Indo-US
Financial Institutions
Reform and Expansion Project -
Debt Market Component
FIRE(D)

Project Notes

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A Standardized Approach to Financial Analysis of Urban Environmental Infrastructure Projects

Over the past three years, USAID/India's Financial Institutions Reform and Expansion (FIRE) Project has worked with 15 municipalities throughout India to develop demonstration urban environmental infrastructure projects. These projects will provide significant economic and public health benefits to India's cities by increasing potable water supply and distribution and sewage collection, treatment and disposal.

During this process, significant strides have been made toward standardizing the approach to financial analysis of municipal infrastructure projects. The purpose of this Policy Note is to disseminate the methodology for this standardized approach. The goal is for other municipalities, state officials and private sector technical and financial advisors to learn from, adapt and apply this approach to municipal infrastructure project financial analysis.

The FIRE(D) Project has made substantial progress on project development in five municipalities. Following are three examples:

• In Tiruppur, Tamil Nadu, bids are currently being evaluated to award a water supply and sewerage concession valued at Rs. 451.4 crore (US$115.8 million) to serve a current population of 270,000.

• In Ahmedabad, Gujarat, design / build contracts for water and sewer construction valued at Rs. 489 crore (US$140 million) will be financed by a combination of municipal bonds and USAID Housing Guaranty funds, to serve a current population of 548,400.

• In Pune, Maharashtra, a combination of design / build contracts and concessions valued at Rs. 496 crore (US$127.2 million) along with privately contracted operations and management will provide water and sewerage to a current population of 2,368,000 people. These will be financed by layering sources of funds from Pune's surplus revenues, Pune municipal bonds, State grants, USAID Housing Guaranty funds, loans from commercial banks and loans and / or equity from the project's private sector developer.

These three examples demonstrate the capacity of the standardized approach to address complex and differing approaches to infrastructure project development.

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The Standardized Approach

The standardized approach for municipal infrastructure project financial analysis consists of four schedules:

- Past and Projected Municipal Revenues
- Project Sources and Uses Of Funds
- Project Debt Service Schedules
- Project Cash Flow Fund

1. Past and Projected Municipal Revenues

The first schedule for the standard approach is used to determine if and how much of the municipality's own sources of funds can be applied to the uses and funds for the project. This is a somewhat labor-intensive undertaking, because municipal records must be analyzed for revenue income and expenditures over the past five years.

Depending upon the municipality, revenue income may come from net octroi taxes; property taxes; taxes and transfers from the state, such as education, health care, slum upgrading, street cleaning, markets and slaughter houses; development charges; water taxes, charges and connection fees; and drainage taxes and charges. Similarly, revenue expenditures for general municipal administration must be examined: education, health care and other expenditures such as slum upgrading, streets, town panning and estates; markets; fire protection and gardens; debt servicing for loans; contributions to reserves and special fund accounts; and capital, operating and salary costs for municipal responsibilities such as water supply and drainage.

Revenue income and expenditure line items are analyzed for each year over the past five years. These are converted to percentages to determine annual increases or decreases for each line item, over time. The percentages are averaged to calculate the average annual percentage growth rate. The average annual percentage growth rate is then used to make assumptions about future revenue income and expenditures for the next 10-20 years, depending on the long-term impact of the proposed project. It is important to perform a sensitivity analysis to test assumptions regarding future average percentage growth rates.

Projection of future revenues will determine if there is an excess of annual income over annual expenditures, and how much would be available per year. Where municipalities do not have future excess of income over expenditures, municipal infrastructure development will rely on public-private partnerships and/or community-based delivery of services.

Where municipalities do have annual revenue surpluses, the surpluses may be applied in two ways:

- In the initial years, the surpluses can be applied directly as capital contributions to the sources of funds required to develop the project.

- In the following years, the revenue surpluses can be applied to the project cash flow fund, to cover ongoing project costs such as debt services for loans, fees for concession agreements, and/or operating and maintenance expenditures.

In either case, it is important not to program the entire amount of revenue surpluses for any single year. For instance, capital contributions should take into account that the municipality will likely have other capital projects for which it is responsible. Annual revenue surpluses in the following years should be discounted by as much as half, to account for unexpected changes in future revenue surpluses. And a cap on future municipal borrowing must be in place to guarantee the availability of future revenues to service the debt for the proposed project.

2. Project Sources and Use of Funds

The second schedule of the standardized approach identifies the sources and uses of funds required to undertake the project. It is important that the sources and uses are allocated over the life of the project's construction period. This will ensure that sources are not borrowed before they are needed, which may result in unnecessary additional costs to the project.

The sources of funds can be multiple, complex and layered. For instance, in the examples of the three projects being developed under FIRE, the sources consisted of the following:

- Pune had a history of significant revenue surpluses. Therefore, it was able to add revenue surpluses, accumulated over the years, to grant funds provided by the Maharashtra State Government, to account for about one-third of the sources of funds.

- All three projects will rely on funds provided through USAID's Housing Guaranty Program. Loans from US investors, guaranteed by USAID, will be provided through the FIRE(D) Project's financial

intermediaries, Infrastructure Leasing & Financial Services (IL&FS), and the Housing and Urban Development Corporation (HUDCO).

• Both Ahmedabad and Pune will issue municipal bonds. To do so, each had, or developed, transparent municipal finance systems which allowed them to receive municipal credit ratings from Credit Rating and Information Services of India, Ltd (CRISIL). Each city is working with merchant bankers to structure the debt obligations.

• Both Pune and Tiruppur will use public-private partnerships where private sector developers will bring equity and/or debt to the project through long-term concession agreements with the municipalities. Under the agreements, the municipalities grant exclusive right to the developer to provide municipal services such as water supply and/or sewerage. The developer is guaranteed the payment of a fee for the services provided.

• Loans from commercial banks will be used in Pune, and perhaps in Ahmedabad. These will be long-term loans at market rates of interest.

In addition to the above, sources of funds may include concessionary financing provided by foreign entities selling equipment such as sewage treatment plants; debt or equity financing provided by private sector developers; or debt or equity financing provided by non-government and/or community-based organizations.

Uses of funds consist of the cost to design, develop and construct the proposed infrastructure. Typically, these include: land; provision or renovation of water and sewer mains, pumps and lift stations, primary and balancing reservoirs, and distribution systems; reduction of unaccounted-for water; price adjustments for long-term construction contracts; contingency allowances for unanticipated costs; professional fees for engineering and design; interest on short-term loans during the construction period; government fees; financing commitments to commercial lenders and fees for issuing bonds; legal costs; payment and performance bonds; and taxes and transfer fees.

Managing the gap between sources of project funds and uses of project funds is an essential part of the project design process. It is important to construct a sources and uses schedule early in the project development process, and revise it often as the project design evolves. This will help to guide the municipality, engineers and merchant bankers. For instance, as additional sources of funds are identified, the project can be expanded to accomplish additional objectives.

3. Project Debt Service Schedules

A project debt service schedule estimates the payments required to retire the various loans described in the sources of funds over the loan repayment periods.

Each of the loans may have different interest rates and repayment periods. For instance, the sources of funds derived from a USAID guaranteed loan may have a repayment period of up to 30 years. The interest rate may be fixed for the entire 30 year period, or it may be renegotiated every five years. The principal repayments may have a grace period of up to 10 years, where only interest payments are required. Commercial banks may have loan repayment periods of 8-12 years. Interest rates may be negotiated every five years. Principal and/or interest payments may be due monthly, quarterly, semi-annually or annually.

Given all the possible variations, it is necessary to develop a table for each source of loan funds. The table will show loan sources and identify the accumulated sum of annual principal and interest payments due for each loan. The amounts due are carried forward to the project cash flow analysis.

4. Project Cash Flow Analysis

The project cash flow table summarizes the total annual income and expenditures for the project. The project cash flow analysis is differentiated from the sources and uses analysis in that the project cash flow analysis examines the project's cash flow after the construction of the project has been completed.

For each project, a separate fund or funds will be established. The operation of the fund(s) will be defined by legal agreements and placed under the control of a trustee, an uninterested third party who will interpret the legal agreement(s) to ensure that the rights of both the developer and the municipality are protected.

The project cash flow analysis is constructed to show, on an annual basis, the funds flowing into and out of the project fund. For instance, income can originate from: monthly charges for water and sewer services; revenue surpluses generated by the mu-

nicipality, which have been carried over from future revenue schedules; and payments from a "sinking" fund. A sinking fund is a source of income for the project, through which an initial deposit made by the municipality, plus interest accrued, are paid out over the life of the project.

Expenditures from the fund(s) may include operating and maintenance costs for the facilities; payments due on loans carried over from the debt service schedule; payments due on concessions with private developers for delivery of water and sewer services; or payments due on contracts with private providers of operations and maintenance or billing and collection services.

The Value of the Standardized Approach

The primary benefits of the standardized approach to financial analysis of urban infrastructure projects are twofold.

First, the inter-relationship of the four schedules enhances project modeling. For instance, increases in future municipal revenue projections provide additional income for the project cash flow analysis. This may allow for additional debt service payments. Increasing the debt service payments, when carried to the debt service schedules, will increase the amount of the loans available to the project. Increasing the amount of loans, when carried to the project sources and uses schedule, will provide additional funds to expand the project uses.

Likewise, decreasing the project uses may result in the need for decreased future municipal revenue surpluses, which may allow for private provision of operations and maintenance.

And second, a standardized approach creates the potential for developing computer-aided analytic tools (CAAT). Software manuals for an urban environmental infrastructure CAAT are currently under development by the FIRE(D) Project. When ready for release, this tool will be made available at no cost to municipalities, state officials, private sector technical and financial advisors and research and training institutions. This will substantially increase the potential for others to benefit from the lessons learned by USAID's FIRE(D) Project.

Indo-US Financial Institutions Reform and Expansion Project - Debt Market Component FIRE(D)

The objective of the Indo-US Financial Institutions Reform and Expansion (FIRE) Project, funded by the U.S. Agency for International Development (USAID), is to support the Government of India in its efforts to strengthen domestic capital markets to enable them to serve as efficient source of development finance. The Debt Market / Infrastructure Component (FIRE-D) seeks to expand the debt market through the financing of commercially viable urban environmental infrastructure projects, by channeling USAID Housing Guaranty funds to selected demonstration cities and states to assist in the financing of urban environmental infrastructure projects.

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