

## Guidelines for Rating International Infrastructure Projects

### Analysts

#### New York

Janet H. Martin  
Sovereign and Solid Waste Projects  
(212) 908-0507

Andrea R. Bozzo  
Transportation and Water  
and Sewer Projects  
(212) 908-0515

Ellen Lapson  
Electric Power  
(212) 908-0504

Ralph Pellechia  
Natural Gas Transmission  
(212) 908-0586

Stephanie Babich  
Telecommunications  
(212) 908-0524

#### London

Jill M. Guido  
European Structured Finance  
0171 382 0676

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This report supplements Fitch's key rating fundamentals as contained in separate ratings guidelines and criteria pieces on the transportation, environmental, and utility sectors. For copies of Fitch Research, contact Market Services at 1-800-85 FITCH or, in London, 0171 638 3800.

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### Summary

*Several factors combine to stimulate the financing of international infrastructure projects. Projects are constructed to facilitate economic growth, as well as to maintain and refurbish existing facilities. Infrastructure projects offer opportunities for private sector involvement as governments seek to streamline operations and enact structural reforms to the financial system. The devolution of services to the local level is yet another example of governmental streamlining that provides additional opportunities for project financing and privatization. Within this climate, Fitch expects that the financing of infrastructure projects will increase. The issuer base is expected to diversify as more countries and private and public sector issuers access the global markets.*

*This report discusses the credit process and criteria used by Fitch to rate infrastructure project bonds. It also highlights Fitch's criteria when evaluating revenue streams and participants prior to the permanent financing of a project.*

### Overview

The analysis of project revenue streams is relevant to three types of public finance infrastructure projects: transportation, which includes airports, ports, toll roads, bridges, and high-speed rail and mass transit systems; environmental, including the treatment of water, sewer, and solid wastes; and utility, such as

electric power, gas pipelines, and telecommunications projects, which can include wireline and wireless equipment and facilities. The rating integrates the analysis of governmental finance — whereby debt, finances, government, and economy are evaluated — with project finance. The key areas of project finance analysis focus on bond security, management, project operations and feasibility, and the underlying service area. For international issuers, the evaluation of the sovereign provides the framework for assessing the environment within which the project will operate. The critical elements of sovereign analysis, as they relate to the project, include the assessment of currency, economic, and political stability.

## Governmental Analysis

International projects include analysis of the underlying sovereign and municipal governments. Sovereign analysis evaluates the likelihood that the sovereign will change laws or take actions that threaten the ability and willingness of issuers to repay debt obligations. Since refinancings are an integral part of debt structure, the threat of loss of market access is often a mitigating factor. Sovereign risks include the assessment of:

- ❑ Expropriation of the issuer or its property or repudiation of its debt (political risk).
- ❑ Declaration of a moratorium or similar prohibition or restriction against any payments on external debt (political risk).
- ❑ Deterioration of the general business and economic environment.
- ❑ Detrimental regulatory actions.
- ❑ Civil unrest, including social and labor disturbances.
- ❑ Deterioration in the value of the sovereign's currency in relation to the currency in which the issuer's debt is denominated (exchange rate risk).
- ❑ Imposition of exchange controls or similar actions that could limit convertibility of the sovereign's currency (transfer risk).

Several factors are considered in analyzing both the sovereign's and municipality's credit quality. These factors are debt, finances, government, external operations, and economy. Debt history is evaluated to determine whether bonds, bank loans, or trade receivables have experienced defaults, repudiations, or restructuring. The authorization process, mechanisms for debt repayment, and sources of revenue are reviewed. Market access is important to determine liquidity when a high proportion of debt is held by nonresidents. Foreign exchange policies and currency stability are significant to ascertain repayment of foreign currency debt. If a currency is devalued, any debt denominated in foreign currencies will be more costly, requiring more local funds to be converted. Debt structures oriented toward floating-rate or short-term obligations may experi-

ence volatility and can be exacerbated by unstable currencies as well as high interest rate scenarios.

Fitch's analysis also examines debt maturities in relation to the budget process to ensure that sufficient funds will be available. Additional reserves and other security features may be required to mitigate perceived risks. Treatment of state-owned and guaranteed liabilities is also reviewed, as well as the mechanism to repay debt of local municipalities. Fiscal position and monetary policies are evaluated to determine whether the central government would impose restrictions on repayment of external debt, or impose currency controls that would make it impossible to convert local currency into foreign currencies to repay external debt.

Generally, relationships among political parties and platforms do not become a negative credit factor unless political disagreements jeopardize the ability to govern or create obstacles for the project to proceed. Precedents have been set where a new political party will remove the project participants and replace them with their own, change terms, or just stop the project altogether. In addition, the failure to adopt budgets on time and the inability to enact legislation to restore fiscal stability by raising taxes or cutting expenses can affect creditworthiness. Other political factors evaluated include the manner in which transitions between governments are handled.

Analysis of business risks for corporate issuers includes assessing the likelihood that the sovereign would nationalize the industry and prevent or divert debt repayment. Changes in fiscal and monetary policy, through their effects on interest rates, exchange rates, tax receipts, and governmental spending, can dramatically alter the economic environment and corporate profitability. To overcome some of these risks, where appropriate, debt can be collateralized or structured to capture specific revenue streams.

## Sovereign Governments

The evaluation of sovereign governments includes:

- ❑ Debt policies, including debt position and reform measures for central government and state companies.
- ❑ Financial operations, fiscal policies, and budget process.
- ❑ Economic indicators and development policies.
- ❑ Monetary policies, external operations, and trade accounts and policies.
- ❑ Governmental policies, regulatory climate, legal structure, and political risks.
- ❑ Intergovernmental relationships, including state enterprises, administrative agencies, and local subdivisions.
- ❑ Central bank and financial institutions, as well as financial markets, the private sector, and privatization.

## Municipal Governments

The evaluation of municipal governments includes:

- ❑ Debt policies and position, including authority to incur debt and recent debt issues by the municipality and any overlapping entities.

- ❑ Financial operations and fiscal policies for the past five years, as well as current budget, including new legislation and interim operating results.
- ❑ Central government's relationship with local subdivisions and changes to revenue-sharing and tax collections.
- ❑ Economic profile and development plans.

International projects operate within sovereign and municipal jurisdictions that form the service area. Many credit differences and challenges are interrelated and may affect the project, its operations, and its regulatory environment. The evaluation of the project also considers these factors and how the international municipality and project may differ from the same project in the U.S. The differences extend to demographics, social service benefits, finances, debt limits, public sector dominance, and politics. Credit challenges encompass the areas of governmental restructuring, economic diversification, foreign direct investment, intergovernmental relationships, private sector and domestic demand, regulatory and judicial systems, and political and social risks.

The sovereign ceiling represents the threshold above which unsecured foreign debt cannot be rated higher than the sovereign's own credit. However, under certain circumstances, an issuer's assets may be securitized or overcollateralized to receive a rating higher than that of the sovereign. For additional information, please refer to Fitch Research on "Securitizing Above the Sovereign Ceiling," dated March 20, 1995.

## Infrastructure Projects

Infrastructure projects are evaluated based on security provisions, operating history, feasibility, and sensitivity analysis, as well as analysis of the underlying service area. The participants are analyzed to assess their technological and management expertise and financial capacity. The project's overall funding mix is considered to determine if sufficient funds will be available to complete the project. These funds include the debt and equity mix, any guarantees, insurance, and loans from private institutions or the International Monetary Fund, World Bank, or Overseas Private Investment Corp., as well as loans from other sovereign governments.

Evaluation of the revenue stream is key to assessing the project. Revenue streams may be simplified into two types of service — essential and competitive — to determine the factors that could negatively affect an international project. Examples of essential service projects include environmental (water, sewer, and solid waste) and utility (electric power, natural gas transmission, and telecommunications) projects. Transportation projects are examples of competitive service due to alternative transportation facilities and the attendant user choices. In some countries, such as the

U.K., Chile, and Argentina, the provision of electric and gas service is subject to market competition. Telecommunications projects in many countries are being privatized and deregulated.

There are some essential service projects that operate within more competitive circumstances, while some competitive service projects (e.g. transportation) may operate within a less competitive environment. As a result, the revenue base for essential service projects may be more stable than that of competitive service projects.

Fitch's analysis identifies how sovereign, project, and participant credit fundamentals positively or negatively affect the revenue stream and, ultimately, the ability and willingness to repay any project obligations in a timely fashion. The box on page 8 highlights important concepts that are considered in the project analysis. Key fundamentals for evaluating a project include:

- ❑ Analysis of sovereign and municipality debt, finances, government, external operations, and economy.
- ❑ Project finance analysis of bond security, project operations, project feasibility, and underlying service area.
- ❑ Evaluation of the revenue stream, flow of funds, and reserve requirements, as well as debt service coverage and additional bonds tests.
- ❑ Sovereign risks — currency and political.
- ❑ Credit analysis of project operators, participants, fiscal position, and technological expertise.

## Transportation

Most international transportation projects have short-term construction funding provided by commercial banks. The private construction/operator team that is awarded the government concession for the transportation facility often provides considerable equity itself to the transportation project and also may syndicate the equity investment to various other parties. Under this scenario, refinancing risk is borne by the concessionaires, and the government will often share it by lengthening the concession period if the concessionaires' return on equity is not realized at the projected levels for the original concession period. Sometimes, in the case of toll facilities, the government will totally assume the refinancing risk by guaranteeing the daily number of vehicles on the toll facility and, hence, toll revenues to be collected and concomitant rate of return during the concession period. The bond financings that take out the construction loans in these scenarios are usually medium term (eight to 12 years) rather than long-term models seen in the U.S.

There are important distinctions between the methods used by U.S. issuers to finance, build, and operate transportation projects and those employed by international issuers. The primary difference concerns the use of a kind of hybrid approach in the U.S., combining traditional

government enterprise financing for as long as 30 to 40 years and private companies providing construction of the transportation project. The U.S. operator is sometimes the governmental unit or at times a private company. Refinancing risk after the construction period is not tolerated in these U.S. financings, and, therefore, both construction risk and operating risk are borne by the long-term bondholder. In addition, the construction company provides very little or no equity but will sometimes take a small portion of its payment due in the form of subordinate bonds of the project. Likewise, the financial institutions involved are almost solely investment banks that invest little or no capital in the projects. Equity has been provided, to date, through a variety of governmental revenues, including developmental impact fees, moneys from a state revolving fund, and local tax-exempt bonds payable from special assessments or federal, state, and local grants. Governmental loans have also been provided; these loans are subordinated to the bonds, with no defined amortization period and a floating interest repayment rate and, therefore, act somewhat as "preferred stock."

### Environmental

Environmental projects build, maintain, and operate infrastructure projects for water, sewer, and solid waste systems. For many international central and local governments, water, sewer, and solid waste are considered governmental services, financed by general governmental revenues through the operating budget. In some cases, financings for these services have the pledge of the governments' full faith and credit. For some systems, there are fees or service charges imposed, but generally not in amounts to make the project self-supporting. The major credit differences between U.S. and international issuers center on the area of pledged revenues. In the U.S., many enterprise systems are designed to be self-supporting. From the standpoint of credit analysis, self-supporting governmental systems are also evaluated when the underlying government is being rated. This is done to ensure that there will be no surprises facing the municipality and that funds planned for other operating purposes will not be needed to activate governmental support mechanisms to the enterprise. Also, in the era of tax awareness, taxpayers and ratepayers are one and the same and are acutely aware of the total taxes, rates, and fees they are paying. Thus, whether or not a water, sewer, or solid waste enterprise is part of the government budget or is stand-alone, it is still considered in the credit evaluation.

### Electric Power and Natural Gas Transmission

Potential worldwide demand for capital investment in the electricity and pipeline sectors is high. Projected requirements for electric power exceed supply in many countries, frustrating economic development. In developing nations,

the need for additional power generation capacity may be matched by the need to improve the electric distribution system, develop gas pipelines and other fuel resources, and reform the economic and financial structure of the utility industry. Moreover, there is a substantial, untapped resource base of natural gas supplies that require development of transmission systems to reach both the electric generation and growing gas distribution markets. Investment projects may take several forms, described below:

- Project development of new electric generation (generally thermal or hydroelectric).
- Related project development of gas pipelines, mines, or other fuel-handling facilities.
- Privatization of existing electric or gas utilities.

In some countries, utilities are predominantly owned by public-sector entities, and tariffs are regulated and administered by a regulatory body or board. A few countries have adopted competitive market models based on the restructuring of the U.K. electricity sector, with a competitive commodity market for power generation and legal separation of the ownership of generation, transmission, and distribution. In either case, a thorough analysis of the regulatory and legal framework of the industry and the local and national political environment is a key factor in Fitch's analysis, reflecting their significant implications for the stability and predictability of cash flows and investor outcomes. A second factor underpinning Fitch's rating process is an assessment of a project's competitive economic position. Experience has proved that pipelines and electric generation projects demonstrating a strong competitive position relative to alternative fuels or technologies in the local market, as well as worldwide energy prices, are inherently less risky than projects whose economics are driven primarily by high-cost, above-market contracts. Economic, competitive arrangements are less likely to be challenged by regulators and politicians. Factors that determine competitive strength include: the impact of technological change, supply and demand, national and regional economic growth, transmission access, production costs and labor considerations, and a number of factors specific to the transaction.

Electric and natural gas projects tend to be highly dependent on local currency revenue sources and intermeshed with the local economic, legal, and political structures. Consequently, it is only in rare circumstances that ratings in these sectors exceed the sovereign ceiling.

### Telecommunications

A modern telecommunications infrastructure is vital to a nation's economic development and future competitiveness. Foreign networks, particularly in lesser developed countries, may have older, less efficient equipment without the reliability and service quality necessary to support a

strong, modern economy. In addition, telephone penetration — the percentage of population with telephone service — often is low, including long waiting lists for service in some countries. Consequently, government owners of systems around the globe are anxious to expand the systems and accelerate modernization.

Foreign governments and companies see privatization and investments from abroad as a means to raise capital to meet their financial needs as they upgrade their telephone systems. Capital requirements are much more significant in Eastern Europe and lesser developed countries than in Western Europe. Additionally, Asian governments see communications as a means of establishing a competitive advantage for their countries and, coupled with rapid economic growth, have spent billions of dollars annually on telephone infrastructure investment.

Cellular networks have gained favor in developing countries as an alternative to landline networks and their enormous capital requirements. Cellular telephone operations have expanded rapidly in the Czech Republic, Hungary, and Argentina. This rapid growth reflects the lower cost and greater ease with which cellular networks are constructed, making high-quality telephone service available more immediately. Even an advanced industrialized country's telephone network equipment must be upgraded to meet the communications needs of a modern economy. Fitch expects continued privatization and foreign investment in telecommunications projects, primarily in Asia, Latin America, and Europe.

The opportunity to invest in foreign networks and establish global partnerships has attracted many U.S. telephone companies. Foreign governments and companies have recognized that U.S. telephone companies possess the expertise and financial strength to build, modernize, and manage advanced telephone networks. An ownership interest by a recognized, financially sound industry leader gives the foreign telephone company, particularly those undergoing privatization, more credibility. At the same time, U.S. telecommunications companies have seen these overseas opportunities as ground-floor, once-in-a-lifetime franchise deals that can offer greater growth and larger profit opportunities or chances to own and operate cable television, as well as wireless and wireline telephone services, without certain legal and regulatory restrictions.

The broad parameters for rating overseas telecommunications projects and newly privatized international telephone company debt are intended to reflect the business risk profile and the regulatory environment. Telecommunications operators that operate in either near- or full-monopoly conditions, with protection from competition, will be subject to less business risk. Consequently, these operators may be able to sustain strong credit quality with lower debt protection measures than companies in a

competitive environment. They also may benefit from continued government ownership because the government will be committed to maintaining the telecommunications company's financial strength and stability.

## Credit Ratings

The credit rating is an assessment of the credit risk associated with a particular security, as well as the issuer's ability and willingness to pay debt on time and in full. All credit ratings are assigned by a rating committee upon completion of the credit analysis. Rating considerations for transportation, environmental, electric power, natural gas transmission, and telecommunications projects and participants follow.

## Transportation and Environmental Projects

Credit quality for these sectors is determined by analyzing the participants, project economics, and pledged revenues. For revenue bonds, pledged revenues are assessed to ascertain the ability of the service area to generate sufficient revenues to repay debt. For bonds backed by general governmental revenues, Fitch evaluates the overall credit quality of the government. Technological and operating risks also may exist. The rating is the distillation of all these risks, as well as an assessment of the key analytical issues. The rating takes into consideration interrelationships between the issuer and the entities that constitute or contribute to the project — owners, operators, and public and private sector participants. To assess credit quality and assign a rating, Fitch performs an internal rating analysis of the appropriate participants. It is not necessary for Fitch to have a public credit rating on the debt obligation of underlying participants, which may include governmental entities and corporate vendors that construct and operate the project.

These internal credit ratings and the perceived risks, coupled with the evaluation of sovereign risks, bond security features, and the project analysis, are essential in determining the credit rating. The rating also incorporates construction risks by examining the various commitments provided by project participants and the degree of technological complexity involved with the project's construction and performance. Where appropriate, Fitch looks for construction and performance bonds from an independent third party, as well as the vendor guaranty. Fixed-price contracts, as well as capitalized interest, reserves for debt service, equipment, operations, maintenance, and rate stabilization, are other important features that may be used to increase bondholder security and may assist in the attainment of an investment-grade rating. The rating also assesses operating risks and the service area. While each credit is based on its own fundamentals, there are, however, certain fundamentals that are consistent with the various rating categories. The credit quality and the expe-

rience of governmental and corporate participants are important components of the rating analysis.

Factors that contribute to an investment-grade rating for transportation and environmental projects include demonstrated economic viability, a stable service area, the ability to support rates and generate revenues, and realistic operating projections. For environmental projects, other important characteristics are suitable technology and demonstrated management oversight that retains the flexibility to respond to a changing regulatory environment. For both transportation and environmental projects, the ability to revise rates in a timely manner is essential for a revenue-based system. In most cases, only one entity should have jurisdiction for rate revisions. Good legal covenants and coverage should be provided, as well as maintenance of sufficient reserves, including debt service, operations and maintenance, and other contingencies as determined by the issuer's credit fundamentals. The rating also takes into account the legal framework, the validity and enforceability of contracts and guarantees, and available remedies in case of contract disputes. Currency and exchange rate risk may be mitigated by denominating the debt in local currency, indexing revenues to the currency of the financing, or special government permits for currency convertibility and repatriation.

### **Electric Power and Natural Gas Transmission Projects**

A successful power or transmission project needs to be well structured, both legally and financially. It must demonstrate demand for its product at a competitive price and have in place all necessary permits and other required arrangements. Proven technology, an experienced development team, and local support for the project are essential. There must be a strong correlation between movements in project fuel costs and revenues derived from energy prices. Political and regulatory factors, including sovereign risk, exchange rate fluctuations, potential for project expropriation, and possibility for unexpected political developments must be considered.

Fitch typically requires that there be a competitively priced contract to assure a stream of revenues for the life of the debt. As with transportation and environmental projects, the rating also takes into account the legal framework, validity and enforceability of contracts and guarantees, and available remedies in case of contract disputes. Currency and exchange rate risk may be mitigated by denominating the debt in local currency, indexing revenues to the currency of the financing, or special government permits for currency convertibility and repatriation.

Since fuel is an important component in thermal power projects, Fitch focuses on the relationship between the price for power and potential fluctuations in the price of the base fuel for the project. Any mismatch could have a significant

effect on project economics. Fuel price risks and reliability concerns may be managed via long-term fuel contracts, dedicated supply arrangements with sound suppliers, long-term transportation arrangements, or other measures. In the case of hydroelectric power production, variable costs are minimal and fixed costs are high, resulting in special risks in the case of low worldwide oil and gas prices or persistent drought conditions. To ensure bondholder protection, estimated financial results should provide sufficient debt service coverage. The analytical process includes the modeling of projected cash flow under a variety of economic circumstances and the development of stress scenarios to identify the project's sensitivity to a wide variety of factors, such as fuel prices, interest rates, performance and efficiency, and weather conditions.

For construction phase projects, the construction contract should include fixed-price, "turn-key" agreements with experienced builders. The construction budget needs to incorporate a realistic completion schedule, along with reasonable contingencies for potential delays or cost overruns. Performance guarantees and sureties by the builders help assure satisfactory completion and performance. Bondholder interests may be protected through the payment of liquidated damages and/or specified payments to reduce project debt if performance guarantees or timely completion is not met. Appropriate warranties on the entire project and on major equipment are positive factors. In addition, an independent engineer should be responsible for monitoring construction progress, possible changes, and completion and performance testing of the facility.

### **Telecommunications Projects**

With respect to the telecommunications industry, established, well understood regulatory procedures, as well as adequate rates of return, are important considerations in the analytical process. The absence of such procedures creates uncertainty among outside investors. The host government's pricing scheme, whether it be a price cap arrangement, price indexing, or a more traditional rate base/rate of return regulation, will be considered, as will any employment of a schedule for plant modernization, capital spending, and service quality requirements. Privatizations or projects that continue to require at least partial government ownership often may benefit from supportive regulatory treatment. Fitch also focuses on the regulatory policy toward competition. As development of an adequate, minimal level of communications infrastructure is established and service quality improves, regulators may open the market to competition, which may pressure profit margins and raise capital investment requirements.

Political stability, or lack thereof, can have a tremendous impact on, among other things, a country's economy, demand for telephone service, repayment of debts and obligations, and a constructive, flexible labor climate.

Political instability can raise borrowing costs and imperil a company's access to the capital markets. Additionally, wide variations in a local currency's value or restrictions on cash leaving the country can hinder financial performance. The type of currency used, its level of volatility, and any significant restrictions on currency outflows are major factors in Fitch's evaluation. In the case of U.S. companies investing abroad, the ability to repatriate earnings and cash to the U.S. becomes significant.

Another component of Fitch's assessment of telecommunications projects and international telephone companies is the topography and geography of a region, which could increase the cost of expanding and upgrading a network. Telephone company efficiency and cost control are affected by the network's physical structure and size. A small, compact network in a more densely populated area generally is more easily built, maintained, repaired, and expanded, compared to the needs of a widely dispersed population, which usually increases capital spending requirements and operating expenses. Furthermore, telephone service demand is influenced by certain factors, such as per capita income, age, employment levels, economic growth, inflation, and the cost of telephone service relative to income. Telephone usage patterns also vary by culture. Fitch assesses opportunities to stimulate usage and gain additional revenue. Low usage in a nation could be considered a significant opportunity for growth rather than a negative credit factor.

For U.S. companies investing internationally, choosing a local partner can be critical in operating the telephone system and navigating the political system, labor market, and regulatory environment and will also be taken into consideration in a rating assessment.

### Project Participants

In addition to governmental participants, international infrastructure projects include construction and operating companies, as well as financial institutions, that provide sources of funds to construct and complete the project. The following is a brief summary of the analytical factors that are evaluated in the rating and qualification of construction companies, operating companies, and financial institutions.

**Construction and Operating Companies:** The evaluation of construction and operating companies includes:

- ❑ Debtholder protection measures, including cash flow leverage (debt/earnings before interest, taxes, depreciation and amortization [EBITDA]) and cash flow coverage (EBITDA/cash interest paid), as well as cash flow adequacy, which measures the ability to service debt maturi-

ties after interest, taxes, and capital expenditures.

- ❑ Financial operations (five years of annual reports and most recent year interim reporting), bank credit agreements, public security issuance documents, and forecasts (next two years).
- ❑ Company's legal structure (including subsidiaries and divisions).
- ❑ Industry outlook, including seasonality and cyclicity, market and competitive position, and demographics.
- ❑ Evaluation of contracts, including raw materials, projects, and guarantees, as well as project insurance and track record and the ability to perform in the time required and at the cost quoted.
- ❑ Environmental and contingent liabilities.

**Financial Institutions:** The evaluation of financial institutions is based on:

- ❑ Corporate structure, including ownership, management team, and regulatory issues.
- ❑ Portfolio composition, including asset types, asset quality trends, and growth trends.
- ❑ Risk management, including asset/liability matching, funding structure, leverage, and liquidity sources.
- ❑ Financial operations, including profitability and margin analysis.
- ❑ Market position and competitive environment.

### Rating Process

The rating process is initiated by the participants or issuer, acting directly or through an advisor. Necessary information and documentation related to the transaction is requested and analyzed. As required, meetings and site visits are also conducted. International corporate transactions evaluate the country of domicile to determine what sovereign risks are appropriate. Fitch does not have to publicly rate the country of domicile to provide the corporate credit rating. However, governmental cooperation is necessary to facilitate the rating process. A multidisciplinary team is used to evaluate the credit fundamentals. Credit ratings are decided by the rating committee for public and private debt issues. To evaluate the various credit areas, Fitch requests the following information:

- ❑ Legal documentation, including laws and resolutions.
- ❑ Feasibility report and budgets.
- ❑ Financial data for project participants.
- ❑ Debt profile and amortization schedule.
- ❑ Service area statistics.
- ❑ Construction, management, and operating contracts.

## Project Analysis Checklist

### I. Project Description and Type

This part of the analysis is important to determine essentiality.

- Type of service provided and location.
- Identification of municipal responsibilities.
- Identification of participant responsibilities.
- Management, operations, and maintenance contracts.
- Rate-setting and payment method.

### II. Bond Security

Bondholder protections and payment structure are of primary importance. These are determined by the evaluation of: legal covenants and litigation; security features; reserve funds and tests; flow of funds; and remedies available to the bondholder under a default.

#### Legal Covenants and Litigation

- Political support, consensus, and litigation.
- Federal, state, and local permits and permitting process.
- Air and water quality regulations.

#### Security Features

- Pledged revenues and flexibility to change rates.
- Participants and rate-setting process.
- Billing process and revenue collection.
- Guaranty or deficiency make-up provisions.
- Gross or net pledge, including broad (covering all types of income from operations) and narrow (single source of income).

#### Reserve Funds and Tests

- Debt service, rate stabilization, and contingency reserves.
- Operations and maintenance reserves.
- Rate covenant and additional bonds tests.
- Revenue bond coverage test.
- Asset transfer provisions.
- Surety or guaranty and substitution provisions.

#### Flow of Funds

- Priority and order of payment.
- Mechanism to fund reserves and under a guaranty.
- Verifications prior to release of funds.
- Repayment of equity.
- Time to fully fund reserves.

#### Defaults and Remedies

- Waiting period and percentage of bondholders required.
- Application of insurance awards.
- Budget process and timing.

### III. Management

The evaluation of project management considers the multi-phases of the project, including construction and operation, technology, and engineering.

#### Construction and Operation

- Experience and fiscal position.
- Technical and management oversight and review.
- Auditing and verification.
- Rate-setting authorization and mechanism.

#### Technology

- Type of technology, suitability, and permitting.
- Environmental and regulatory compliance.
- Capacity and supply.

#### Engineering

- Independence.
- Technical and management oversight and review.
- Verification and auditing.
- Fee escalation clauses.
- Asset maintenance practices.

### IV. Project Feasibility

The analysis of project feasibility determines the essentiality of the project in conjunction with the credit risks and factors of the sovereign and governmental participants that affect the debt, finances, and economy of the issuer, participants, and service area.

- Project necessity, system components, and expansion.
- Competition and pricing.
- Sovereign risks — currency and political.
- Service area economy and sensitivity analysis.
- Revenue collection and billing process.
- Operating position and leverage.
- Reliance on interest income.

### V. Service Area

The area that is serviced or utilizes the project is analyzed, as well as the mechanism for charges and payment for use of the project.

- Service area economy and demographics.
- Underlying credit quality of municipalities.
- Billing cycle in relation to budget cycles and process.
- Payment responsibility.
- Competition and alternatives to the project.