

	Capital Markets Issues	Investor Issues
Lack of suitable long term debt instruments	√	√
Lack of sufficient underwriting or other institutions to create debt instruments, to securitize, or otherwise package long-term debt	√	
Lack of long-term government debt or other benchmarks	√	
Lack of secondary market facilities	√	
Lack of suitable credit rating or other credit-worthiness information	√	√
Lack of knowledge or understanding of the water and wastewater sector		√
Lack of prior experience with recourse mechanisms and other risk management strategies for long-term, revenue-backed debt		√

This lack of suitable long-term debt instruments is both a general capital markets development issue and a specific issue to potential investors. Investors who may have funds they are willing to invest in longer-term infrastructure debt find few mechanisms available. This puts the investor in the position of evaluating single, large projects as possible long-term financial investments, which potentially puts too much of an investor's capital into only one or a few investments. An investor such as an insurance company cannot commit significant portions of their funds to single projects. Similarly, banks issuing longer-term notes to borrowers, corporate or public, have little or no choice but to hold those notes since there are no ready instruments or means by which the asset represented by the borrower's repayment obligation can be converted into a tradable instrument. That constrains local governments' ability to raise capital to finance large, long-term projects.

Underwriting, Securitization

Closely related to the lack of suitable existing debt instruments is the limited involvement of financial institutions in underwriting large, long-term debt, or in performing other forms of securitizing long-term debt. A large, visible project, such as a large water source development project being considered in Cebu in the Philippines may be successful in

attracting large financial institutions from within the domestic capital market to play an underwriting role through essentially private placements. However, these same projects are of a size sufficient also to attract more experienced financial institutions from other countries. For example, although few details are available, it appears that there are at least two serious consortia interested in the Cebu water source development project, both from Malaysia, and that these two investment groups would be arranging their own, offshore financing.

Benchmarks and Secondary Market Facilities

The last two general capital markets issues are the lack of other types of long-term debt such as long-term government bonds to serve as benchmarks for other long-term debt issuers (and investors) and the lack of secondary market facilities through which investors in long-term debt can buy and sell such debt. In highly developed capital markets, long-term government debt, such as U.S. 30 year treasury bonds, serve as a benchmark indicator of the value at any point in time investors place on long-term debt. The yield on a long-term, safe [18] investment such as a long-term central government bond gives issuers of new debt a benchmark against which to price the new debt issue and investors a benchmark against which to evaluate the new issue versus an existing option. Closely related is the ability of existing investors to sell long-term debt they are holding in a secondary market.

There is some argument as to the necessity of developing long-term central government debt instruments to serve as a benchmark versus the potential for a large private capital market participant to make the market by pricing and purchasing a sufficiently large quantity of long-term debt that a benchmark in effect is created. Our observation of the current state of Asian capital markets is that there is no one private party willing or able to play a market-making role in most countries, if any.

Credit Ratings, Credit Worthiness

Many local government enterprises, such as larger Philippine water districts, have some experience with debt. Fewer local governments have credit histories, although several hundred local governments throughout Asia have borrowed from central government intermediaries such as Indonesia's RDA and the Philippines MDF. To some extent, this existing credit history can serve as some evidence of the borrower's ability to manage debt. However, no formal system of credit ratings or other standard mechanisms which use a common methodology to establish the credit worthiness of local government exist. This in itself does not preclude evaluating the credit risk of a potential borrower, but it does mean that each potential investor or investment group has to develop its own credit information requirements and standards for assigning risk.

[18] Safe, meaning very little or no risk premium is attached to the debt by the investor.

Understanding of the Urban Sector and Experience with Risk Management

Domestic private capital market participants, lacking experience in urban infrastructure projects, naturally are more reluctant to consider long-term lending for those projects than for more familiar, and shorter-term, commercial ventures. Water supply and distribution projects, under the supervision and control of water districts in most cases, depend entirely on the revenue stream from the project for the source of funds to repay investors. Commercial debt is secured by the borrower, and there typically are capital assets pledged by the borrower as security.[19] Wastewater projects, which are few in all emerging market countries, typically do not generate by themselves sufficient revenue to pay the costs of financing and operations. In the Philippines, there is some experience with securing local government borrowings through pledging the Internal Revenue Allotment (a formula driven central government resource transfer) receipts either as the direct source of repayment or as a recourse should the direct source not meet the payment obligations.

Steps to Address These Issues

Addressing these issues will involve changes in both the mechanisms for financing urban infrastructure and in the effectiveness and efficiency of local government management. In financing systems, changes will involve:

- Private sector financing of many more services and facilities now thought of as public;
- Access to well developed debt finance systems, either through direct access to capital markets or through special purpose financial intermediaries.
- Private sector provision of many more services and facilities now thought of as public;
- Primary reliance on self-financing mechanisms through user charges, beneficiary charges, and fees charged to those who will gain private economic value from receipt of a public service or use of a public facility;
- Reduced reliance on intergovernmental systems that transfer resources from the geographic sources of wealthy and then retransfer those resources back.

In local government efficiency and effectiveness, financial management improvements will involve:

- Reliance on strategic planning mechanisms to engage citizens, public officials and economic leaders to develop shared vision for the community, to develop economic objectives for the region, and to secure commitment to collaborative achievement;

[19] In both mature and emerging capital markets, there is a growing volume in securitizing revenue streams such as receivables (e.g., the revenue stream from credit card debt) as the collateral against a debt financing. As these securitizations of revenue streams become more common, and therefore more familiar, the securitization of revenue streams from water supply enterprises will seem less novel.

- Reliance on performance standards and results transparently available to the public as incentives for public sector employees to perform, even where directly competitive operations are not possible;
- Reliance on corporate type approaches to resource allocation (budgeting) and management to enable functions remaining primarily public to achieve efficiencies associated with competitive markets for private functions.