Addressing Urban Infrastructure Needs of the Poor: The Tamil Nadu Experience of Public Private Partnerships

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Executive Summary

Tamil Nadu is one of the most highly urbanized states in India, with 43.86 percent of the population of 62 million living in urban areas. The state is ranked fourth among the major states in terms of per capita income. While 16.5 percent of the urban poor live in slums, the figure for Chennai, the state capital, is around 30 percent. In terms of urban services, Tamil Nadu, together with other states, faces the challenge of providing adequate and efficient infrastructure. The following statistics indicate the scope of the problem:

- The state’s urban population in general has access to drinking water; however only 30 percent have adequate quantity. Less than 40 percent of households residing in municipalities have house connections. The figure for panchayats is about 24 percent.

- Only 16 percent of urban local bodies (ULBs) have a sewerage system and even these ULBs cover only a part of the household population. While most solid waste generated is collected, the majority of local authorities do not have organized disposal facilities.

- Less than 50 percent of the roads have storm water drains.

Problems in urban infrastructure

The inclusion of water and sanitation in the millennium goals highlights the significance of basic facilities. Urban infrastructure covers a wide spectrum of services, which contribute to economic development both by increasing productivity and by providing amenities that enhance the quality of life. The key issues in provisioning of urban infrastructure services are largely structural since the government, through its various agencies, has been the sole provider of these services. ULBs that are responsible for their provision are severely constrained in financial and managerial terms. Investments are typically funded either out of tax revenues or through debt finance. Without recourse to imposing commensurate service charges, the ability to expand networks and maintain quality of services has been eroded. In recognition of these constraints, governments have been looking towards involving the private sector to assume part of the burden. While there has been a fair increase in private financing of infrastructure, it is still not considered adequate in terms of the potential. This is because of the persistent risks that developing countries pose, specifically with reference to the water sector. On the other hand, successful projects give policymakers the necessary experience, attract more investors, and build constituencies for further up-scaling.

To address the problem, India has embarked on economic and regulatory reforms over the last decade. Measures include legislative and constitutional amendments to give greater authority to ULBs, together with various incentive-based programs. These initiatives seek to improve the financial and organizational capacities of local bodies, bring about greater certainty and transparency in devolution of funds, and facilitate private sector investments. In Tamil Nadu the reform process started in 1994, with the Conformity Legislation. The principal changes included holding elections to all ULBs in October 1996. This put 14,000 councilors and 750
chairpersons in office, including 3,500 women and 1,000 members of socially-marginalized sections of society. The state has also constituted and received the recommendations of two successive state finance commissions with reference to devolution of funds to ULBs, incentives for reforms, and other matters.

**Bold public-private initiatives**

Tamil Nadu has led the effort to tackle urban-sector reforms and has established an efficient framework to aid the process. A string of private-sector infrastructure projects are being implemented. These pioneer initiatives will not only bring about the positive outcomes associated with good infrastructure, but in their own way have established the viability of private participation in developing the urban infrastructure sector. Demonstrating the efficacy of this model will be the lasting contribution these pioneer initiatives will make as a testifying legacy for the welfare of future generations.

Tamil Nadu has approached reform with bold innovation. Dynamic institutions have been set up to garner market opportunities and effectively partner with the private sector to boost investments and provide urban services efficiently. Moreover, the initiatives underway are all demand-driven and structured on commercial lines, providing local examples for subsequent scaling-up. Three important umbrella institutions have been set up in partnership with the private sector: Tamil Nadu Water Investment Company, Tamil Nadu Urban Infrastructure Financial Services Ltd. (TNUIFSL), and Tamil Nadu Road Development Company. Each has been innovatively structured, with wide ranging mandates allowing the conception and development of a whole array of projects with private sector participation.

Tamil Nadu Water Investment Company Limited (TWIC), a joint venture between the state government and Infrastructure Leasing and Financial Services (IL&FS), has been set up with the express mandate to develop infrastructure projects with private participation, emphasizing water and sanitation. The path-breaking sanitation project at Tirupur (Western Tamil Nadu), at a cost of $220 million, is the first private water and sanitation project in the country.

Tamil Nadu Urban Development Project (TNUIFSL) is a state government project with assistance from the World Bank. Part of its strategy is to enhance institutional development by building and strengthening financial and managerial capacities in ULBs. Under this project, the T.N. Urban Development Fund, the first private institutional arrangement in the country, has been established to assist municipalities in raising funds from markets to finance specific infrastructure projects. It also helps local authorities structure and develop infrastructure projects. It has so far successfully implemented three projects with private participation.

Tamil Nadu Road Development Company Ltd (TNRDC) is the third institutional arrangement established as a joint venture between Tamil Nadu Industrial Development Corporation (a government of Tamil Nadu undertaking) and IL&FS for developing road-sector initiatives under the public-private partnership format. Its first project was the 113 kilometer-long tolled East Coast Road (ECR), which has set benchmarks in both quality of construction and maintenance.
Impact of infrastructure

The initiatives described and the institutional arrangements within which they have developed are pioneers in their own distinctive ways. Combined, they account for about $261 million of private investment in quality urban infrastructure assets. The positive spin-offs are indeed multidimensional and will eventually have a positive impact on poverty reduction. The Tirupur water project, for example, is expected to have a profound economic impact in the project area, together with improvements in local health and environmental conditions. The sanitation projects, in turn, will bring health and hygiene benefits to the project area, which includes many poor and marginalized segments of the population. The three road-related projects will help traffic decongestion, facilitate trade, and reduce city pollution. The East Coast Road has helped spawn tourism, leisure entertainment, and eatery businesses. All these have led to increases in economic activity and employment opportunities and will eventually lower local poverty levels.

Another important outcome from these first-of-its-kind projects is that they have established the principle that private-sector participation in urban infrastructure supply services can be an unambiguous success. The joint venture model as adopted in the state has proved robust and efficient in meeting objectives, while allaying social concerns over equity, consumer interests, and welfare. All these projects have made clear the high levels of financial leverage that fiscally strapped governments can achieve while promoting investments. The Alandur, Madurai, and Karur projects, in turn, have demonstrated to other ULBs that asset creation is a possibility well within the grasp of local initiative in partnership with the private sector.

Creating an attractive environment for private investment

Tamil Nadu has consistently been among the top destinations of investors. It has been among the front-runners of industrial growth since independence, and in the post-liberalization era of the Indian economy has been one of the preferred destination of foreign direct investment flows as well. This can be attributed to a number of factors. It provides a good macroeconomic environment, above-average social development indicators with respect to education and health, an educated and technically qualified work force that is disciplined and productive, and forward-looking political leadership. While these are necessary conditions for creating an attractive environment for private investment, by themselves they are not necessarily sufficient.

Complementing the above, is the other strength-of the projects in Tamil Nadu—the Public-Private Partnership (PPP) format upon which they have been structured. This is the basis on which risk allocation has been put on a viable track. Regulatory and policy risks are borne by the government, while commercial risks are carried by the private entity. For added attractiveness, the government has also assumed certain contingent liabilities apart from force majeure events. These contractual requirements have, in fact, been recognized and incorporated in the related documents in clear terms. The success of up-scaling infrastructure initiatives in Tamil Nadu will rest on the demand-driven nature of the projects and on following the given PPP model. This format has shown itself as vibrant, robust, and dynamic, with an effective risk-sharing contractual structure. These conditions, together with the stable and growing national
economy and sector-specific reforms, have created the necessary conditions for attracting private investments in an otherwise difficult sector.

Scaling up

Apart from the above-mentioned projects, the three umbrella institutions are now gearing themselves to develop fresh initiatives totaling $665 million. These include a $400 million water project by TWIC. TNRDC is to implement six road-related projects of about $180 million, covering almost 400 kilometers. Under the TNUDP, 11 more urban jurisdictions will be covered for providing sanitation systems at an estimated cost of $95 million. In other words, the initial clutch of investments ($261 million) will now be scaled up two-and-a-half times, totaling almost $1 billion.
Urbanization

A defining feature of the 21st century is urbanization. In 1970, about 163 metropolitan cities around the world had a population of 1 million and above. Currently that figure has risen to 350, where 65 percent of the world’s urban population lives in small and medium towns. “25 years ago less than 40 percent of the world’s population lived in urban areas; 25 years in the future, this share could reach nearly 60 percent.”

In India, 285 million people, constituting 27 percent of its population live in 5161 towns and cities and by 2025, the urban population would go up to 50 percent.

Urbanization in its positive aspect is an engine of economic growth. As countries develop, cities account for an increasing share of national income, where; about 55 percent of GNP in low-income countries, 73 percent in middle-income countries and 85 percent in high-income countries comes from the urban sector. In India, about 66 percent of the GDP is derived from its urban centers. This is largely because the growth sectors of an economy – manufacturing and services – are invariably concentrated in cities. This in turn is a benefit derived by firms from agglomeration and scale economies prevalent in urban markets.

At the social level, urbanites enjoy higher standards of services and quality of life. Employment in turn can move from one sector to another, keeping average unemployment low. With better civic, health and education facilities, cities possess a better human capital and infrastructure base with which to compete in an increasingly globalized economy. In fact, in future, the forces of globalization, including trade liberalization and financial integration will continue to reinforce the importance of urban agglomeration economies. It can be expected that openness to the world economy will increase competition among cities within the same country.

Persisting poverty lies at the heart of the urban development challenge. An urban agenda for improved livability indeed begins with reducing poverty and inequality. In fact urban poverty is a complex and multi-dimensional occurrence. Slums and similar tenements provide compelling evidence of inequities in urban growth and distribution of wealth and welfare. While the poor provide valuable services contributing to urban growth, they in turn live a life bereft of adequate essential services, adequate housing and other amenities, and face impediments for their own growth and development in economic, social and environmental terms. Urban poverty in fact manifests itself in various forms, where the poor incur an exacting price while living a marginalized life.

3 Ibid p. 126.
Urban Infrastructure

While entering the 21st century, the global community has given itself a set of “millennium goals”. These represent universal concerns and aspirations, and reflect the urgency in the need of their fulfillment. Among these are included water and sanitation, highlighting the significance of basic services and infrastructure.

Growing and expanding cities need investments in infrastructure to provide services necessary for economic growth and improvements in quality of life. “Absorbing the 2.4 billion near urban residents – expected over the next thirty years will require further investments in housing, water, sanitation, transportation, power, and telecommunications. The need for fresh investments comes on top of the backlog that already plagues the worlds’ cities. Providing universal access to water and sanitation alone in the urban centers in developing countries will cost nearly 5 percent of their GDP. It would appear that cities have indeed been overwhelmed by population growth, leaving them unable to provide sufficient basic services. In 1994, 220 million urban dwellers (13 percent of the developing worlds’ urban population) lacked access to clean drinking water, and almost twice as many lacked sanitation facilities. Roughly half of solid waste went uncollected, while domestic and industrial effluent was being released into waterways with little or no treatment, affecting the quality of water far beyond the city.

Lack of basic services imposes a high toll on human health. Epidemiological studies show that improving access to water and sanitation can reduce the incidence of diarrheal diseases by more than 20 percent. In India close to 70 percent of health problems are water related. As estimated “ at any given time, close to half the urban population in developing countries is suffering one or more of these (water borne) diseases. Airborne illnesses such as acute respiratory infections and tuberculosis also spread faster in overcrowded urban housing with poor ventilation. Air pollution in fact seriously impinges on the health of children and adults alike. These are exacting costs, the burden of which rests disproportionately on the shoulders of the poor.

The manner in which cities manage their development goes far in determining the rate of growth. As such, urban governments can foster economic growth or they can slow it down. Given this, institutions and policies that affect the management and development of cities have a strong bearing on their ability to promote economic development and improve the quality of life for the urban poor. Thus when there are institutional and governance weaknesses and distortions in the determination of how investments are made and assets shared and used, then the effort towards sustainable development and poverty reduction are impaired and compromised. Indeed currently, urbanization and rapid growth have led to demand for services that have outstripped traditional supply abilities. And, as is becoming increasingly evident, decline in availability of services is impeding economic growth itself. In this, urbanization fails to live up to its promise when, there

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5 Ibid p. 140.
6 Ibid p. 141.
is institutional and governance failure to anticipate and commit to preparing for the future needs of a growing city.

This failure in part is explained by the manner in which services were provided. Since the 1950s, the infrastructure market in the developing countries was transformed to be completely dominated by the public sector. In this transformed role of the state it became incumbent upon the government to invest, maintain and provide all the services that fall within the scope of infrastructure – ranging from water and sanitation to building ports and airports. Vertically integrated monoliths were created to provide these myriad services.

As noted earlier, governments felt compelled to assume the responsibility of providing infrastructure services. However, several factors have led to a departure from such an approach. A greater role for the private sector is now viewed as a viable supplement to public sector investments to meet the rising tide of demand. In simple terms this implies a changing role of the public sector, which allows participation of private entities in the financing, operations, maintenance and ownership of infrastructure utilities or provision of services. To that extent the challenge faced by governments in providing adequate and efficient services has in effect become a source of opportunity for private business. However, despite the strong appeal and rationale for private participation, the experience thus far though promising has been mixed, and has revealed many difficulties, which have hampered the effort.

The question that arises here is as to what factors have contributed to driving this spur towards private participation, given the social sensitivities relating to this area. The first reason is the high projection of investments, and lack of government ability to fund these requirements. The quantum of investments required amounts to a magnitude that is simply not accomplishable by governments. For instance, for the water and sanitation sector alone, “developing countries will need to invest around $60 billion per year, or $1.2 billion every week during the next ten years. This will mean increasing water supply and sanitation investments from less than 0.4 percent to about 1.0 percent of their combined GDP in the next decade.”7 Faced with budgetary pressures and fiscal constraints, governments cannot provide the finances required without crowding out other priority social and economic programs. While it would be unrealistic to assume that the private sector will completely replace the State in this regard, it will help share a substantial part of the burden and relieve pressure on budgets, creating room for allocations to other priorities.

The second factor relates to efficiency. First is the issue of efficiency of investment, which assumes importance in the context of fiscal stringency. There is greater demand for accountability in public expenditure. When infrastructure facilities are developed by the public agencies, there is typically little connection between the cost of funds and the returns on investment. Second, the quality of services provided by public agencies has been poor and unreliable. On the other hand privatizing infrastructure services is expected to infuse greater efficiency in the working of the sector as a whole.

From the perspective of investors, a stable economic environment, along with a transparent and predictable regulatory regime are essential, though not sufficient, elements to attract private savings and investments. In the case of investments in the infrastructure sector, the need for a stable economy is specific in view of the long-term and capital intensive character of the sector. Furthermore, investors are particularly interested in the policy framework of the specific sub-sector in which investments are being considered. Sector specific policies which complement the overall effort of privatization are a factor of consideration for attracting private capital. And it is towards this end that governments have been compelled to undertake what is commonly referred as “sectoral reforms”. The reform process has addressed policy and regulatory issues and in many cases has led to the entire restructuring of the industry.

Apart from macro economic and sector related concerns, investors seek returns commensurate with risks related to a given specific investment. Risks associated with urban infrastructure projects are indeed perceived to be high. Infrastructure investments are particularly vulnerable, because of the inherent complexities of the sector, and more so, because they are highly leveraged. The fact that many of the projects do not reach financial closure or incur high development costs is a measure of the complexities and risks involved.

While there has been a fair increase in private financing of infrastructure, it is still not considered adequate in terms of the potential. This is on account of the persistent risks that developing countries pose. Reforms in policy though easy to prescribe, have in fact been difficult to achieve. On the other hand, the development impact of successful projects goes beyond improved service and increased capacity. Successful projects give policymakers experience, attract more investors, and build constituencies for further reforms.

The Indian Context

In India too the model of public provisioning and funding of services was adopted. Indeed the record of public investment in infrastructure has been impressive. Huge and at times mega projects were constructed, extensive networks laid and coverage and access expanded. This march towards modernization however exhausted itself. Lack of finance, capacity constraints, inefficiencies in operation, deterioration of assets, and dissatisfaction of consumers began to increasingly characterize the status of the industry. It has been estimated that 52 percent of urban India lacks sanitation facilities, 30 – 50 percent solid waste remains uncollected\(^8\) and while city roads increase by 5 percent, the traffic increases 80 folds\(^9\). As an example of what has been achieved and yet lagging in supply is the water sector. Almost all urban centers have been provided by some public water supply scheme. State level data would show coverage of 88

\(^8\) Presentation by Mr. N.N. Khanna, Secretary, Ministry of Urban Development & Poverty Alleviation. Government of India, on the occasion of the Asia Pacific Week, Indo-German Business Conference. 17, September, 2003.
\(^9\) Mr A Ramakrishna, Deputy Managing Director & President (Operations), Larsen & Toubro Limited, Chennai on the occasion of the Asia Pacific Week, Indo-German Business Conference. 17, September, 2003.
percent, and in some cases going over 90 percent. However, these are figures that reflect the physical and financial aspects of services, and mask issues relating to quality, reliability and sustainability. For instance, coverage figures do not provide any indication of the hours of supply. Similarly there are no accurate figures indicating unaccounted for water, unauthorized connections and contamination levels of the supplied water. Typically in most urban centers, residents supplement public supplies with expensive and unregulated private sources.

With half of India’s’ population expected to be urban by 2025, the challenges facing the urban sector are complex and wide ranging. For instance, the Central Public Health and Environmental Engineering Organization (India) has estimated that financial requirements for the 10th Five Year Plan [2002 - 2007] would be Rs. 28,2400 million10 for water and Rs. 23,1570 million for sanitation alone. Overall, for the full range of urban services like water, sanitation, solid waste collection, roads etc., a funding of $ 90 billion will be required over the next 10 years. Similarly, the gap in O&M funding is $17 billion for the next 5 years.11

The Process of Reform

From the early 1990s, India embarked upon its structural reform program through progressive lowering of barriers to trade and foreign investment, liberalization of domestic financial markets, easing of restrictions on capital movement, and the implementation of privatization programs. The regulatory regime was eased to facilitate and encourage the private sector to reach its full potential. Sector after sector was “opened” up, as a result of which, economic growth registered impressive gains. With the advent of reforms, GDP growth, for over a decade now, has been consistently sustained at a healthy rate. As a result India has registered itself as one of the fastest growing economies in the world, despite the prevalence of a turbulent external environment. Poverty has been reduced from 44 percent in 1983 to 26 percent in 200012. Furthermore, with greater openness and liberalization, India has also become much more integrated with the world economy with a foreign exchange reserves in excess of $100 billion.

Urban Sector

In the context of urban services, constitutionally, the responsibility of providing such services lies with the respective state governments, within the federal framework of the Indian polity. And within the states, municipal services are to be provided by the concerned urban local bodies (ULBs) assisted by the respective state governments. Investments in urban infrastructure have largely been funded on the basis of debt financing. The servicing of debt and the O & M costs in turn are to be met by the respective ULB from general tax revenues and user charges.

Fiscal, managerial, and other capacity constraints along with high urbanization have led to a position where ULBs and state governments have not been able to cope with the rising

10 $ 1 = 45 Rupees (Rs).
11 Mr N.N. Khanna, Indo German Conference, September 17, 2003.
demand that has outstripped supply abilities. Furthermore, inadequate cost recovery, and distortions in the policy and institutional framework have compromised the long-term sustainability of even the existing levels of investments. On the other hand, municipal governments are viewed as unattractive borrowers by the markets because they lack the autonomy to raise revenues, or reduce spending, particularly on establishment/ administration matters. Moreover, they are perceived with having no credible commitments to long-term financial obligations. Under these conditions, borrowing from the market, without government support is difficult. It is in keeping with these factors, that the Government of India, along with state governments have initiated a number of steps to improve the general environment of local government functioning.

For the development of the urban sector, and as part of the process of deepening decentralization, the 74th Constitutional Amendment (1992) heralded the process of urban reform with greater local empowerment. Its salient features include; appointment of an independent election commission in each state, mandatory elections for ULBs, with reservation for women and weaker sections of society and setting up of a state finance commission to recommend basis for transfer of resources from state to local bodies.

Furthermore, the Government of India has introduced measures and incentives to encourage urban reforms. Some of the measures announced in the Union Budget (2002-03) include; i) the setting up of the Urban Reform Incentive Fund to promote state level reforms in areas such as property tax, urban land ceiling laws, rent control laws, levy of user charges etc. ii) The City Challenge Fund to provide grants to cities to meet the transition cost of reforms and through restructuring, become more credit worthy. iii) Pooled Finance Development Fund, which is an instrument to support smaller ULBs to jointly raise funds from the market on a pooled basis.

Separately, in recognition of the constraints in the development of urban infrastructure, the central government has also put in place a policy framework that addresses the difficulties faced in increasing the level of investments. Keeping this in view, current policy initiatives encourage the private sector to play a full role in the provisioning of services, ranging from funding to operations and maintenance. Towards this, legislative changes have been made to enable private entry in the development of the sector. In encouraging higher investments, the sector has also been opened to foreign direct investment, apart from receiving various fiscal incentives in the form of tax and tariff concessions.

It is in keeping with this policy environment that a number of imaginative initiatives under the public-private partnership (PPP) model have been conceived and currently under implementation in the southern state of Tamil Nadu. This state, held out as one of the “progressive” states in the country is noted for the efficiency of its governance, healthy economic growth with good social indicators and infrastructure with an enabling investment regime.
The Case of Tamil Nadu

Tamil Nadu is one of the most highly urbanized states in the country with 42 percent of the population living in urban areas out of a total state population of 62 million (2001 census). The state is ranked fourth among the major states in terms of per capita income. It is noteworthy that 16.5 percent of the urban poor live in slums, where 30 percent of the population of Chennai (the state capital) lives in slums. In terms of urban services, as in the case of other states, Tamil Nadu too faces the challenge of providing adequate and efficient services.

- 64 percent of the state’s urban population has access to safe drinking water. However, only 50 percent of the supply is as per norms. Moreover, less than 40 percent of household residing in municipalities and about 24 percent of households residing in town panchayats had house connections. Also about 35 percent of the water is unaccounted for against the world norm of 10-15 percent.

- Only 16 percent of ULBs have a sewerage system, but which cover only a part of the household population.

- Although bulk of the Solid Waste generated is collected, most local bodies do not have organized disposal facilities.

- Less than 50 percent of the roads are provided with Storm Water Drains.

Although the reform process in the state really started in 1996, Tamil Nadu had passed the Conformity Legislation to the 74th Amendment in 1994 itself. The state has since been in the forefront of ushering changes in urban governance and facilitating investments through financial and administrative reforms. The principal changes include holding elections to all ULBs in October 1996. This put 14,000 councilors and 750 Chairpersons in office. This includes 3500 women and 1000 members of socially weaker sections of society.

In conformity with the decentralization process, the state also set up a Finance Commission to formulate resource sharing and allocation measures between the state and ULBs. The recommendations have been under implementation since 1998. Subsequently, the 2nd Finance Commission was set up (the only state to do so in the country), which further detailed the devolution formula. These include transfer of 8 percent (up from 3.6 percent) of state’s own tax revenues, along with continuing transfer of discretionary grants. The recommendations also detail the inter-se ratio of allocation on vertical lines between the various classes of ULBs as well as on horizontal population segmental basis with 40 percent weightage for overall population, 40 percent for women and 20 percent for socially weaker segment of the population. Furthermore, the equalization-cum-incentive fund to reward performance and hand-hold weaker ULBs has been pegged at 13 percent, with detailed breakup of 2 percent for reserves, 6 percent for equalization and 5 percent for incentive funding. The above 6 percent will be used to fund ULB

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elections, interest subsidy for debt for water projects, and for part funding of PPP based sewerage projects

A Bouquet of Bold Initiatives

While gaps in services remain, Tamil Nadu has been singular in its approach to the task at hand. A fundamental characteristic to its approach has been bold innovation. Uniquely dynamic institutions have been set up that can garner market opportunities and effectively partner with the private sector to boost investments and provide urban services efficiently. What is important is that all the novel initiatives underway are all demand driven, and structured on commercial lines, providing local examples for subsequent up-scaling. At the one level three important umbrella institutions have been set up in the state in partnership with the private sector. These are a) Tamil Nadu Water Investment Company, b) Tamil Nadu Urban Infrastructure Financial Services Ltd., and c) Tamil Nadu Road Development Company. Each of these institutions has been innovatively structured with wide ranging mandates, which allow them to conceive and develop a whole array of projects with private sector participation. Indeed their structure and mandate, based on the public-private partnership model provides the underlying basis for subsequent up-scaling of the initial clutch of initiatives.

Tamil Nadu Water Investment Company

For the first time in India, a joint venture institution was established for the development and implementation of water sector projects in the state on a public-private partnership basis. The Tamil Nadu Water Investment Company (TWIC) was set up in 2001 jointly by the government of Tamil Nadu and Infrastructure Leasing and Financial Services (IL&FS), a private financial institution in India, and the majority shareholder in TWIC. The company has the mandate to develop and promote infrastructure projects in the state, with emphasis on water – for households as well as for industry - and sanitation. As part of the mandate, it also undertakes to find and bring the financing for the projects from outside government sources, enter into concession agreements with the state government and local bodies, and set up Special Purpose Vehicles (SPV) for specific projects. The first such venture promoted by TWIC is the $220 million Tirupur water and sanitation project in the western part of the state.

New Tirupur Area Development Corporation Limited.

New Tirupur Area Development Corporation Limited (NTADCL) was established under the Indian Companies Act, as a Special Purpose Vehicle (SPV) with the primary objective of implementing the Tirupur Area Development Project (TADP). This is the first Water Sector related project developed under the public-private partnership framework in the country. The Tirupur area is a growth center and is the principal hub of India’s knitwear industry. Currently, the apparel exports from the area are to the tune of over $1 billion. And while it strives to increase output by several folds in coming years, the local industry is concurrently gearing itself
to meet the competitive challenge of the emerging WTO regime. It is in keeping with this that the TADP was developed to improve local infrastructure by addressing bottlenecks, mainly water supply and sewerage, in Tirupur Municipality, adjacent Village areas and for industries located in the Tirupur Local Planning Area (TLPA) spread over 220 square kilometers.

It is noteworthy that the poor quality and uncertain availability of water has been the singular source of constraint for the local industry. This is particularly so for the dying and bleaching units. Currently, there is only very limited scope for abstracting groundwater in the vicinity, and consequently, it is being sourced and transported from an increasing radius of beyond 50 kms. Since this water is being sourced from agricultural lands, it has given rise to social tensions on account of the competing demands of industry and agriculture, leading in turn to supply side uncertainties. Furthermore, the quality of water remains poor and therefore heavy costs are incurred for treatment prior use. In fact it has been estimated that currently the cost of water for industry is in the range of Rs. 75 to 80 per kilo liter (kl, i.e., 1000 liters), which makes this input extremely expensive apart from the persistent uncertainties of supply. Compared to this, the water charge for industry in Chennai (the state capital) is Rs. 62/kl and Rs 60/kl in neighboring Bangalore.

As for households in Tirupur, while they pay on a flat rate basis (unmetered), the municipal supply is erratic, where residents receive water once in three to four days, and that too for a few hours at a time. Thus as opposed to the accepted level of supply of 110 liters per capita per day (lpcd), the residents receive only 50 lpcd. The water requirements are then supplemented with private unregulated expensive water. It is estimated that the cost of such private water can be as high as Rs.1000 /kl apart from domestic storage and treatment expenses. These of course do not reflect the related costs incurred on health afflictions, time value for waiting in distribution lines etc. As opposed to the above costs for industrial and household current direct costs on water, NTADCL will supply on the following rates:

<table>
<thead>
<tr>
<th>Industry</th>
<th>Rs 45 / kl</th>
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<tbody>
<tr>
<td>Tirupur households</td>
<td>Rs 5 / kl</td>
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<tr>
<td>Rural households</td>
<td>Rs. 3.50 / kl</td>
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NTADCL proposes to initially abstract 185 million liters per day (Mld) of water and increase the abstraction to 250 Mld once the demand increases in the Service Area. Further, the company proposes to set up a secondary treatment facility for treating domestic sewage, and provide onsite sanitation facilities for slums and low cost tenement areas within the municipal jurisdiction, where currently residents do not have access to such facilities. In all the project will cover four urban towns with a population of 450,000 and 792 rural habitations with an equal population (2001 census). The sanitation component will provide an initial coverage of 22300 households, with an eventual coverage of 60 percent of Tirupur households including low cost sanitation for slum tenements. The total estimated cost of the project is Rs 10230 million, and is financed on a non-recourse basis.

The project marks the highest single private investment in urban infrastructure in the country and provides for a 20 percent return on investment. The project is currently in the
construction phase and is expected to be commissioned in May 2005 (phase - I) and phase – II by October of the same year. The contracts are on a Lump Sum Turn Key basis.

**Tamil Nadu Urban Development Project**

With the assistance of the World Bank (USD 80 million line of credit), the second Tamil Nadu Urban Development Project (TNUDP) is under implementation in the state. The project focuses on state-wide ULB reforms, institutional development, capacity building of local urban bodies and investment financing for urban infrastructure projects. Investment financing is provided through the Tamil Nadu Urban Development Fund (TNUDF), which is managed by an asset management company Tamil Nadu Urban Infrastructure Financial Services Limited (TNUILFS), a joint venture between Government of Tamil Nadu and three leading domestic private financial institutions – the latter being the majority equity partners. TNUDF also provides project development support and strategic advice to local governments in developing and implementing commercially structured infrastructure projects and accessing capital markets.

So far the experience of this initiative has been encouraging. This is particularly in terms of capacity building for strengthening urban management. ULBs are increasingly formulating and developing projects on their own. Most of them have moved to computerized, accrual based accounting systems. By instituting accounting, auditing and disclosure practices that are compatible with market standards, local governments for their part are improving their attractiveness to lenders. This is the first such effort in the country covering all ULB functions in one go. TNUDF is mandated to link city civic needs to the capital market, and to promote innovative methods of funding urban infrastructure. To this effect, TNUDF has done three such market issues and has promoted and designed projects, which have attained financial closures using co-financing from institutions and the users of the facility. Besides the above, TNUDF also handles plain vanilla loan funding to the ULBs on a non-guarantee mode. TNUDF has the distinction of the first financial intermediary to raise Bonds from the capital market on a non-guaranteed basis. The Bond, of Rs 1100 million, was raised at a competitive rate of 11.85 percent, and was oversubscribed.

Similarly, as part of this initiative, a pooled entity has been created by Government of Tamil Nadu in the form of a trust, in the name of Water and Sanitation Pooled Fund (WSPF). This entity identifies viable projects and funds them from concept to commissioning on a commercial mode. The main objective of the fund is to make the Urban Local Bodies (ULB) a part of the active debt markets so as to avail the best interest rates available in the market. As a pioneering effort for market access, thirteen ULBs and projects have been financed / refinanced by the proceeds of WSPF bond issue amounting to Rs.304.1 million. The bonds carry a guarantee from USAID to the extent of 50 percent of the principal. This is the first issue of its kind in India made by a pooled fund, on the basis of US bond banks. A few early innovative projects are currently under implementation with private sector participation.
**Alandur Underground Sewerage Project**

TNUIFSL structured the first municipal BOT wastewater project in India, at Alandur (South of Chennai) at a total project cost of Rs.340 million. The scheme has been designed for an ultimate population of 300,000. The collection and pumping system are financed by debt of Rs.200 million and grant of Rs.30 million. The financing of the treatment process (i.e.) Sewerage Treatment Plant (STP) is by a private sector operator, for a concession period of 14 years. Of the 16,000 assesses residing in Alandur, almost 98 percent households have already paid towards deposits, mobilizing Rs 79.5 million. As for the additional coverage of adjoining areas under the scheme, 65 percent of the households have also paid a one time deposit; which together contribute to the equity financing of the project.

The following are the key elements of the Project:

- Project Implementation is based on a mix of a Construction and Build-Operate-Transfer Contract, structured with the following objectives:
  - To bring in an Engineering, Procurement and Construction (EPC) Contractor to build the Underground Sewerage System (UGS).
  - To let the EPC Contractor design, finance, build, operate and then transfer the Sewage Treatment Plant (STP) after the concession period of 14 years...

**Madurai Inner Ring Road**

Madurai is the second largest city in Tamil Nadu and a major commercial, religious and tourist center in the southern part of the state, linking important trade and tourist flows in the state. The Madurai Inner Ring Road a 27.2 km, two-lane Road is the first Toll road constructed by an Urban Local Body in India based on user charges. The project was completed at a total cost of Rs. 430 million. It has been opened to traffic since November 1st 2000. Toll collections being encouraging and after construction risks were removed, the Corporation of Madurai restructured its financial commitments and reduce stress on the project cash flows, through a private placement of bonds. This product was independently credit rated. This is the first revenue bond in India made by a medium sized ULB, which has linked its liability to revenue generation from an asset without recourse to its general revenues.

**Karur Toll Bridge**

Karur is one of the fastest growing towns in Tamilnadu. The Light House Bridge over a local river was constructed in the early part of the 20th century, and serves as the main link between the eastern and western parts of the town. In order to mitigate the hardship caused on account of the congestion on this Light House Bridge, Karur Municipality, on the basis of a feasibility study done by TNUIFSL entered into a concession agreement for construction of the new bridge. The scheme is the first BOT arrangement entered between an urban local body and a private sector operator in India for financing, construction, operation and ultimate transfer of a toll bridge without any traffic guarantees. The cost of the project is Rs 154.5 million.
Tamil Nadu Road Development Company Ltd (TNRDC)

This entity has been promoted by the State Government as a 50:50 joint venture of Tamil Nadu Industrial Development Corporation (TIDCO, a state government undertaking) and IL&FS for developing road sector initiatives under the Public-Private Partnership format. The objective of this unique umbrella partnership is to leverage State resources and develop road sector initiatives, by catalyzing private sector participation and investment. The 113 kms. long East Coast Road (ECR) has been a first for TNRDC and the country in many respects. The ECR project was entrusted to TNRDC and the Concession Agreement was signed on December 2000 for developing the project on Rehabilitate, Improve, Maintain, Operate and Transfer (RIMOT) basis. The project was completed in record time and commercial operations commenced in March, 2002 at a cost of Rs 600 million.

The Case for Tamil Nadu

A question that poses itself is what is it in Tamilnadu that has been made all this happen, more so in successfully inducing private investments. The answer, in turn, lies at more than one level. First, Tamil Nadu has consistently been among the top destinations of investors. It has been among the front- runners of industrial growth since independence, and in the post-liberalization era of the Indian economy has been one of the preferred destinations of FDI flows as well. This can in large measure be explained by the sound economy and good macro-economic parameters. On the flip side, the State has consistently positioned itself among the top performers on the social side. Its social development indicators in the fields of health and education for example, are well above national averages. Thus, in social as well as economic parameters, Tamilnadu sets itself out as an example. Given that investors, domestic or foreign, seek a suitable economic environment backed by good social performance, Tamilnadu offers itself as a logical choice for investment. Its track record demonstrates and testifies this in ample terms.

The above position, of course, is a result of the people of the State being hardworking, industrious and enterprising. The State has not only a high level of educated and technically qualified people, but provides an extremely disciplined and productive work force. Industrial strife is conspicuous by its absence in the main. At the other end, commitment to economic growth along with concerns of equity and social welfare form the basis of all policy initiatives. Buttressing the human endowment factor, the administrative ethos of the State has always been held out as an example. The project cases summarized earlier further reinforce this argument.

With a favorable and conducive macro base, investors also look closely at the policy and administrative ethos of the specific sector in which their interests lie. In an earlier section, a summation of urban sector reforms is indicative of the sweep of regulatory and policy changes that have been ushered to create the necessary enabling investment. The steps taken and the continuing efforts to deepen the sector reforms clearly inspire confidence among investors.

The final element that is supportive of a commercialisation of urban infrastructure in the State is its own urban profile. Tamilnadu, with a 42 percent urban population has 806 small and
medium towns, along with 26 large class I cities (population in excess of 100,000). While urban growth and sprawl pose the problem of lack of adequate and efficient services, the very same growth also creates the conditions to overcome the constraint. In the section on urbanization, it was observed that urban in its positive aspect is an engine of growth because growth sectors, manufacturing and services, locate themselves in urban sector on account of benefits of agglomeration and scale of economies prevalent in urban markets. It is this same scale of economy and agglomeration of urban centers that provides the basis for supply of urban services on a commercial basis, with possibilities for internal cross subsidy to cover the poorer sections of the population.

In brief, a suitable social and economic position with a sound and forward-looking administration along with its urban profile, have provided the State a platform to convert what is otherwise a challenge into an opportunity.

As observed earlier, the macro-economic performance and outlook along with sector specific reforms are the necessary conditions for creating an attractive environment for private investment. But, these by themselves are not sufficient. Eventually, it is the specific project that will come under close scrutiny by investors. Each infrastructure project is a discrete investment and will be tailored to the specifics of each location. Primarily, from the investors’ position, the equation between risk and reward becomes central. Conversely, from Government’s point of view a very high rate of return would put pressure for high tariffs. And given the natural monopoly characteristics of infrastructure projects, high profiteering or possible rent-seeking by the private sector make Governments wary of private entry. Given these disparate positions, the sustainability of a project can only be ensured if mutual concerns are addressed to inspire confidence and comfort. The issue of up-scaling then can only be addressed within the framework of long-term sustainability. The project cases described earlier are structured on basic parameters, which give them this strong basis of sustainability.

The most basic strength is derived from the demand-driven nature of all the projects. The high degree of local ownership can be measured by the extent of direct participation by the communities in the development of the various projects. In the Tirupur project, not only does the Company Board of Directors include two representatives from the local industry, but the project enjoys the benefit of equity funding by them, thus making clients also part owners of the Company itself. Similarly, the Alandur project was made possible only due to the initial financial contribution of the households of the project area, with the municipal counselors taking the full initiative and charge of developing and promoting the project, and bringing it to successful fruition. Projects such as Alandur, Madurai and Karur have shown the way to other ULBs that asset creation is a possibility well within the grasp of local initiative in partnership with the private sector.

The other founding strength of the projects in Tamil Nadu is derived from the Public-Private Partnership (PPP) format upon which they have been structured. This is the basis on which risk allocation has been put on a viable track. At the one end, regulatory and policy risks

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have been assigned to the Government, while commercial risks are to be borne by the private entity. For added comfort, the Government has also assumed certain contingent liabilities apart from *force majeure* events. These contractual requirements have, in fact, been recognised and incorporated in the related documents in clear terms. The Concession Agreement, Memorandum and Articles of Association and the Shareholders’ Agreement provide clearly the rights, responsibilities and roles of each participating party. Similarly, the Engineering, Procurement, Construction (EPC) and financing documents spell out the expectations from all the concerned entities. All these are open documents, which have been drafted after detailed discussions and reviews – to ensure that the concerns of all the participants and stakeholders are adequately and transparently addressed. With appropriate domiciling of risk and transparency in contractual agreement, the level of comfort, security and mutual trust, increase and translate to efficient investments opportunities.

The commercial formatting of projects, appropriate risk sharing and clarity of contracts and documentation vastly improves the attractiveness of a project as an investment opportunity. But, the long-term character of infrastructure projects also requires that the commitment and ownership of all parties remain strong for the entire life cycle of a project. This is particularly so for the Government, since the social aspects of infrastructure will constantly keep the Government engaged in some measure with the project. Conceivably, the support of Government in one form or other will always be required by such projects. Yet, it is also necessary that an arm’s length be maintained between the Government and the project entity. This “not-too-close” and “yet not-too-far” position has been made possible through the governance structure of some of the projects. In case of Tirupur water project and the East Coast Road, for instance, no direct funding by the Government has been made. The Government financial support has been routed as equity contribution, through the promoting institutions - Tamilnadu Water Investment Company Limited and Tamilnadu Road Development Company Limited. Both these holding companies are Joint Ventures between the Government and the private sector, but with the higher equity of the private investors, thus making these Joint Ventures more private than public entities. As a result of this arrangement, more than an arm’s length has been maintained. Yet, the Boards of Directors of East Coast Road and New Tirupur Area Development Corporation Limited have representatives of the Government but, these Boards also have representatives of all other interested parties (Lenders, Investors, Consumers and Independent Individuals), thus providing for balance in governance. It is this corporate structure that enables the protection of all interests as also the project itself.

The sustainability as the basis for up-scaling of the infrastructure initiative in Tamilnadu rests at the one level on the demand-driven nature of the projects and the structuring of the PPP model. This format has shown itself as vibrant, robust and dynamic with an effective risk sharing contractual structure, balancing risk and rewards and governed on the basis of highly participatory approach. It is these specifics, imbedded in each of the projects, which come on top of a stable and growing national economy, coupled with sector specific reforms that have created the necessary conditions for attracting private investments in an otherwise difficult sector.
Impact and Outcomes

Dignity of life is essentially the final outcome of good infrastructure. It implies, at the real level, that people, particularly women and girls, do not spend valuable time waiting at street corners at odd hours for water. Good basic services involve the dignity of private sanitation. It allows improvements in health and other social indicators such as education. It also means that students do not sit below streetlights to study, but can do so in the comfort of their homes. It enables the ability to communicate at will and to share moments of joy and sorrow with loved ones, or conduct business efficiently without let or hindrance of power, telecom, transport etc. Good infrastructure is the platform on which individuals and firms can realize their true potential without the constraints of inefficient services. In economic terms, quality infrastructure implies efficient use of resources, higher output, leading to growth, employment, and less poverty. In essence, good, quality infrastructure is a means and basis for economic growth and improved quality of life. In recent years, much research has been devoted to estimating the productivity of infrastructure investments. Many studies examining the link between aggregate infrastructure spending and GDP growth show very high returns in time-series analyses. “Research indicates that while total infrastructure stocks increase by 1 percent with each 1 percent increment in per capita GDP, household access to safe water increases by .03 percent, paved roads by 0.8 percent, power 1.5 percent and telecommunications 1.7 percent. Infrastructure productivity will determine how India will cope with the increasing pace of urbanization, globalization and technological innovations in manufacturing and logistics. Environmental issues and poverty reduction, too, depend heavily on the productivity of the infrastructure sector.”16

The positive spin-offs of infrastructure are indeed multi-dimensional – with an eventual benign impact on poverty. The clutch of projects described and the institutional arrangements within which they have been developed aim and hope to achieve just that.

The Tirupur water project will have a profound impact in the project area and beyond in tangible economic terms, along with improvements in local health, environment and living conditions. At the one level, it will lead to an immediate increase in economic output. The rationale for the project was in fact to supply water, a critical input, to the local industry, particularly the dying and bleaching units. With the commissioning of the project, local industry will receive the much needed fillip to meet the competitive global challenges of the emerging WTO regime, and increase its export earnings from the current level of $ 1 billion to $ 5 billion over the next decade. Quality and assured water supply will help local industry to concentrate on productivity, move up the value chain and expand production. Clearly this will lead to higher employment opportunities, wages and standard of living and reduction in poverty.

A water project such as in Tirupur will of course have a huge impact on the lives of women and girls. Gone will be the days of standing in lines at odd hours for long durations to obtain poor quality or untreated water of minimal quantities. With water available on tap 24

hours, seven days a week, they will instead be able to productively attend to a more qualitative agenda of household chores, enjoy more leisure time and or take advantage of the emerging employment opportunities (currently almost half the workforce comprises of women). It is expected that more girls will similarly be freed from water fetching chores and be able to attend school instead.

On the social side, both the Tirupur and Alandur projects will convey large positive impacts on the health profile of the local population. It is estimated for instance that about 70 percent of India’s health problems arise on account of water – and as a corollary, sanitation. With supply of quality water round the clock, along with access to new sanitation facilities, it can be assumed with confidence, that the health indicators of the benefiting population will improve manifold. That sanitation facilities will also cover the poorer households and slums will indeed have a long term beneficial impact on the health and hygiene conditions of the marginalized and otherwise neglected sections of society.

Finally these projects will have a long-term impact on the local and even regional environment. Currently, for instance, the residents and industry of Tirupur draw large quantities of water from sub-soil sources. Due to the discharge of effluents from industry, the underground water has been polluted to a large extent, making it undrinkable and unusable. Once the water project is commissioned, it is expected that there will be no further need to draw water from wells. This will allow the recharging of the ground water over time. The standards and quality of the water from the project will also lead to lower levels of effluent pollution discharge by industry.

In effect, projects relating to water and sanitation systems will give long-term social and economic gains to the community at large. The transport sector projects in Madurai, Karur and the East Coast Road, too in turn will provide related benefits. Clearly in economic terms, improvement in traffic flows will reduce transaction costs, abatement in congestion, and ease of travel will lead to economic gains on account of the improved productivity levels in the performance of the sector. For instance, at the national level, under the ongoing expansion of the “Golden Quadrangle” program, about 5846 Kms. of national highways will be upgraded from two to four lanes. It has been estimated by the World Bank that this program will lead to an annual savings of about Rs 80000 million in fuel and vehicle operating costs. In other words, the savings will equal to about Rs. 14 million per kilometer per year. On the social side, these projects improve safety standards, and driving will become that much more a pleasant experience. The E.C.R. has helped spawn tourism, leisure entertainment, and eatery businesses. All these have led to increase in economic activity, employment, area development and eventually lowering local poverty levels.

The above are generic outcomes from each of the investments in infrastructure. But the impact in terms of up scaling of these “first-of-its-kind” projects is significant in a more specific sense. These projects have successfully established that the private sector can wholly participate in urban infrastructure supply services and unambiguously demonstrate that “it works”. It does so in several ways. First, these projects have helped achieve the mandates and expectations of the government. These include creating quality infrastructure assets, stimulating economic growth,
increasing local competitiveness, improving social welfare and quality of life. For the private sector, their participation confirms that returns are commensurate with perceived risks, which have been appropriately apportioned to parties best positioned to assume them. This risk sharing in essence is the underlying principle for the success of the public-private partnership model. The government assumes the risk associated with the local regulatory regime (as is the case in the discussed projects) and the private entities shoulder commercial risks.

Second, the joint venture model as adopted in the state has also shown its robustness and efficacy in meeting objectives, while allaying social concerns of equity, consumer interests and welfare. Such concerns arise in view of the natural monopoly status of the projects as providers of basic services. The regulatory and more importantly, governance structure of these project entities ensure that social and consumer interests are safeguarded, while protecting the commercial interests of the projects. For instance, the Board of Directors of NTADCL and TNRDC include representatives of the government, private investors and independent individuals to balance the different interests and act as a means of check and balance.

Third, the projects demonstrate the degree of leverage cash strapped governments can achieve by bringing in private capital and operational commitment. One of the factors leading to decline in service expansion is the fiscal constraints of governments. Given a conducive and enabling environment, the private sector can share the burden of public expenditure, and free up scarce government finances for other social investments. The Tirupur and ECR projects make clear the high levels of financial leverage that fiscally challenged governments can achieve while promoting infrastructure investments. In the latter case, with a contribution of Rs 50 million, a total investment of Rs 600 million was achieved – a leverage of 12 times. In the Tirupur case this ratio is over 20 times, where a contribution of Rs. 500 million has brought in a total investment of Rs 10230 million. Similarly, in the TNUDF projects, in the case of Alandur, a capital grant of Rs 30 million from the state government has helped realize an investment of Rs 340 million, giving a leverage ratio of 11 and a four times investment in Madurai. At Karur the investment has been brought in on a BOT basis, with no government funding contribution at all. In all with its own contribution of $ 15 million, the state has been able to garner private investments for urban infrastructure to the tune of $ 261 million. All these projects thus clearly affirm that it is not so much the funding but the enabling and facilitation aspects that are important in creating assets with private sector participation.

Typically urbanization in the developing world is characterized by opportunities and challenges. It provides an impetus for economic growth, social well-being, opportunities for employment, and a basis for reducing poverty. Yet urban poverty, with its own unique features, remains a central challenge for societies. A key input for urban efficiency is infrastructure and basic services. Fiscal and organizational capacity constraints along with distorted policies have increasingly thwarted the ability of ULBs to meet the rising demands of urban services. In India the government is striving to meet this challenge through a series of urban sector reforms. Tamil Nadu, has led the effort and has established an efficient framework to aid the process. A string of private sector infrastructure projects are being implemented in the state. These projects, which have been structured on a PPP model, are based on the principles of appropriate risk sharing, with
an efficient balancing of risks and rewards to attract private investment. These pioneer initiatives will not only bring about the positive outcomes associated with good infrastructure, but in their own distinct way have established the viability, logic and associated strengths of private participation in the development of the urban infrastructure sector. These initiatives have been built on the underlying principles of long term sustainability, which in turn provides the platform for future up-scaling.

**Prologue—Up-scaling**

Apart from the projects under implementation summarized above, the three umbrella institutions are now gearing themselves to develop and implement a further group of projects with the total estimated cost of about $675 million.

These include:

- One major water project by TWIC - $400 million
- Six road related projects by TNRDC - $180 million
- Eleven urban jurisdiction for sanitation systems by TNUDP - $95 million

In essence, the initial clutch of investment ($261 million) is now expected to be up scaled 2½ (two and half) times, thus providing for total private investments in urban services just short of $1 billion. The water and sanitation project will cover a population of about 9 million.