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Policy Note

Concessionary Financing Programs for the Water and Sanitation Sector in China



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Urban Water and Wastewater Sector issues are an integral part of the development challenge in the East Asia and Pacific (EAP) Region. The World Bank’s Environment Strategy in the East Asia and Pacific Region has provided the conceptual framework for setting priorities, strengthening the policy and institutional frameworks for sustainable development, and addressing key development challenges through projects, programs, policy dialogue, non-lending services, and partnerships. This policy note provides a forum for discussions on good practices and policy issues within the development community and with client countries.

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Table of Abbreviations

ACUACAR	Aguas Cartagena
ANA	Agencia Nacional de Aguas, Brazil's National Water Agency
BOD	Biochemical Oxygen Demand
BOT	Build Operate Transfer (a form of contracting)
CDB	China Development Bank
CWSRF	Clean Water State Revolving Fund
DRC	Development and Reform Commission
DWSRF	Drinking Water State Revolving Funds
IFI	International Funding Institutions
IUP	Intended Use Plan
MAVDT	Ministerio de Ambiente, Vivienda y Desarrollo Territorial, Colombia's Ministry of Environment, Housing, and Regional Development
MEP	Ministry of Environmental Protection
MOF	Ministry of Finance
MOHURD	Ministry of Housing and Urban-Rural Development
MOPH	Ministry of Public Health
MWR	Ministry of Water Resources
NDRC	National Development and Reform Commission
POI	Plan de Obras e Inversión, Works and Investment Plan
PSP	Private Sector Participation
PWSS	Public Water System Supervision
SGP	General System of Participations
WSS	Water Supply and Sanitation

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Executive Summary

1. Introduction. China's water and sanitation sector faces challenges from rapid urbanization and industrialization, urban diversification, large investment needs, water scarcity, water pollution, and ecological degradation. To assist the Government of China consider policy options in this area, the World Bank is preparing a series of policy notes on specific topics. This policy note addresses "Concessionary Finance¹." It is intended to provide a briefing for Chinese government officials who formulate policies for the water and sanitation sector. This note is not intended to provide recommendations on which policies to adopt, but rather to facilitate understanding of the policy options, how to choose among them, and where and how various options have been used in practice.

2. Concessionary Finance to Improve Utility Efficiency or Sector Governance. Good water and sanitation services are essential for economic growth, public health, and environmental protection. However, these services can be difficult to finance. When utilities do not have sufficient capital, they under-invest and this will adversely affect the quality of services the utilities provide. Many governments run targeted concessionary financing programs as a method of helping utilities raise the needed capital. International experience has shown that well-designed concessionary financing programs can additionally be employed as incentives to successfully improve utility efficiency, sector governance, or both.

3. Selected Case Studies. This policy note draws on successful case studies from concessionary finance programs in other countries, and has selected the following three which have a particular relevance

1-Concessionary finance in the water and sanitation sector entails financial support provided by the government. Such financing, usually in the form of loans or grants, is given on the basis of a contract between the government and another party. Such contracts involve operation within a certain area—a 'concession'. Since these concessions fulfill a public function, such loans may be given on less restrictive terms than those offered by the market. At present, concessionary financing in China is mainly provided by the China Development Bank and through the State Bonds program. Both of these are described in Section 5.

to the Chinese context.

4. State Revolving Fund Programs in the USA. If there is under-investment in water and sanitation infrastructure, a government may wish to provide concessionary financing directly for the construction or improvement of infrastructure in the affected areas. State Revolving Fund² programs in the United States provide concessionary financing for the construction of infrastructure used to deliver drinking water, and the construction of infrastructure used to treat wastewater and improve effluent quality. Although all utilities and other water providers are eligible for this funding, the programs target small and lower-income communities.

5. Brazil's Catchments Restoration Program. If under-investment in infrastructure and utility inefficiency are due to weak sector management, then a concessionary finance program may be designed which focuses on improving all three of these areas. The program can improve sector management by streamlining or creating new sector management channels. Brazil's Catchments Restoration Program (PRODES) was designed to address poor sector management, utility inefficiency, and under-investment in infrastructure. It gives local river basin committees responsibility for specifying the pollution discharge requirements that sewage treatment plants must meet. Sewage treatment plant owners must ensure that their plants meet these requirements in order to have access to concessionary finance.

6. Colombia's Specialized Operator Initiative. If sector performance is poor because utilities are inefficient, then a concessionary finance program can be designed to incorporate incentives and management structures that improve utility efficiency—in addition to financing investment in infrastructure. For example, Colombia's Specialized Operator Initiative encourages municipalities to engage private sector utility operators, and efficiency requirements are included in the operator's contract with the

2-Detailed descriptions of the State Revolving Fund program in the USA, Colombia's Specialized Operators initiative, and Brazil's Catchments Restoration Program (PRODES) are provided in Section 4 and Appendix A.

municipality. In addition, costs are kept to a minimum through a bidding process in which the bidder requiring the least subsidies is awarded the concession. This is a process known as “negative concession.”

7. Concessionary Financing Instruments and Targets. Once the objectives of the program have been identified, the government then determines the following:

- the financing instruments to be used—these could include conventional grants or loans, or output-based grants or loans;
- the types of service providers that will be eligible to receive the financing— eligibility criteria may be based on how efficient the utility is, whether it is a small-scale provider or a larger utility, or whether it is located in an urban or rural area;
- the type of infrastructure that will be eligible for financing; and
- the entity that will administer the program— national development banks, other financial intermediaries, line ministries, and sub-national government agencies may be involved in administering a concessionary finance program.

8. China’s Water and Sanitation Sector. China’s water sector faces a number of challenges. To assist utilities and local governments in providing adequate water and wastewater infrastructure, the China Development Bank and State Bonds programs provide concessionary financing for this infrastructure. The current fiscal stimulus program is investing about RMB 230 billion in expanding wastewater treatment plants and constructing new sewers. These programs have been instrumental in increasing water supply and wastewater coverage. However, there is scope for improvement in both of these programs so that they lead to better outcomes in the water sector’s overall performance. For China to further improve this sector, the following specific challenges need to be addressed³:

- financing investment needs;
- improving water utility performance; and
- improving sector governance.

9. Policy Options for China’s Water and Sanitation Sector. Well-designed concessionary financing programs can be used to improve utility

efficiency and sector management, in addition to resolving financial needs for infrastructure. Investment subsidies are common practice in industrialized countries. Subsidies are justified to support the poor section of the population and to help utilities undertake investments aimed at protecting the environment, as these can be very costly and cannot be financed solely by the users. Preparation of the upcoming 12th Five-Year Plan might benefit from considering some of the policy options presented in this note. Some of the key policy options that may be considered include the following:

1 Concessionary Finance to Improve Sector Governance. Concessionary finance could be made conditional on establishing a sound provincial/municipal regulatory framework. This was successfully demonstrated in Brazil’s PRODES program, which required a utility to belong to a water basin with a legally established and operational river basin committee in order for it to be eligible for finance.

2 Including Incentive-Based Models to Improve Utility Performance. The China Development Bank, the State Bonds programs, and the China New Countryside Development program all apply concessionary financing concepts. Each of these programs could benefit from means to target the improvement of utility efficiency and sector governance as a condition of providing concessionary finance. Colombia’s experience with Specialized Operators could serve as a suitable model.

3 Concessionary Finance as a Means to Improve Access to Reliable Data. Lack of data and analysis can be a major obstacle in implementing output-based grants and loans. To address this issue, concessionary finance can be used as an incentive to improve transparency of utilities, thus reducing information gaps.

4 Provincial Pilot of Incentive-Based Concessionary Finance Program. A pilot for an incentive-based concessionary finance program could be designed for a developing province in China.

³-This section is based on the World Bank’s recent publication on China’s water sector, “Stepping Up: Improving the Performance of China’s Urban Water Utilities”.

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Concessionary Financing Programs for the Water and Sanitation Sector

1 Introduction

China's water and sanitation sector faces challenges from rapid urbanization and industrialization, urban diversification, large investment needs, water scarcity, water pollution, and ecological degradation. The recent World Bank study "Stepping Up: Improving the Performance of China's Urban Water Utilities" highlighted several objectives for improvement of China's urban water sector:

- strengthening policy coordination and improving the Government of China's oversight of the sector;
- improving the governance and structure of municipal utilities;
- helping utilities become more financially sustainable; and
- using private-sector participation (PSP) to improve the performance of municipal utilities.

To assist the Government of China

consider policy options in each of these areas, the World Bank is preparing a series of policy notes on specific topics. This policy note addresses "Concessionary Finance." It is intended to provide a briefing for Chinese government officials who formulate policies for the water and sanitation sector. This note is not intended to provide recommendations on what policies to adopt, but rather to facilitate understanding on the policy options, how to choose among them, and where and how various options have been used in practice.

The over-arching objective of concessionary finance should be to improve the quality of water and sanitation services. Concessionary finance can help achieve this objective by focusing on building infrastructure, improving the efficiency of utilities, improving sector and environmental management, or by a combination of these.

2 Objectives of Concessionary Financing

Good water and sanitation services are essential for economic growth, public health, and environmental protection. However, these services can be difficult to finance. Many utilities do not charge full cost-recovery tariffs to consumers⁴. As a result, a utility often has insufficient revenue to cover its costs, including the cost of capital needed to provide the service. This means that these utilities are unable to raise all of the required capital. When utilities do not have sufficient capital, they may under-invest and this

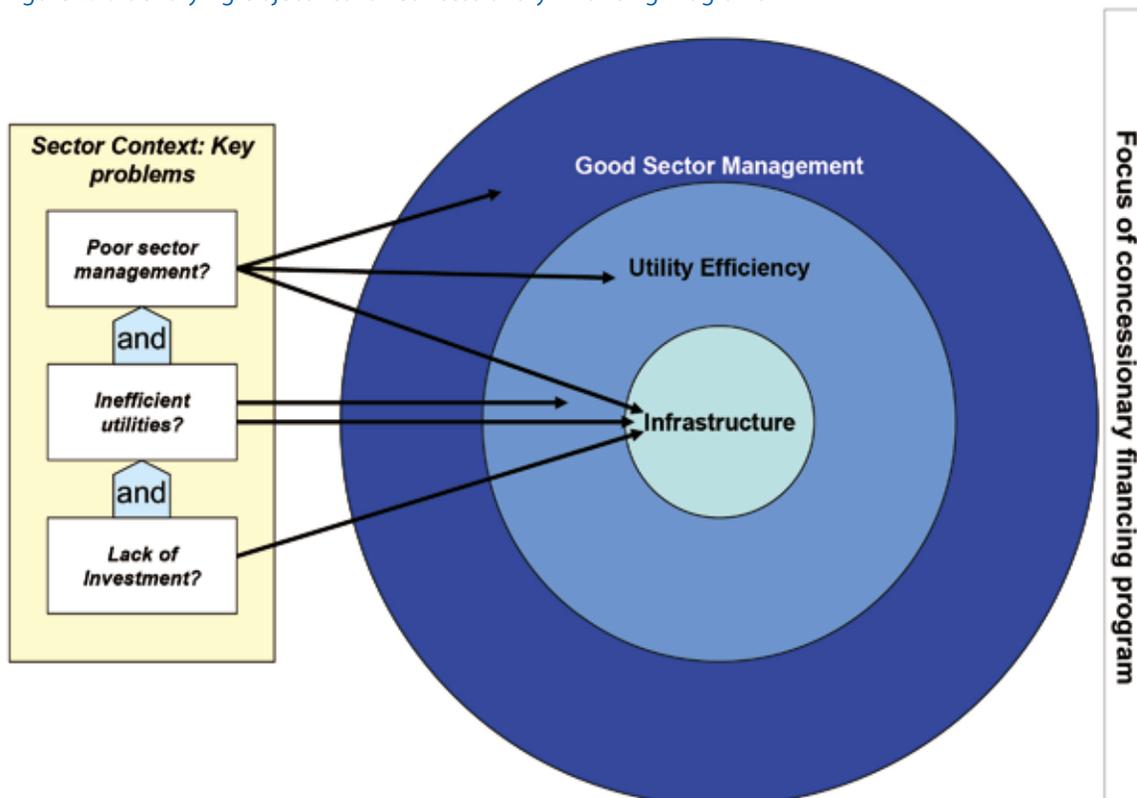
4-Full cost-recovery tariffs are the tariffs calculated based on the full costs of providing the service (capital and operating and maintenance costs), and therefore would allow the utility to recover the full cost of providing the service through tariff revenue, provided that all customers pay the amount they are billed.

will adversely affect the quality of services provided by the utilities.

In addition, weak sector management with unclear policies and regulations, as well as uncertainty regarding the roles of various government entities, will cause utilities to operate inefficiently. This will also undermine the ability of utilities to deliver reliable, good quality service.

Many governments operate targeted concessionary financing programs to help utilities raise the needed capital and also to improve utility efficiency and sector management. The overall goal of these programs is to help utilities build infrastructure services that will contribute to economic growth, public health, and environmental protection. The specific

Figure 2.1: Identifying Objectives for Concessionary Financing Programs



objectives of these programs vary across countries, depending on the specific country context and sector problems.

If a country is weak in any of the key areas—adequate infrastructure, efficient utilities, and effective sector management—the concessionary financing program should focus on strengthening these area(s). Figure 2.1 illustrates a process for determining the objectives of a concessionary financing program, based on a diagnosis of the sector's main problems.

Financing investment in infrastructure is usually the core component of a concessionary financing program. However, such programs may also be designed to focus on improving utility efficiency, sector management, or both.

If there is under-investment in water and sanitation infrastructure, but the sector management is strong and utilities are efficient, a government may wish to provide concessionary financing directly for the construction or improvement of infrastructure in the areas that suffer from under-investment. State Revolving Fund programs in the United States provide concessionary financing for the construction of infrastructure used to deliver drinking water, as well as the construction of infrastructure used to treat wastewater and improve effluent quality. The programs

target small and lower-income communities, although all utilities and other water providers are eligible for this funding.

If sector performance is poor because utilities are inefficient, then the concessionary finance program can incorporate incentives and management structures that improve utility efficiency—in addition to financing investment in infrastructure. For example, Colombia's Specialized Operator initiative encourages municipalities to engage private sector utility operators, and efficiency requirements are included in the operator's contract with the municipality.

If under-investment in infrastructure and utility inefficiency are due to weak sector management, then the program may focus on improving all three areas. The program can improve sector management by streamlining or creating new sector management channels. Brazil's Catchments Restoration Program (PRODES) was designed to address poor sector management, utility inefficiency, and under-investment in infrastructure. It gives local river basin committees responsibility for specifying the pollution discharge requirements that sewage treatment plants must meet. Sewage treatment plant owners must ensure that their plants meet these requirements in order to have access to concessionary finance.

3 Concessionary Financing Instruments and Targets

Once the objectives of the concessionary financing program have been identified, the government then determines

- what financing instruments will be used—these could include conventional grants or loans, or output-based grants or loans;
- which types of service providers will be eligible to receive the financing—eligibility criteria may be based on the efficiency of the utility, whether it is a small-scale provider or a larger utility, or whether it is located in an urban or rural area;
- what type of infrastructure will be eligible for financing; and
- who will administer the program—national development banks, other financial intermediaries, line ministries, and sub-national government agencies may be involved in administering a concessionary finance program.

3.1 Financing Instruments

Financing instruments commonly used in concessionary financing programs include conventional grants and loans, and output-based grants and loans.

3.1.1 Conventional Grants and Loans

A conventional approach to concessionary financing involves either providing grants or loans up-front, or as the infrastructure is built.

Construction grants are generally up-front payments made for capital investments in infrastructure such as water and sewerage systems. The amount of the grant may be determined by the project size and type.

To ensure that a grant covers only efficient construction costs, cost estimates are generally subject to a competitive process. The grant may cover all or part of the construction costs.

Concessionary loans may be provided up-front to finance capital investments in infrastructure. There are different types of concessionary loans, depending on the form of concessionality and the conditions tied to the loan.

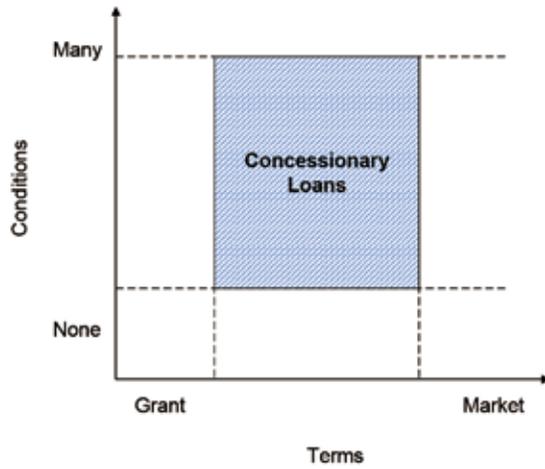
- The terms of a concessionary loan may be better than the terms available in the market in several respects. Concessionary financing may offer lower-than-market interest rates, a longer-than-market grace period during which no repayments are due, a later-than-market maturity date for loan repayment, a guarantee on the loan that enables utilities with lower-than-market creditworthiness to borrow, or a combination of any or all of these. The loan may also be packaged as part loan, or part construction grant.

- The loan may cover all of the capital investment, or it may be contingent on co-financing from the utility or other sources. If the concessionary loan is provided as part of a program to help water sector utilities have access to commercial finance, it may be provided with the condition that the remaining costs are financed from a loan from a local commercial bank. Concessionary loans may also be tied to other conditions, such as the utility adopting a new type of management system or making other efficiency improvements before the loan is granted.

Figure 3.1 illustrates where concessionary loans fall on the spectrum between grants

and market financing, and conditional and unconditional funding.

Figure 3.1: Conditions and Terms of Concessionary Loans



3.1.2 Output-Based Grants and Loans

A growing trend in concessionary finance programs is to link disbursement of grants and loans to measurable outputs. This is generally referred to as “output-based.” Disbursements of grants and loans may be conditional on outputs.

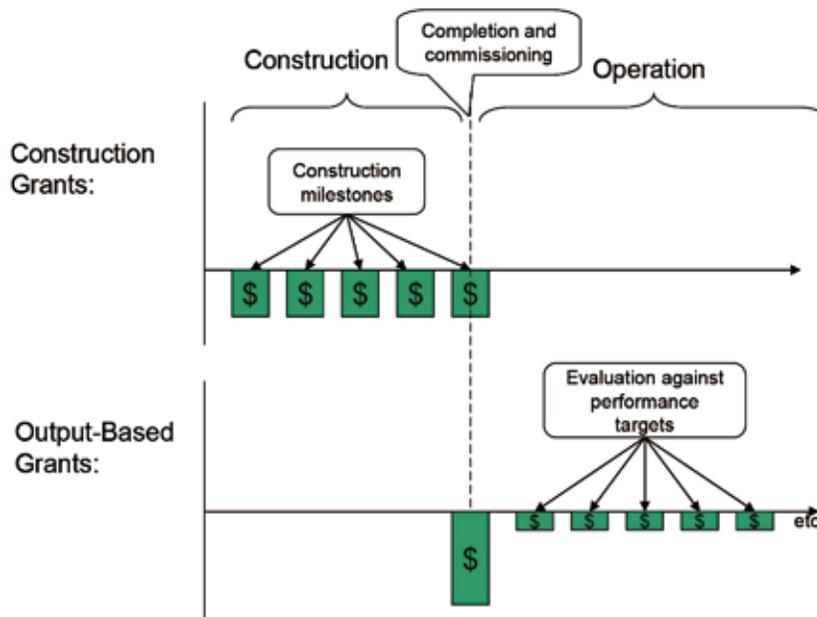
- Output-based grants are paid once an output is produced, rather than up-

front. The output could be either a one-off capital investment (for example, the completion and commissioning of a water treatment facility or the installation of a new service connection), or an ongoing service (for example, delivery of a specified amount of m³ of water). To ensure that output-based grants cover only efficient construction or service costs, cost estimates can be subject to a competitive process, as with construction grants. The grants may cover all or part of the relevant costs.

- Loan disbursements may also be output-based. The World Bank has developed an approach in which a fixed amount equal to or less than the cost of building an infrastructure asset is disbursed as a loan to the utility that incurred that cost only after the asset is completed or commissioned. This reduces the risk of cost overruns or delays during construction.

Figure 3.2 illustrates how the timing of payments to a utility for an identical project may differ under a conventional construction grant and an output-based grant. In this figure, a utility builds and operates a water treatment plant using a construction grant (top) or output-based grant (bottom). The

Figure 3.2: Construction Grants versus Output-Based Construction Subsidies



amount of concessionary financing is the same in both cases.

Under the conventional construction grant, the utility receives grant payments once certain construction milestones are completed. The whole grant is paid out by the time the plant is completed and commissioned.

In an output-based approach, payments begin only after the plant has been completed and commissioned. The remaining portion of the grant is paid over the plant’s useful life as the utility provides water according to pre-specified performance targets. For example, the grant could be paid out each month provided the utility supplied a pre-specified quantity of water that met pre-specified quality standards.

3.2 Eligibility Criteria

The objectives of the concessionary program will, in part, determine the types of service providers (utilities and small-scale service providers) targeted by the program, as well as the types of infrastructure eligible for financing. Therefore, if the focus is on building infrastructure to increase access to services in rural and peri-urban areas, and small-scale providers are the most viable form of service provision in these areas, then only small providers in those areas may be eligible for concessionary financing for those projects that expand coverage levels.

3.2.1 Eligibility Criteria for Utilities

Governments may determine what types of utilities are eligible for concessionary financing programs based on a number of criteria.

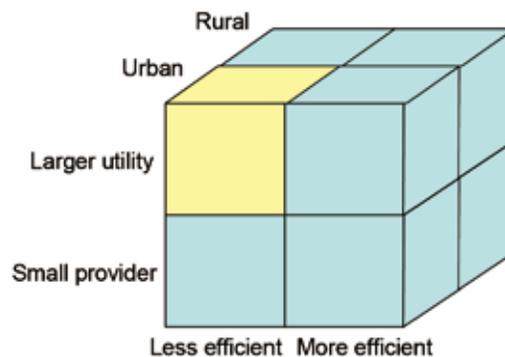
- Degree of efficiency. Poorly-performing or less efficient utilities may require incentives and assistance to improve their performance and financial sustainability. More efficient utilities could use additional funding more effectively than other utilities—either to extend services to new areas, or to improve service quality—and may respond to incentives

by accessing further financing from the market, or through revenues.

- Type of provider. Small-scale private or community providers may find it difficult to access financing from the market, yet may present the most efficient means of extending access to water services, especially in peri-urban and rural areas. Larger utilities may be the best target for a program aimed at improving service provision to a large number of customers, especially in an urban area.
- Location of utility. If service coverage levels are high in urban areas and extremely low in rural areas, then the best target is likely to be water providers in rural areas. If, however, providing water services to a fast-growing urban population is a major challenge, the best target may be providers in urban areas.

Governments may combine these types of eligibility criteria. For example, a government may provide concessionary finance for less efficient, larger utilities in urban areas if the government wishes to improve provider efficiency and expand access to water and sanitation services in a rapidly-growing area. Figure 3.3 shows the different types

Figure 3.3: Types of Utilities



of eligibility criteria and how these may be combined. This highlights the example of targeting a group of less efficient, larger urban utilities.

3.2.2 Eligibility Criteria for Projects

To ensure that limited concessionary funds

reach the highest-priority projects, the government can specify the type of projects that are eligible for concessionary financing. There are many types that could be defined as eligible, including

- water treatment plants, if the supply of potable-quality water is insufficient;
- expansion of water distribution networks, if coverage levels are low; and
- wastewater treatment plants, if water pollution levels are higher than the standard established by national legislation.

3.3 Combining Objectives, Instruments, and Eligibility Criteria

Programs use different instruments and have different eligibility criteria depending on their objectives. For example, output-based subsidies can be targeted towards more efficient utilities to help improve sector and environmental management, as in Brazil. Concessionary loans could be

targeted towards community providers to build essential infrastructure, as in the United States. Construction grants could be targeted towards utilities with incentives to increase their efficiency, as in Colombia. Figure 3.4 shows how the Government of Colombia determined objectives, financing instrument, and eligibility criteria based on analysis of the underlying sector problems.

3.4 Program Administration

Another key component in the design of a concessionary finance program is the administrative structure. This determines which institutions have responsibility for managing financial flows and for administering the program. A range of entities may be involved in administering a concessionary finance program.

Table 3.1 presents some options. A checkmark indicates the roles generally played by the types of entities listed, but is not intended to indicate an absolute rule.

Figure 3.4: Designing Financing Instruments to Achieve Program Objectives

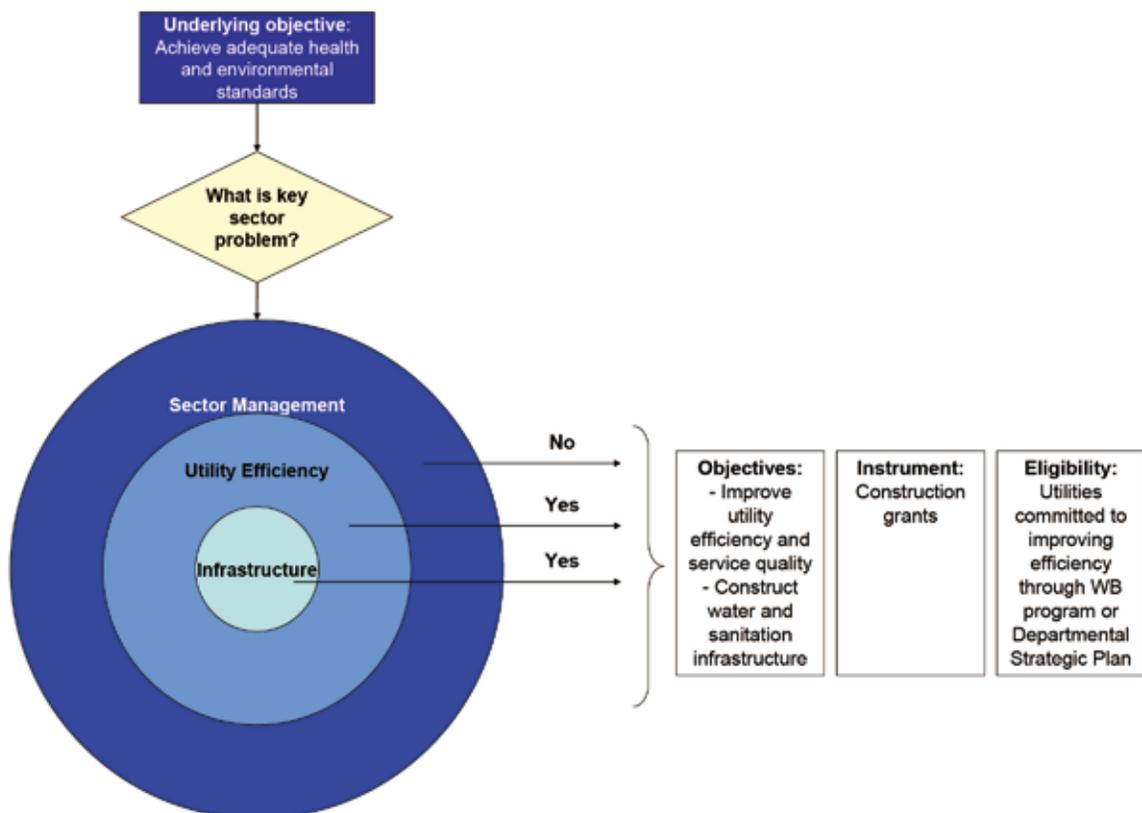


Table 3.1: Range of Roles for Administering Concessionary Financing

	National government line agency	Province-level government agency	National development banks	Special-purpose fund	Other financial intermediary
Manage overall program	✓		✓		
Monitor programs that are implemented at the province level	✓	✓			
Approve and disburse grants to utilities	✓	✓	✓	✓	✓
Approve loans to utilities			✓	✓	✓
Manage loan disbursements and collect repayments			✓	✓	✓

Usually, responsibility for overall program management lies with a government agency. There may be multiple layers of administration. In the United States, the Environmental Protection Agency (EPA) administers the federal portion of the Drinking Water State Revolving Fund program. The state agencies responsible for supervising water systems are also responsible for overseeing the state revolving loan funds. In Colombia, the MAVDT (Ministry of Environment, Housing, and Regional Development) administers the national-level Specialized Operator initiative. At the department level, Integrated Management Units are responsible for managing the initiative.

When the program involves the provision of grants, a government entity such as a line ministry, the Ministry of Finance, or other

government agency may manage payments to utilities. In some cases, a financial intermediary—such as a special-purpose fund manager—carries out this role. Again, there may be several layers of administration. For example, in the United States, the EPA provides capitalization grants to state-level revolving funds. State-level fund managers disburse grants and loans to utilities. In Colombia, funding comes from a variety of sources and is deposited into a departmental-level trust account. The departmental government hires a manager for this trust account, which is managed separately from other departmental funds.

Concessional loans are usually managed by financial institutions, such as national development banks and financial intermediaries. In China, the Ministry of Finance may also administer financial flows.

4 International Experience with Concessionary Financing Programs

The United States' Drinking Water State Revolving Fund program, Brazil's PRODES program, and Colombia's Strategic Operator initiative are successful examples of concessionary financing programs for the water sector. These three examples illustrate how concessionary financing programs can be tailored to address the particular problems of a given area, as discussed in Sections 2 and 3.

Table 4.1 summarizes common international variations for program objectives, financing instruments, and eligibility, and shows how these dimensions vary among the case study examples in this section. Sections 4.1, 4.2, and 4.3 briefly describe each of the case studies. The full case studies are presented in Appendix A.

4.1 United States' Drinking Water State Revolving Fund

In the United States, the government provides concessionary financing for improvements in water infrastructure through the Drinking Water State Revolving Fund (DWSRF) program. The DWSRF program is a relatively simple, intermediary-run program that focuses on providing capital to water providers for the construction of new infrastructure, or for improvements to existing infrastructure. The investments supported under this program must address priority public health concerns and help needy households. This program was established by the 1996 amendments to the Safe Drinking Water Act, and is run by the Environmental Protection Agency (EPA). It is commonly viewed as a best practice example of programs for financing water sector infrastructure.

Through the DWSRF program, state agencies receive grants from the federal government ("capitalization grants") which they can on-lend to water systems for infrastructure development and technical assistance. The grants provide capital for a state-level revolving loan fund. To receive a capitalization grant, a state must agree to deposit matching funds equal to 20 percent of the capitalization grant into their state revolving loan fund. The amount available to states in the form of capitalization grants is appropriated annually by Congress.

The state revolving loan funds are then used to provide loans with lower interest rates and longer maturities than are available in the market, and grants to water systems for investments to build and improve the infrastructure involved in providing drinking water. Eligible types of infrastructure include water treatment facilities and transmission and distribution networks. States are also authorized to set aside a portion of their capitalization grants (called "set-asides") to fund a range of activities, including source water protection and capacity development.

The water providers receiving the concessionary loans must demonstrate that they have the technical, financial, and managerial capacity to manage the new investment (construction and operation of the new infrastructure). If water providers do not have this capacity, the set-asides may fund technical assistance to improve their capacity.

All types of water providers are eligible to receive concessionary loans and grants, but the program especially targets providers in small and disadvantaged communities. Small communities are considered to be those

Table 4.1: Summary of Program Types

	Common Variations	U.S. Revolving Funds	Brazil PRODES	Colombia Specialized Operators
Focus/Objective	<ul style="list-style-type: none"> Constructing water or sanitation infrastructure (or both) Improving utility efficiency Improving sector & environmental management 	<ul style="list-style-type: none"> Constructing water infrastructure 	<ul style="list-style-type: none"> Constructing sanitation infrastructure and improving utility efficiency to improve sector & environmental management 	<ul style="list-style-type: none"> Constructing water and sanitation infrastructure Providing incentives to improve utility efficiency and service quality
Financing instrument	<ul style="list-style-type: none"> Grants <ul style="list-style-type: none"> Construction Output-based subsidies Cover all costs of specified work Cover part of the costs of specified work program Concessionary loans <ul style="list-style-type: none"> Compared to commercial loan: lower interest rates, longer grace period, or later maturity date Cover all costs of specified work Cover part of the costs of specified work program A guarantee on the loan 	<ul style="list-style-type: none"> Concessionary loans Construction grants Interest rates are approximately 50% of market rates (varies by state) 	<ul style="list-style-type: none"> Output-based grants Cover up to 50% of the capital costs of the projects 	<ul style="list-style-type: none"> Construction grants Cover all or part of the costs of the specified work program Varies by municipality depending on socially-acceptable tariff levels and investment required to meet service targets
Eligibility	<ul style="list-style-type: none"> Poorly-performing utilities More efficient utilities Small-scale private or community providers 	<ul style="list-style-type: none"> All providers with eligible projects, but especially small-scale providers or those operating in disadvantaged areas 	<ul style="list-style-type: none"> More efficient utilities that can make sanitation investments and meet pre-established performance targets 	<ul style="list-style-type: none"> Municipalities with low water coverage rate Mayor and municipal council agree to PSP and tariffs ensuring, at least, recovering O&M and depreciation
Program Administration	<ul style="list-style-type: none"> Ministry of Finance Line ministries Other government agencies National development banks Financial intermediaries 	<ul style="list-style-type: none"> Administrative: <ul style="list-style-type: none"> Environmental Protection Agency (federal) State agencies that are responsible for supervising water systems Financial: Specialized fund manager 	<ul style="list-style-type: none"> Administrative: National Water Agency Financial: Specialized fund manager 	<ul style="list-style-type: none"> Administrative: <ul style="list-style-type: none"> Ministry of Environment, Housing, and Regional Development Department-level Integrated Management Unit Financial: Specialized fund manager

where the water system serves a population of less than 10,000. In 2006, 69 percent of all loans from the DWSRF program went to small systems. Disadvantaged communities are those with low ability to pay for water services. States set their own affordability criteria to determine whether a community is disadvantaged.

The EPA administers the federal portion of the DWSRF. The state agencies responsible for supervising water systems administer the state revolving loan funds.

The DWSRF program has exceeded targets for utilizing funds and for increasing the long-term revolving level of funds (US\$ 12.8 billion available as of the end of fiscal year 2006, according to EPA). The water revolving fund model has been used for other revolving loan programs in the United States and elsewhere.

4.2 Brazil's PRODES Program

In 2001, the Government of Brazil established a program to promote the restoration of water quality in key river basins. The program is called PRODES (Programa Nacional De Despoluicao de Bacias Hidrograficas) and is managed by the National Water Agency (Agencia Nacional De Aguas, or ANA).

PRODES focuses on constructing sanitation infrastructure and improving utility efficiency and environmental management. Its objectives are to

- prevent river basin pollution and reduce the existing water pollution levels;
- increase investment in sewage treatment plants, and
- stimulate modern water resource management instruments such as river basin committees.

The Programa Nacional De Despoluicao de Bacias Hidrograficas was created in 2001 after the government's previous approach to concessionary financing for sanitation failed to improve treatment plant maintenance and water quality. The previous approach involved the federal government providing input

subsidies to public and private companies to cover part of the costs of establishing and maintaining sewage treatment plants.

Through PRODES, the federal government provides output-based grants for the construction of new sewage treatment facilities or improvements to existing facilities (upgrade in treatment processes or enlargement of treatment capacity).

PRODES targets sewage treatment plant owners, both public and private, located in a river basin with a legally established and operational river basin committee. The plant to be built or upgraded using PRODES funding must be part of the investment program approved by the river basin committee. The plant must also meet the pollution discharge requirements specified by the committee.

The grant is provided as a reimbursement of construction costs, paid quarterly over a five to seven year period. To receive the payments, the treatment plant must meet the performance targets agreed upon at the proposal selection stage by the provider, river basin committee, and municipality. The performance targets relate to levels of pollution discharge as well as management indicators (including training of operational staff, operational planning, maintenance of civil works and equipment, and management and disposal of solid waste and sludge). By making payment conditional on achieving environmental and managerial performance targets—output-based—the program provides incentives for utilities to become more efficient and improve environmental outcomes. Specialized fund managers manage disbursements to water providers.

The federal government estimates that as of the end of 2007, PRODES had resulted in the abatement of 100,000 kilograms of Biochemical Oxygen Demand (BOD) per day of pollution discharge and a 15 percent decrease in the number of people hospitalized with water-related diseases in the areas benefiting from the program.

4.3 Colombia's Specialized

Operator Initiative

The Government of Colombia encourages municipalities to engage “Specialized Operators” for water supply and sanitation services. The Colombian model involves the awarding of long-term concession contracts through a special bidding process in which the bidder requiring the least subsidies is awarded the contract—a structure also referred to as “negative concession”. The Colombian experience has been particularly successful at driving institutional reform. The core of the approach is target-based concessions using largely private-sector Specialized Operators.

Specialized Operators that receive financing from the Colombian government are usually private-sector firms engaged through this initiative. Sometimes these are joint ventures between the municipality and a private firm. Specialized Operators receive construction grants for building water and sanitation infrastructure with the grants being referred to as subsidies for capital investment. The amount of the grant is based on the gap between the tariff levels prevailing in their service areas and the infrastructure investments necessary to achieve performance targets set by the municipality and which are included in the Specialized Operator’s contract with the municipality. These grants are paid out from a trust account directly to the companies that the Specialized Operator contracts to build the infrastructure. This approach has two major benefits: (i) it reduces opportunities for corruption at the local level and assures the government that subsidies are translated directly into water supply and sanitation infrastructure; and (ii) if an operator fails, the public sector funds (which were obtained through grants or loans) are not lost but remain for use by the next operator, for the benefit of the users.

The objectives of this initiative are two-fold:

- to improve coverage and quality of water supply and sanitation services through investments made by the Specialized Operator with support from the government; and

- to improve efficiency of water supply and sanitation services through a private-sector management approach and efficiency requirements (in terms of employees per 1,000 users) and service standards included in the Specialized Operator’s contract.

The design of this initiative provides incentives to improve utility efficiency and service quality. Tariffs and service standards are set before the bidding process for a Specialized Operator contract commences. Bidders must present an investment plan that will permit them to meet the service targets the municipality has set for WSS in the service area. Bidders must specify the amount of government subsidy that they would require to make these investments. The firm that requires the least subsidy is awarded the contract. This type of contracting structure is sometimes referred to as “negative concession.”

The Specialized Operator approach has been implemented in three stages. First as a World Bank project targeting small- and medium-sized towns in the northern region of the country, second as a World Bank project in the Department of La Guajira, and third as a national-level initiative where the government is replicating what was a successful small-scale initiative at the departmental and national levels. For municipalities under the national-level initiative to be eligible to participate, they must be located in departments that have a water and sanitation sector strategic plan that has been approved by the federal government, and the departments must establish specific institutional structures for administering the subsidies.

It should be noted that the Specialized Operator approach requires a relatively developed institutional and regulatory framework in order to be implemented effectively. In Colombia, a sophisticated tariff structure involving cross-subsidies to poorer users, an independent regulator, and strong central government institutions were built to facilitate development of the sector. Central

government participants have had a key role in the structuring of transactions and in the steering of local officials to participate in the program. This model was generally applied in small and medium cities (population 12,000–40,000).

For small and poor towns in Colombia (population 2,000–20,000), a similar model, referred to as the “Constructor–Operator” contract, has been developed which has proven successful at attracting entrepreneurs to the water and sanitation sector. Through competitive bidding, small- and medium-size construction companies, possibly in association with small consulting firms, will compete for the construction and/or rehabilitation of the water supply and sewerage systems in a small municipality and the winning bidder will commit to operate the systems for a period of 10–15 years from the date of signing the contract. No prior experience in the operation of water systems is required from the bidders. It is assumed that construction companies with the capacity to construct the systems will also have the technical and management capacity

to operate them after minimal training, as the systems are relatively small and simple. The winning bidder will receive training in management of water utilities as well as written material and management software, from the line Ministry (provincial or central).

In the Constructor-Operator model the government or municipality decides the investment program and prepares the design. The operator is also the constructor and directly receives the subsidy funds from the government, under the conditions of a construction contract.

According to the World Bank, the approach of engaging Specialized Operators has been successful and has led to the creation of a genuine market of utility operators within Colombia. As of January 2008, approximately 180 municipalities had incorporated Specialized Operators. As of November 2003 (latest data available), the Specialized Operators existing in Colombia had investment plans for US\$ 355 million, of which US\$ 152 million were to be financed by the operators, with the remainder by government funds from various sources.⁵

5-Ministerio de Ambiente, Vivienda y Desarrollo Territorial. “Importancia Estratégica del Programa de Modernización Empresarial en el Sector de Agua Potable y Saneamiento Básico.” November 2003.

financial resources, sector management, and efficiency of utilities. For the purposes of comparison, this section will distinguish between the following three types of Chinese municipalities: (i) “developed” municipalities with average per capita GDP of US\$ 4,000 or more, such as Beijing, Tianjin, Shanghai, Guangzhou, etc.; (ii) “developing” municipalities, including most areas of China, with average per capita GDP between US\$ 2,000 and US\$ 4,000, and (iii) “under-developed” municipalities, including those with an average per capita GDP below US\$ 2,000. Many remote western cities and rural towns would be in this category.

Figure 5.1 shows a map of China highlighting the average per capita GDP per province in China. It should be noted that this policy note distinguishes between three categories of average per capita GDP per municipality. However, wealthier provinces may include ‘developing’ and ‘under-developed’ municipalities.

5.1.2 China's Water and Sanitation Sector

China has made remarkable progress in expanding its urban water supply and wastewater infrastructure since 1990. Driven by investment of RMB 438 billion (US\$ 54 billion), water supply and wastewater coverage in China's 663 designated cities has increased dramatically. The amount of the urban population served by municipal water utilities increased from 50 percent in 1990, to 95 percent in 2008, reaching 350 million people. Over the same period, wastewater treatment capacity has more than tripled, reaching over 80 million m³ per day, while the wastewater treatment rate reached 70 percent in urban areas in 2008.

The challenges faced by China to further improve its sector performance are similar to the problems in many other countries, including ⁶

⁶-This section is based on the World Bank's recent publication on China's water sector, “Stepping Up: Improving the Performance of China's Urban Water Utilities”.

- financing infrastructure investments;
- improving water utility performance; and
- improving sector governance.

5.1.3 Financing infrastructure investments

Table 5.1 shows the total investment in water and wastewater infrastructure made between 1991-2005, and the estimated investment needs for the 11th Five-Year Planning period of 2006-2010.

Table 5.1: Investment in Water Supply and Wastewater Infrastructure, 1991-2010

Sector Investment	Total Investment 1991-2005		Estimated Investment 2006-10	
	US\$ billion	RMB billion	US\$ billion	RMB billion
Water Supply	25	200	20	160
Wastewater	29	230	34	270
Total	54	430	54	430

The growth in China's population, combined with aspirations to improve the quality of water services, will require a significant amount of investment in water supply and wastewater infrastructure. The estimated investment needs for 2006-2010 alone equal approximately the amount of investment that was made over the last 15 years. Financing these investments, and ensuring investment efficiency, is a major challenge.

5.1.4 Improving water utility performance

Many Chinese utilities operate at levels similar to most middle-income countries, but below the average for advanced industrial countries (e.g. OECD countries). However, there is a wide spectrum of utility performance in China, with some performing efficiently and others operating well below their potential. Financial and operational performance is of concern, as are gaps in information on utility performance. Although there is some degree of correlation between city size and utility performance, and city wealth and utility performance, this relationship is not particularly strong. Table 5.2 provides an example based on percentage of water service area with low water pressure.

If the practices of the well-performing utilities are adopted by other cities potential exists for rapid improvement in performance.

high rates of water loss. Many cities have significant excess water treatment capacity, reflecting poor water supply planning

Table 5.2: Percentage of Utility Service Area with Low Water Pressure

City Type	Large and Rich Cities (%)	Medium Cities (%)	Small and Poor Cities (%)
Average	12	10	16
Best 25% of Utilities	0	0	0
Worst 25% of Utilities	45	33	46

Source: World Bank, "Stepping Up: Improving the Performance of China's Urban Water Utilities", 2007.

Financial Performance. In 2008, 60 percent of water supply utilities in China reported negative net incomes. Although there is no comprehensive data for the wastewater sector, the financial condition of wastewater entities is more precarious than water supply utilities. The national weighted-average water supply tariff has increased more than 50 percent since 1998, and is now around RMB 1.5 /m³ (US\$ 0.20). Starting in the late 1990s, most cities began charging wastewater tariffs, and the 2008 national average is RMB 0.80 (US\$ 0.12). These rates, particularly for wastewater, are still insufficient to cover the full operating, maintenance, and capital costs. In addition, the collection of wastewater fees is a problem in many cities, particularly from industrial consumers. Most utilities still rely on municipal government equity contributions to finance a significant part of their investments.

Operational Performance. China's water supply utilities generally provide 24-hour service, but the quality of the service is variable. One-quarter of the water utilities are unable to provide adequate water pressure to more than 40 percent of their service area. Around 60 percent of China's 663 cities face seasonal water shortages, and over 100 cities have severe water constraints. On average, around 20 percent of the water produced at the water treatment plant is lost through leaky distribution pipes. Although a 20 percent leakage rate appears good by international standards, this is achieved largely because of China's compact, high-density distribution networks. When the leakage rate is calculated in terms of water loss per kilometer of pipeline, Chinese utilities have exceptionally

practices. On a national scale, there is at least 50 percent excess treatment capacity.

China is rapidly constructing wastewater treatment plants. By 2008, over 400 of 663 cities had plants, with a national capacity to treat around 70 percent of all wastewater. The average plant utilization rate, however, was only 65 percent. The relatively low utilization rates stem from a variety of problems, including inadequate wastewater collection, poor planning, and a shortage of operating funds. Wastewater strength is also often significantly lower than planned, contributing to the under-utilization. Expansion and renovation of wastewater collection networks has lagged behind treatment plant construction. Inadequate collection systems in many cities result in excessive stormwater inflow and groundwater infiltration into the drainage pipes, stormwater drainage problems, and overflows of untreated wastewater into receiving water bodies.

Information Gaps. Analysis of China's water utilities is complicated by the lack of information on utility performance. The China Water Works Association together with occasional surveys by the Ministry of Construction provides some information, but utility performance assessments are still inadequate and incomplete. The problem is particularly acute for wastewater, where many wastewater utilities are either government departments or operate on a quasi-department basis with significant municipal government budget support. This study relies on a myriad of different—and often incomplete—sources of information.

Although the general picture that emerges is clear, the resolution of some specific features may be less certain.

5.1.5 Improving sector governance

Government agencies at the national, provincial, and local levels have responsibility for various aspects of water sector governance. However, if their activities were better coordinated and allocated, sector governance would be improved.

Governance and Coordination at the National Level: There are four main sector agencies at the national level guide the urban water sector: (i) the Ministry of Housing and Urban-Rural Development (MOHURD); (ii) the Ministry of Environmental Protection (MEP); (iii) the Ministry of Water Resources (MWR); and (iv) the Ministry of Public Health (MOPH). The National Development and Reform Commission (NDRC) and the Ministry of Finance (MOF) provide overall development policy and financial supervision to the sector. While the State Council issues key national policy statements (such as the historic 2000 Circular on “Strengthening Urban Water Supply, Water Saving, and Water Pollution Prevention and Control”), the various specialized sector agencies each issue a multitude of opinions, notices, circulars, etc. These are not always consistent, occasionally provide ambiguous guidance to cities, and may even be contested by other sector agencies.

Provincial Government Oversight: Although urban water services are the responsibility of the municipal government, it is important to have an effective oversight and monitoring mechanism to ensure that cities and their utilities meet their obligations. China is too large for the national government to oversee thousands of utilities, and provincial governments are well-placed to provide utility oversight and regulation. Provincial agencies already have many key mandates for utility oversight, including

- utility supervision (construction departments);
- approval of municipal tariffs (price

department of Development and Reform Commission - DRC);

- channeling national concessionary finance (DRC);
- overseeing environmental compliance (Environmental Protection Bureau -EPB);
- overseeing drinking water compliance (public health department); and
- approval of large construction projects (DRC).

The efforts of provincial agencies, however, are often hampered by a lack of funds and an absence of real authority over municipal governments, as well as an absence of coordination among provincial agencies.

Municipal Utility Governance: Municipal governments need to improve their capacity to govern and regulate public utilities, while at the same time empowering the utilities to undertake the leading planning, financing, and operating role in the sector. In many cities, multiple city agencies make fundamental decisions and provide advice to the mayor and vice-mayors—on infrastructure targets, financing, tariffs, and budget transfers—without having a holistic view of the sector. Creating more integrated, accountable, and transparent city governance structures for the sector would help utilities achieve a more sustainable balance. It would also provide them with the institutional space to become modern organizations responsible for their own destiny, but under the leadership of the government.

5.2 National Concessionary Financing Programs

The Government of China has two national concessionary financing programs in place for the water sector:

- China Development Bank loans; and
- The State Bonds Program.

The China Development Bank (CDB) provides loans to credit-worthy provincial governments, local governments, and utilities for investment in water and wastewater

infrastructure. The CDB has also lent to concessionaires in Build Operate Transfer (BOT) projects.

The State Bonds program provides grants and concessionary loans to project executing agencies for investment in water and wastewater infrastructure. These agencies may be utilities, municipal governments, or other entities.

The sections below will discuss the details of these two different financing programs subsequently in terms of objectives, financing instruments, eligibility criteria and administrative structures. It will conclude with an analysis of the effectiveness of these programs as well as possible improvements.

5.2.1 Program objectives and overview

CDB

The China Development Bank provides lending to creditworthy borrowers to support projects that are in line with China's policy goals. The CDB does not have a specific water sector lending program. Its lending for the construction of water infrastructure is usually via multi-sector programs,⁷ although the CDB has provided some loans to water BOT projects.

In 2004, CDB loans for water engineering (dams, reservoirs, and others), environmental protection, and public infrastructure (water supply, wastewater treatment, public transport, and others) equaled 22 percent of all CDB loans issued—at RMB 1,409.5 billion. In 2005, loans for water supply and wastewater accounted for about one percent of total loans issued—at RMB 1,731.8 billion. However, there are no comparable statistics to examine growth in these categories between 2004 and 2005, although it is expected that the share of CDB loans to water infrastructure will increase.

According to the President of the CDB, Mr. Yuan Chen, the CDB would seek to strengthen the support it provides to urban public infrastructure (including water supply and wastewater) during the 11th Five-Year Plan. In 2006, the CDB signed a cooperation

agreement of RMB 50 billion with the former Ministry of Construction (now MOHURD) to develop energy conservation cities and new counties, in which water supply and wastewater (particularly the pipe networks) are the key components. Mr. Chen has also emphasized that the CDB should promote the establishment of financial markets in China to support the development of public infrastructure (Chen, 2007).⁸ Thus, it is anticipated that the share of CDB loans allocated to water infrastructure will increase, although exact figures are unavailable.

State Bonds Program

The objective of the State Bonds program is to stimulate domestic demand and facilitate stable economic growth. Although the State Bonds program does not have a specific objective related to the water sector, this program has been used to finance important water sector infrastructure in China, especially in wastewater treatment and the development of environmental infrastructure in under-developed regions (such as Western China) and key river basins including the “Three Rivers, Three Lakes”⁹ areas.

The scale of the State Bond program has been reduced since the 2002 market reforms of the urban water sector, although environmental infrastructure remains the primary focus of this program. In 2004, RMB 3.8 billion in State Bonds was issued to support the water supply sector, and RMB 7.1 billion was issued to support the wastewater sector. In 2005, these amounts dropped to RMB 1.0 billion and RMB 3.6 billion, respectively. The State Bond

7-This includes the development of new counties (a Government initiative for sustainable development in rural areas), the development of urban infrastructure (such as loans to Hubei Province for the development of urban infrastructure during the 10th and 11th Five-Year Plans), and environmental management initiatives (such as loans to address water pollution of the Tai Lake River, which totaled RMB 6.4 billion over 2002-2008).

8-Chen Y., Nov 28 of 2007. “China Needs to Step up Establishment of Investment and Financing Market in Line with National Conditions,” available at: www.cdb.com.cn.

9-The “Three Rivers and Three Lakes” regions refers to the basins of the Huai River, Liao River, and Hai River; and Tai Lake, Dianchi Lake, and Chao Lake.

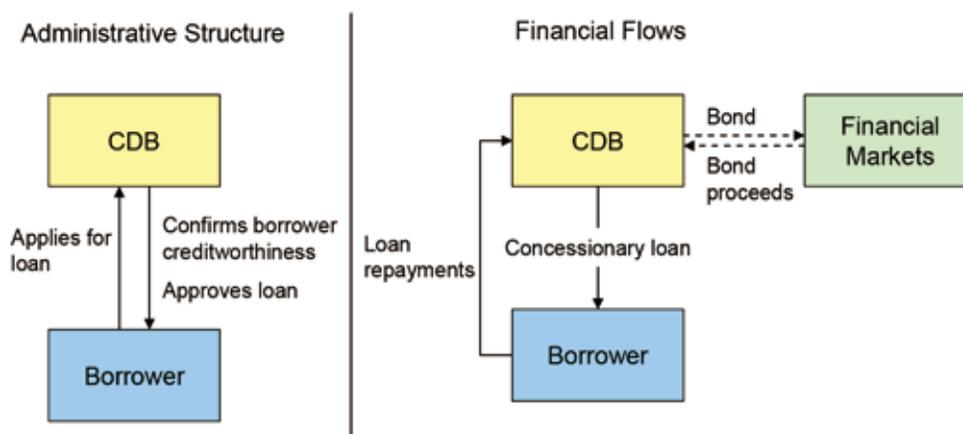
program is expected to continue to be reduced. Although the State Bonds program has been reduced in recent years, the RMB 4 trillion economic stimulus program designed to combat the financial crisis of 2008 has increased spending in infrastructure. About 5 percent of the stimulus package should be allocated to efficiency, environmental and ecological projects. In the first half of 2009, approximately RMB 230 billion was spent on expanding the capacity of wastewater treatment plants by 2.83 million m³/day and constructing over 2,500 km of new sewer networks. The stimulus program, to a certain extent, replaces the State Bond program.

5.2.2 Financing Instruments

The CDB provides concessionary loans to creditworthy borrowers. Funds from the State Bonds program may be disbursed to project executing agencies as concessionary loans, construction grants, or output-based grants.

CDB

Figure 5.2: CDB Administrative Structure and Financial Flows



The CDB issues bonds that are linked to specific projects or groups of projects.¹⁰ It passes the proceeds of the bonds, in the form of concessionary loans, on to the provincial government, local government, utility, or

10-No information is available on the general terms of the project-specific bonds. However, CDB is the third-largest bond issuer in China. As an example, in June 2007, it issued two-year RMB bonds in Hong Kong with an interest rate of three percent, to finance key infrastructure construction projects. The maximum quantity issue is RMB five billion, with a minimum of RMB one billion in retail bonds.

other entity that will develop a project. In principle, the interest rate charged on the CDB loans to the developers of infrastructure projects should be in line with the rates set by the People's Bank of China. However, interest rates on long-term loans to public utilities can be negotiated below the interest rate required by the People's Bank of China.

The repayment periods for CDB loans to the developers of infrastructure projects are up to four times longer than repayment periods offered by commercial banks. Repayment on CDB loans can extend to 15-20 years, while commercial banks require loans to be repaid in 5-8 years. Additionally, the CDB normally offers a grace period of 3-5 years.

Figure 5.2 illustrates the administrative structure and financial flows of CDB lending to projects involving the construction of water and wastewater infrastructure.

Some provincial and city governments may administer CDB loans, although information on the procedures for administering and on-

lending funds is not available. Provincial and city governments may impose conditions on the receipt of CDB loans. For example, the city government of Zhengzhou requires that

- the applicant has finalized the feasibility study, planning permit, environmental impact assessment, land use permit, and others; and
- the project developer has confirmed that it has counterpart funds and guarantee, and that it has a repayment plan in place.

State Bonds

Through the State Bonds program, the Ministry of Finance issues general obligation bonds. It passes the proceeds on to utilities and other agencies that build infrastructure projects in one of two ways:

- As **concessionary loans**. The Ministry of Finance passes the proceeds on to provinces as low-interest loans earmarked for infrastructure. The provincial governments disburse and administer loans to project executing agencies. The provincial governments must repay the Ministry of Finance; and
- As **construction grants**. The Ministry of Finance passes the proceeds on to the National Development and Reform Commission (NDRC) to be disbursed as grants to utilities and other project

executing agencies. NDRC administers the funds directly or through the provincial Development and Reform Commissions.

Project executing agencies may be utilities, municipal governments, or other entities.

Figure 5.3 shows the administrative structure and financial flows for loans under the State bonds program while Table 5.3 shows how the terms and degrees of concessionality offered on loans differ by regions.

Figure 5.4 shows the administrative structure and financial flows for grants under the State bonds program.

Construction grants are possible for projects which cannot be effectively financed through the market, such as

- public goods and public infrastructure projects;

Figure 5.3: Administrative Structure and Financial Flows for Loans in the State Bonds Program

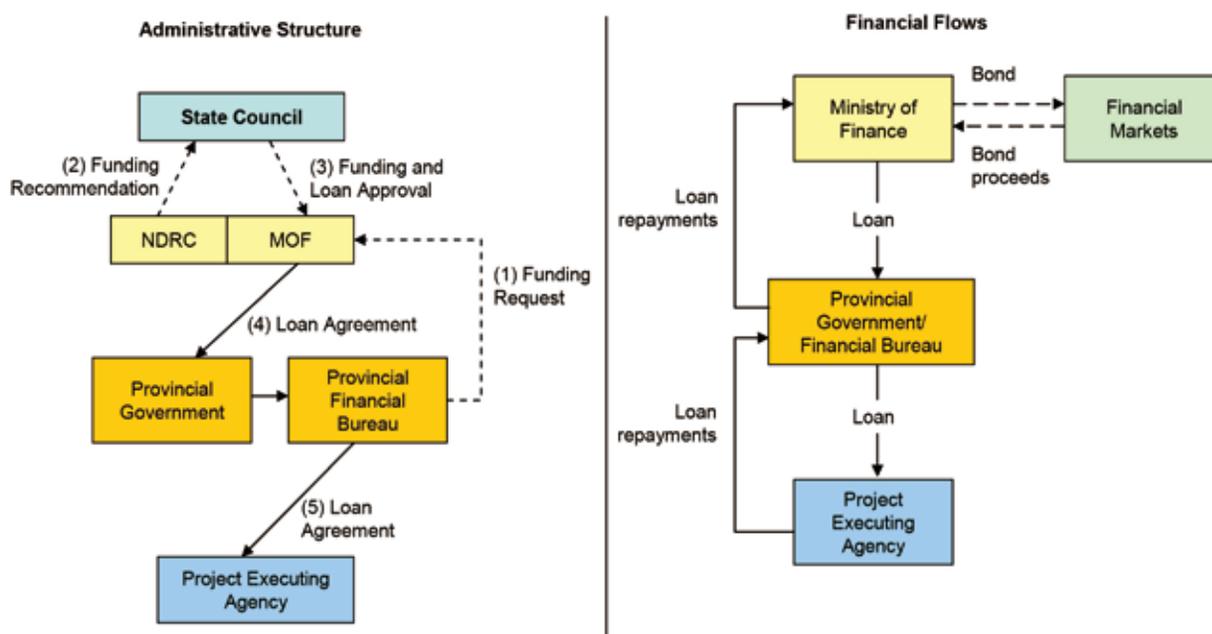
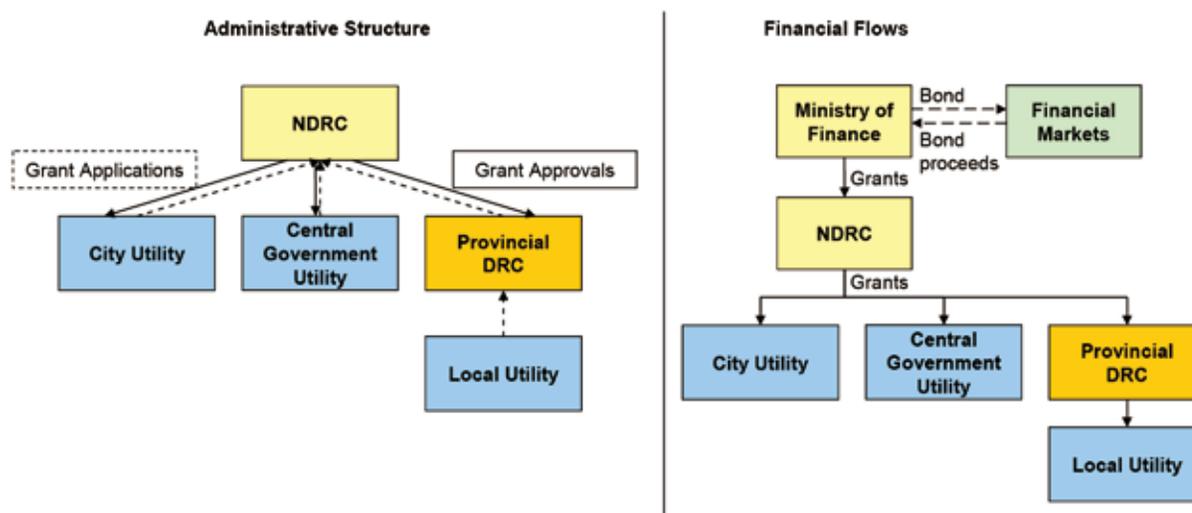


Table 5.3: Interest Rates, Repayment Periods, & Grace Periods on State Bonds Loans

Regions	Annual interest rate	Repayment period	Grace period
Economically developed regions (Guangdong, Fujian, Zhejiang, Shanghai, Jiangsu, Shandong, Tianjin, Beijing, Liaoning, Shenzhen, Xiamen, Ningbo, Qingdao, Dalian)	5.5%	6 years (15 years for rural power grid projects)	2 years (10 years for rural power grid projects)
Central and Western China	5%	10 years (15 years for rural power grid projects)	2 years (10 years for rural power grid projects)

Figure 5.4: Administrative Structure and Financial Flows for Grants in the State Bonds Program



- environmental protection and improvement projects;
- investments that can promote the economic and social development of underdeveloped regions;
- investments that can facilitate and industrialize the development of new science and technologies; and
- other projects fitting in with the relevant requirements (no clear criteria for the requirements).

Construction grants provided to project executing agencies have generally been of a conventional type (see Section 2 for an explanation of conventional versus output-based disbursements). In November 2007, the Ministry of Finance called for grants supporting wastewater collection pipe projects in Central and Western China to be conditional upon an energy efficiency and emission reduction program. The Government of China considers this an output-based approach, although the conditions are not directly related to progress or outcomes of the projects funded by the grants. Funds reserved by the Central Government for water pollution control projects on the Three Rivers and Three Lakes, plus the Songhua River must also be provided as output-based subsidies, and related to local emission reductions.

There are no clear regulations on other loan

or grant conditions. However, local financial authorities must oversee and periodically review the performance of the project executing agency. The project executing agency must follow the relevant agreements on the use of the funds, and must deploy the funds effectively and efficiently.

5.2.3 Eligibility Criteria

To receive CDB funding, borrowers must be creditworthy. However, there are no other clear eligibility requirements for CDB or State Bond funding.

CDB

The main borrowers of CDB are local governments, state-owned enterprises, and enterprises that are partially owned by the state. The CDB has also begun to provide loans to BOT projects that involve private-sector investment, and the CDB is authorized to provide concessionary loans to enterprises.

CDB's creditworthiness assessment depends on

- the prospective client's repayment history and its financial conditions;
- the industry in which the prospective client operates, and risks related to that industry. These are determined by an analysis of supply and demand, competitiveness, the relevant policy and legal framework, and other considerations; and

- the creditworthiness of the region the prospective client is from. This depends on local economic conditions and the creditworthiness of local government.¹¹

No information is available on how CDB's creditworthiness assessment guidelines are applied in practice, or what type of financial records or other information prospective borrowers need to present when applying for a loan. Furthermore, no information is available on CDB default rates to determine the accuracy of its creditworthiness assessment process.

State Bonds

The State Bonds program provides funds to project executing agencies, including utilities, municipal governments, or other entities. There are no clear eligibility criteria, and provincial governments have considerable discretion regarding which project executing agencies receive funding.

There are also no clear criteria for determining when a project executing agency can receive a grant, or when it can receive a loan.

5.2.4 Eligible Activities

CDB funds may be used for the construction of water and wastewater infrastructure, as well as for other activities. Because the CDB provides concessionary funding for many different types of projects, there are no clear requirements or restrictions on eligible activities. CDB has provided concessionary financing for the construction of water treatment plants, wastewater treatment plants, distribution networks, and other projects.

State Bonds funds may be used for the following types of projects:

- agriculture, forest, and water engineering projects (such as dams and reservoirs);
- road and public transport projects;
- urban infrastructure (including

water supply and wastewater) and environmental protection projects;

- power grid projects; and
- other projects specified by the Central Government.

The last category of “other projects” suggests there are no clear restrictions on eligible activities.

5.2.5 Program Administration

CDB

All CDB lending is administered fully within the CDB. Eligibility is determined by a creditworthiness assessment which is conducted by the Project Appraisal Department, the Credit Administration Department, and local and regional branches of the CDB of the industry, the region, and the individual borrower, respectively.

Local governments may issue policy papers outlining procedures for applying for CDB loans. However, it is unclear under what circumstances local governments can become involved in CDB lending, whether they can on-lend CDB funds, and if they can, what conditions apply.

The CDB provides funding directly to the recipient—whether a provincial government, local government, utility, or BOT concessionaire. Recipients repay loans directly to the CDB.

State Bonds

The National Development and Reform Commission (NDRC), in the Central Government, administers the State Bond program at the national level. The administrative structure and financial flows for loans and grants differ.

Provincial governments manage loan disbursements to project executing agencies and collect repayments from project executing agencies. The provincial government must repay all of the loan funds it receives to the Ministry of Finance.

For grant funding, project executing agencies that report to the provincial or central

¹¹-CDB's creditworthiness assessment guidelines are outlined in the “Interim Method on Administering the Creditworthiness of the China Development Bank (Guojia Kaifa Yinhang Xinyong Pingji Guanli Zaxing Banfa)” (No.141 Policy Paper of the CDB, April 2000).

governments apply directly to NDRC, and NDRC disburses the grants directly. Local utilities and other local executing agencies apply for funding through their provincial Development and Reform Commission (DRC). The provincial DRC passes these applications on to NDRC, and the provincial DRC may be involved in disbursing the grants to these utilities and executing agencies.

More detail on administrative procedures for loans and grants in the State Bonds program is presented in Appendix B.

5.3 Scope for Improving National Concessionary Finance Programs

The CDB and the State Bond program have been important sources of concessionary financing for investment in water and wastewater infrastructure. However, while the programs focus on financing investment in infrastructure, they do not contain incentives and structures that will resolve some of the water sector's main problems—utility inefficiency and weak sector governance. If utilities remain inefficient and sector governance stays weak, then sector performance will continue to be below its potential even as more infrastructure is built.

Weaknesses of the CDB and State Bonds programs include the following.

- The CDB and State Bond programs do not explicitly include incentives or assistance built in for utilities and other service providers to improve efficiency. For example, Brazil's PRODES program includes such incentives. To access concessionary financing for the construction of a sewage treatment plant, the plant's owners must ensure that the plant meets pollution discharge requirements specified by local river basin committees (see Appendix A.2).
- The CDB and State Bond programs do not explicitly include institutional structures or policies to correct the weaknesses identified in sector management.
- The department-level Integrated

Management Units in Colombia are an example of how a concessionary finance program can implement structures that improve overall sector management. Each department must set up an Integrated Management Unit to oversee the implementation of a department-level strategic plan for water and sanitation services. The Integrated Management Unit is responsible for managing, supervising, planning, and coordinating the strategic plan (see Appendix A.3).

- The CDB and State Bond programs' eligibility criteria are broad and do not appear to ensure that concessionary funds are channeled to the highest-priority projects or utilities. Eligibility criteria are broad enough to permit political concerns and other considerations to influence lending decisions.

- Brazil's PRODES program is an example of more tightly-specified eligibility criteria. To be eligible for PRODES financial support, the sewage treatment plant must be located in a river basin that has a recognized "river basin committee" and the plant must be part of the investment program approved by the river basin committee. In addition, it must meet the discharge requirements specified by the committee (see Appendix A.3).

- Available information on the State Bonds program indicates that this program lacks rigorous appraisal procedures, strict compliance monitoring, and effective evaluation techniques. Without these components, there are few incentives for improved performance.

- Recipients of CDB loans must be creditworthy. This means that the CDB concessionary lending program increases access to financing for only a segment of utilities. It does not increase access to financing for utilities that are not creditworthy according to the CDB's concessionary criteria.

6 Policy Options for China's Water and Sanitation Sector

The policy options outlined in this section are intended to serve as a point of reference for decision makers in China, with particular relevance for the development of the 12th Five-Year Plan. In presenting the policy options, a brief analysis is given of the relevance to China of the international experience provided in the previous sections. This analysis will be followed by a set of selected policy options for the Chinese context, with particular emphasis on (i) improving sector governance and (ii) improving utility efficiency. It will conclude with a list of main options identified.

China's water and sanitation sector is facing many of the same key issues and challenges experienced globally. Although China has been successful at improving the level of access and in reducing costs and building infrastructure, it still has the potential to improve cost recovery policies, and improve efficiency, as well as financial transparency and financial accountability. Concessionary financing is widely viewed as an effective approach to tackle these issues.

All forms of concessionary finance are, in effect, investment subsidies, and without subsidies, weak utilities are unable to improve. The only viable subsidies are investment subsidies and not operation and maintenance subsidies.

Decision makers in developing countries are sometimes reluctant to authorize subsidies to the water and sanitation sector because of concerns that this is not an economically acceptable course of action. However, investment subsidies are common practice in industrialized countries including the USA, the EU countries, and Japan. Subsidies are justified to support the poorer sections of the population and to help utilities undertake

investments aimed at protecting the environment, which can be very costly and cannot be financed solely by the users.

In the Chinese context, particular attention must be given to the widely divergent levels of development in different localities, leading to different levels of capability in financial resources, sector management, and efficiency of utilities. Thus, different solutions should be applied to areas that are undergoing different stages of development.

6.1 Analysis of Relevance to China of Selected Case Studies

Of the cases discussed in the previous sections, Colombia's Specialized Operators model places particular emphasis on the improvement of utility efficiency. For this reason, it is considered to be the most relevant to the Chinese context.

6.1.1 State Revolving Funds Programs in the USA

If there is under-investment in water and sanitation infrastructure in certain regions, a government may wish to provide concessionary financing directly for the construction or improvement of infrastructure in the areas that suffer from under-investment. State Revolving Fund programs in the United States provide concessionary financing for the construction of infrastructure used to deliver drinking water, and the construction of infrastructure used to treat wastewater and improve effluent quality. For example, a grant of 75 percent of cost may be provided for the construction of wastewater treatment plants. This model primarily targets small and lower-income communities.

Both the United States and China face similar issues in rural areas, including shortage of construction funding, lack of capability in the operation and management of rural water and sanitary facilities, insufficient expertise, and improper technologies. In China, programs similar to the State Revolving Fund program could be developed targeting under-developed municipalities, to stimulate the construction of infrastructure to improve coverage. Although this approach does not specifically facilitate the improvement of utility efficiency or sector management, the first priority in the under-developed municipalities should be to effectively provide access to water and sanitation services.

The recent “Central China Specific Village Comprehensive Environmental Protection Fund” (draft version of March 24, 2009 for discussion) proposes “central government grants and regional government grants to subsidize towns/villages to build environmental facilities” as a method of addressing priority rural public health concerns. Clear eligibility criteria have been set out, but the draft has not specified whether conventional or output-based grants will be adopted. The draft includes detailed implementation guidelines and procedures for grant administration, monitoring, as well as grant contributions between the central and provincial governments. The “Revolving Fund” experiences are highly relevant to this proposed concessionary financing program, particularly at the current stage of policy formulation.

6.1.2 Brazil's Catchments Restoration Program (PRODES)

Programs can be designed to improve sector management by streamlining or creating new sector management channels. Brazil's PRODES program was designed to address poor sector management, utility inefficiency, and under-investment in infrastructure in certain low-income areas, using designated output-based loans or grants. The output-based grants or loans provide incentives for utilities to become more efficient and enhance overall sector governance and enforcement

by introducing specific institutional structure to administrate the grants or loans. It gives local river basin committees responsibility for specifying the pollution discharge requirements that sewage treatment plants must meet. Sewage treatment plant owners must ensure that their plants meet these requirements to have access to concessionary finance.

This approach contains a number of elements which could be beneficial for China's “developed” municipalities, as well as more progressive “developing” municipalities.

.A crucial element of PRODES operation is the requirement that to be eligible a utility belong to a water basin where a river basin committee is legally established and operational. This requirement merits close attention in China as it may have important repercussions because the establishment of river basin committees would significantly improve sector management, with further benefits to other municipalities in the catchment area.

.Incentives could be provided to undertake activities that are currently not particularly attractive to utilities because of insufficient financial return. For example, increased coverage and wastewater treatment plants in poor areas within the municipalities, or reducing physical water losses. In the latter case, while the financial returns of reducing physical water losses are high, so is the corresponding risk of failure. A recently prepared project in Sao Paulo, Brazil named REAGUA, aims to increase the attractiveness of such activities, along with optimizing water consumption and promoting reuse of treated wastewater.

It is important to note that the experiences of the PRODES program are more relevant for financially strong municipalities that are capable of financing their own investment program, rather than for poor municipalities. However, a lack of initial financing is not necessarily a key factor in discouraging participation in a program like PRODES.

Methods exist to overcome this problem through defining preliminary outputs and paying for their achievement, as done in REAGUA or in the Local Government and Decentralization project under preparation in Indonesia.

6.1.3 Colombia's Specialized Operators Initiative

The Colombian model was designed to respond not only to the need for concessionary financing, but mainly to the need to improve the performance of the utilities. Frequently, performance problems and financing problems are interconnected. Therefore, stimulating good performance reduces the investment requirements. Colombia's Specialized Operator initiative encourages municipalities to engage private sector utility operators, with efficiency requirements also included in the operator's contract with the municipality. The Colombian Specialized Operators model is considered to contain the methods and policy options most relevant to China because it addresses the problem of poor performance of utilities simultaneously with the problem of financing.

This model awards long-term concession contracts through a special bidding process. Tariffs and service standards are set before the bidding process for a Specialized Operator contract commences. Bidders must present an investment plan that will permit them to meet the service targets the municipality has set for water supply and sanitation in the service area. Bidders must specify the government subsidy they would require in order to make these investments. The firm that requires the least subsidy is awarded the contract. This process is referred to as "negative concession".

The methods applied in Colombia's Specialized Operators program are relevant to regions in China characterized by poor utility efficiency and performance, but they are particularly relevant to the developing municipalities, which are vigorously expanding coverage while at the same time struggling to develop efficient and well-

performing utilities. The model is also relevant to developed municipalities facing poor utility performance. By setting tariffs and service standards, and financing the gap between the investment costs and the local ability to finance them, the model is helpful in situations where municipal governments are facing social challenges in increasing water and wastewater tariffs to reach the level of full cost recovery, and where subsidizing is necessary.

In under-developed municipalities, the methods of Colombia's Specialized Operators initiative could also be applied, as well as Colombia's Constructor-Operator model, which could be utilized to encourage entrepreneurs to establish small new utilities in very small municipalities (populations under 20,000).

6.2 Selected Policy Options for China

The policy options presented below have been selected based upon the World Bank's international and China experience.

The question to be asked is how China can improve its approach to concessionary financing. China has focused mainly on access, bridging the affordability gap and building infrastructure. It could potentially improve cost recovery policies, improve efficiency, as well as financial transparency and financial accountability. Long term domestic financing sources are more readily available in China than in other countries in the region, and as a result the supply side is not a major problem. However, often banks are brought in to finance utilities that technically are not creditworthy. A program that will improve the service standards of these utilities, and enable them to have access to market-based finance in the future should be considered.

6.2.1 Selected Options Aimed at Improving Sector Governance

1. Incentives could be provided for managing the river basin as a whole and

providing concessionary finance based on improvements to water quality or reduction in overall pollutant loads.

2. Incentives could be given for aggregating services, such as the county organizing services for all townships, as well as the capital town. This is beginning to occur in progressive areas like Jiangsu and Ningbo, but it could be facilitated in other places.

3. Concessionary finance could be made conditional on establishing a sound provincial/municipal regulatory regime. This was successfully demonstrated in Brazil's PRODES program, which required that for a utility to be eligible for finance it needs to belong to a water basin where a river basin committee is legally established and operational.

6.2.2 Selected Options Aimed at Improving Utility Efficiency

1. Incentives could be used to promote appropriate private sector participation (PSP), such as in Colombia. This is particularly important in the poorer and smaller cities which otherwise would not attract private sector funding without a BOT¹² contract for a treatment plant.

2. For public utilities, concessionary finance could be made conditional on meeting certain financial and service parameters, or at least on demonstrating continued improvements.

3. The current approach of the China Development Bank (CDB) to lend only to creditworthy utilities is contradictory to the goal of improving weak and poorly performing utilities. Under this approach, the non-performing utilities will never be able to improve. Also, the eligibility for obtaining funding is currently not related to improving performance. The funding

should be directly tied to incentives to improve performance.

4. Grants (subsidies) should be provided by the government, national or provincial, to poorly performing utilities, conditional on adopting policies to improve performance. Sources of funds for grants, at least for pilot projects, can be loans of International Funding Institutions (IFIs) to the central or local governments. The Colombian model could serve as the basis for improving the performance of ailing utilities.

5. In developing and underdeveloped areas, there may be no viable utilities. In such circumstances, the Colombian "Constructor-Operator" model could be applied to encourage construction entrepreneurs to establish new utilities, as a precondition to the award of a contract to construct and/or rehabilitate local infrastructure.

6. Lack of data and analysis is a problem in the water and wastewater sector in China, and such lack of data can be a major obstacle in implementing output-based grants and loans. Conversely, using concessionary finance as an incentive, requirements can be made as to the transparency of utilities, thus reducing information gaps.

7. To further support the collection, management and analysis of data, a national information system could be developed, including a cost database. This is an area in which the Bank could further its share international experience.

6.3 Key Options to Consider

Well-designed concessionary financing programs can be used to improve utility efficiency and sector management in addition to resolving financial needs for infrastructure. Investment subsidies are common practice in industrialized countries such as the USA, the EU countries, and Japan. Subsidies are justified to support the

12-Build-Operate-Transfer contract: a long term contract whereby a private party agrees to build a facility (e.g. a treatment plant) for a public party and operate it over a specified, usually long, period and subsequently transfer control back to the public party.

poorer sections of the population and to help utilities undertake investments aimed at protecting the environment as these are sometimes very costly and cannot be financed only by the users. Preparations for the upcoming 12th Five-Year Plan might benefit from considering some of the policy options presented in this note. There are four key policy options to consider:

1. Concessionary Finance to Improve Sector Governance.

Concessionary finance could be made conditional on establishing a sound provincial/municipal regulatory regime. This was successfully demonstrated in Brazil's PRODES program, which required that for a utility to be eligible for finance, it needed to belong to a water basin where a river basin committee is legally established and operational.

2. Including Incentive-Based Models to Improve Utility Performance.

The China Development Bank, the State

Bonds programs, and the China New Countryside Development program all apply concessionary financing concepts. Each of these programs could benefit from means to target the improvement of utility efficiency and sector governance as a condition of providing concessionary finance. Colombia's experience with Specialized Operators could serve as a suitable model for such efforts.

3. Concessionary Finance as a Means to Improve Access to Reliable Data.

Lack of data and analysis can be a major obstacle in implementing output-based grants and loans. To overcome this absence of information, concessionary finance can be used as an incentive to require improved transparency of utilities, thus reducing information gaps.

4. Provincial Pilot of Incentive-Based Concessionary Finance Program.

A pilot for an incentive-based concessionary finance program could be tailored for a developing province in China.

Appendix A: Case Studies

This appendix includes three case studies of concessionary financing programs: the United States' State Revolving Fund program, Colombia's "negative concession" program, and Brazil's PRODES program.

A.1 United States' Drinking Water State Revolving Fund

In the United States, the government provides low-cost financing for improvements in water infrastructure through the Drinking Water State Revolving Fund (DWSRF) program which was established in 1996 and is run by the Environmental Protection Agency. It is a relatively simple, intermediary-run program that focuses on providing capital to small and disadvantaged communities. It is commonly viewed as an example of best practice programs for financing water sector infrastructure. Table A.1 summarizes the main characteristics of the program.

the federal government's experiences with earlier programs for financing wastewater and water supply infrastructure—mainly, the construction grant program established by the 1948 Water Pollution Control Act and the Clean Water State Revolving Fund program established in 1991.

The Water Pollution Control Act of 1948 first established a grant program to assist localities with planning and design work for wastewater infrastructure. This Act authorized loans for treatment plant construction. In 1956, a construction grant program replaced the loan program. Progress in the construction of wastewater treatment plants was slow, and water quality continued to deteriorate.

In the Federal Water Pollution Control Act Amendments of 1972, Congress totally revised the existing clean water law and established national standards for treatment, mandating that all publicly owned treatment

Table A.1: Summary of U.S. Drinking Water State Revolving Fund

Dimension	United States' Drinking Water State Revolving Fund Program
Objectives	<ul style="list-style-type: none"> ▪ Provide an affordable source of financing for drinking water infrastructure improvements
Financing instrument	<ul style="list-style-type: none"> ▪ Low-interest loans and grants
Degree / form of concession	<ul style="list-style-type: none"> ▪ Interest rates are approximately 50% of market rates (varies by state)
Target	<ul style="list-style-type: none"> ▪ All providers with eligible projects, but especially small scale providers or those operating in disadvantaged areas
Funding arrangements	<ul style="list-style-type: none"> ▪ Source: Federal government grants matched 20% by state government funds (grants or bond proceeds) ▪ Decision-making: Government agencies at the federal and state levels <ul style="list-style-type: none"> – For funding to states, the EPA – For funding to water systems, the agency that supervises water systems in the corresponding state ▪ Rules: <ul style="list-style-type: none"> – State government provides matching contribution to fund – Projects address priority public health concerns and assist needy households – Water systems have technical, financial, and managerial capacity

A.1.1 Program Background

The Drinking Water State Revolving Fund (DWSRF) program was established in 1996. However, it was created based on

works were to achieve a minimum of secondary treatment or more stringent treatment by July 1, 1977. Grants were

administered by the federal Environmental Protection Agency (EPA) and were provided through states to local municipalities in a complex three-step process (feasibility, design, and construction).

In the mid-1980s, grants for wastewater treatment plant construction became subject to government budget cuts, and Congress authorized a shift to state revolving funds starting in 1991. One of the unintended incentives under the construction grant program was that many municipalities over-invested in treatment plant facilities because they received matching grants from the federal government ranging from 50 to 75 percent of total project costs.

The first state revolving fund program to be established in the water sector was the Clean Water State Revolving Fund (CWSRF). This program provides grants to be used as seed money for state-administered loans for water quality projects. The revolving fund may provide a range of loan assistance to communities, including construction loans made at or below market rates (interest-free loans are permitted), refinancing of local debt obligations, and loan guarantees or purchasing of insurance. CWSRF funds may be used for a wide variety of water quality projects including municipal wastewater treatment as well as all types of nonpoint source and estuary management projects. The entity that administers each state-level fund may determine specific eligibility criteria for projects according to the state's priorities. Since being established, its annual assistance has been around US\$ 3.2 billion.

The Drinking Water State Revolving Fund was modeled on the initial success of the CWSRF program. The structures and rules for the two programs are almost identical, differing only in the types of projects they finance.

A.1.2 Program Overview

The DWSRF program allows state agencies to receive grants from the federal government (“capitalization grants”), which they can on-lend to water systems for infrastructure development and technical assistance. The

1996 amendments to the Safe Drinking Water Act established the DWSRF program.

Under the DWSRF program, states are eligible to receive capitalization grants from funds appropriated annually by Congress. These grants provide capital for a state-level revolving loan fund for investments to improve the infrastructure involved in providing drinking water (such as treatment facilities and transmission and distribution networks). To be eligible to receive these grants, states must agree to deposit matching funds equal to 20 percent of the grant into their state revolving loan fund.

The state revolving loan funds are then used to provide low-cost loans and grants to water systems for drinking water infrastructure improvements. States are also authorized to set aside a portion of their capitalization grants (called “set-asides”) to fund a range of activities including source water protection and capacity development.

The EPA administers the federal portion of the DWSRF while the state agencies responsible for supervising water systems administer the state revolving loan funds.

The DWSRF program has exceeded targets for utilizing funds and for increasing the long-term revolving level of funds (US\$ 12.8 billion available as of the end of the 2006 fiscal year, according to EPA). The water revolving fund model has been used for other revolving loan programs in the United States and elsewhere.

A.1.3 Program Objectives

The goal of the DWSRF program is to provide an affordable source of financing for drinking water infrastructure improvements, especially in small and disadvantaged communities. The DWSRF program provides financing to public water systems (water providers) to upgrade infrastructure, as well as some technical assistance to water systems. To qualify for funding, the proposed infrastructure upgrades should be priority improvements that the water system needs to make to provide safe drinking water.

The DWSRF program also allows states to use

up to 31 percent of their capitalization grants to fund activities that encourage improved water system management and source water protection.

A.1.4 How the Program Operates

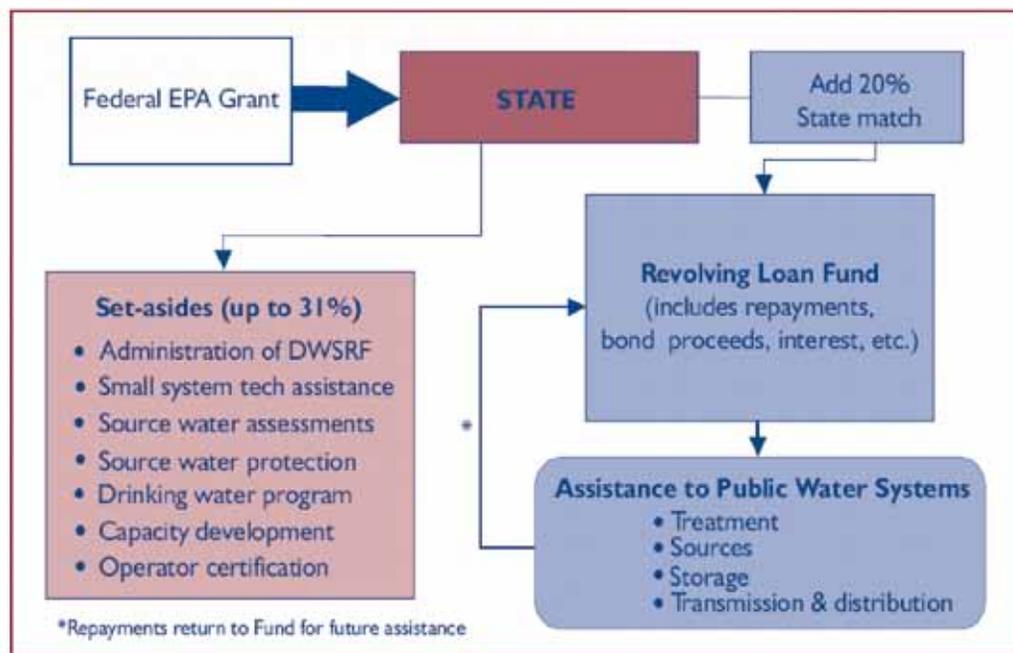
Each state, plus Puerto Rico, operates its own revolving loan fund under the DWSRF program. Water systems seeking funding to develop an infrastructure improvement project must apply to their state governments for DWSRF funding. The state government draws from its revolving loan fund (which includes the capitalization grant and the state matching grant, plus any interest repayments from previous loans) to award grants or loans to water systems with eligible projects. These water systems may be publicly-owned, privately-owned, or non-profit.

recent Drinking Water Infrastructure Needs Survey. The EPA conducts these surveys every 4 years. The allotments for the period 2006 through 2009 are based on the 2003 survey. Each state is entitled to receive at least one percent of the total available funding.

The state agency with the authority to establish a state revolving fund for drinking water administers the state's Public Water System Supervision (PWSS)¹³ program. This is often the state's public health or environment department. States may delegate day-to-day operations and financial management of their DWSRF program to another agency such as a finance authority provided priority setting and program oversight responsibilities remain with the PWSS program.

To receive a capitalization grant, a state must

Figure A.1: Structure of the DWSRF Program



Source: EPA. "The Drinking Water State Revolving Fund Program: Financing America's Drinking Water from the Source to the Tap." Report to Congress. May 2003.

Funding for annual capitalization grants made to states is authorized by Congress each year. The EPA administers the DWSRF program at the federal level. The EPA allots funds to each state based on the state's proportional share of total eligible needs reported in the most

13-The PWSS program carries out many key activities, including developing and maintaining drinking water regulations, tracking compliance information, and ensuring that all public water systems follow state regulations.

- agree to deposit matching funds equal to 20 percent of its grant into the state revolving loan fund;
- show the EPA that it has the ability to manage the program and that it will comply with the applicable statutes and regulations and agree to deposit all program funds, except funds used for set-asides, into its DWSRF and must agree to a timeline for providing assistance;
- agree to use generally accepted accounting principles and to conduct audits in accordance with the Single Audit Act. As a best management practice, the EPA encourages each state to conduct independent audits of its DWSRF program to ensure the fund's financial integrity;
- comply with other requirements related to state capacity development and water system operator certification programs; and
- develop an annual Intended Use Plan (IUP) that describes how program funds will be used including a comprehensive list of eligible infrastructure projects and a list of the highest priority projects expected to receive funding in any year.

States make their matching contributions directly from their budgets as grants ("state appropriations"), or from proceeds obtained from the sale of bonds. Funding from state appropriations is the most common method. If the state issues bonds, these may be either "general obligation bonds" which are issued by the state and repaid out of the state's general budget, or "revenue bonds" which are issued by the state DWSRF program and repaid using interest repayments made into the fund. If the state chooses to make its contribution to the fund using revenue bonds, the fund grows more slowly because less than 100 percent of loan repayments to the fund are recycled as additional loans (a part goes to repaying interest on the revenue bonds).

After a state receives its federal capitalization grant and provides matching contribution

equal to 20 percent of the capitalization grant, it may set aside up to 31 percent of its federal capitalization grants for technical assistance and administration. The remaining federal capitalization grant and the state contribution comprise the revolving loan fund.

The revolving loan fund becomes the repository for any interest earned on the initial capital and any repayments on loans. Each year, a portion of the loan fund is disbursed to eligible public water systems through concessionary loans and grants.

The revolving loan funds provide financing to water systems in the form of grants or loans at below-market interest rates, with repayment terms of less than 20 years. Funding may also be a combination of grant and loan. Each state sets its own discounted market interest rates based on household income or other affordability criteria. When loan recipients make repayments to the state DWSRF program, the funding is "revolved" and made available for further projects.

The most common type of assistance provided by state revolving funds to water systems is loans. State revolving funds are also allowed to refinance publicly-owned systems' short- or long-term debt issued after July 1, 1993, and they may also provide guarantees or purchase insurance. However, by far the largest share of assistance is by way of loans.

To receive financing from a state revolving fund, a water system (operator) must

- demonstrate that it has a dedicated source of revenue, or in the case of privately-owned systems, adequate security to ensure repayment of assistance;
- show it has the technical, financial, and managerial capacity to ensure compliance with the SDWA. States may develop their own methods to assess systems' capacities. If a system lacks capacity, it may become a beneficiary of a state revolving fund's technical assistance programs; and
- not have any significant non-compliance with any national primary drinking water regulation, unless the assistance to be

received will address the cause of this noncompliance.

National and state-level rules on loan terms

There are some national limits on loan terms, but states have some leeway to set their own loan terms within these limits. For financing given to all systems besides those in disadvantaged communities, interest rates are between zero and market rates, and repayment periods do not exceed 20 years. Within these limits, each state determines the terms (including maturity and interest rates) on which it will provide loans and grants from its revolving loan fund.

Most states set their interest rate based on some percent of the rate that states are charged for borrowing—typically, the 20 year General Obligation Bond Buyer Index ¹⁴. In practice, weighted interest rates have ranged from 0 to 6 percent. According to the EPA, the weighted average interest rate of DWSRF loans in 2006 was 2.1 percent. Figure A.2 compares the weighted-average interest rate offered on DWSRF loans against the market interest rate during 2000-2006.

Figure A.2: DWSRF Interest Rates vs Market Rates



Source: EPA. "Drinking Water State Revolving Fund: Increasing Impact, 2006 Annual Report".

The DWSRF program allows states to provide special financing terms on loans

¹⁴The General Obligation Bond Buyer Index is based on the average yields of 20-year general obligation bonds issued by municipal issuers.

to water systems that serve disadvantaged communities. States may offer negative interest rate loans, principal forgiveness, or extend loan terms up to 30 years, or a combination of these. Negative interest rate loans and principal forgiveness are limited to an amount equal to 30 percent of the state's capitalization grants. States may set their own criteria to determine whether a system is located in a disadvantaged area.

Eligible projects

There are national and state-level rules on eligible projects. To be eligible for funding in any state, a project must be in one of five categories:

- **Treatment:** Projects that will meet (and continue to meet) drinking water health-based standards for contaminants that cause acute and chronic health effects.
- **Transmission and Distribution:** Projects to install or replace transmission and distribution mains, pumps, and other distribution system infrastructure.
- **Source:** Projects to rehabilitate wells or develop new sources to replace contaminated sources.
- **Storage:** Projects to install or improve eligible storage facilities.
- **Consolidation:** Projects to consolidate water systems. For example, a water system with a contaminated source or a system that is unable to maintain technical, managerial, or financial capacity. A state must give priority to projects that
 - address the most serious risks to public health;
 - are necessary to ensure the system can meet SDWA's drinking water health-based standards; and

- assist systems most in need on a per-household basis.

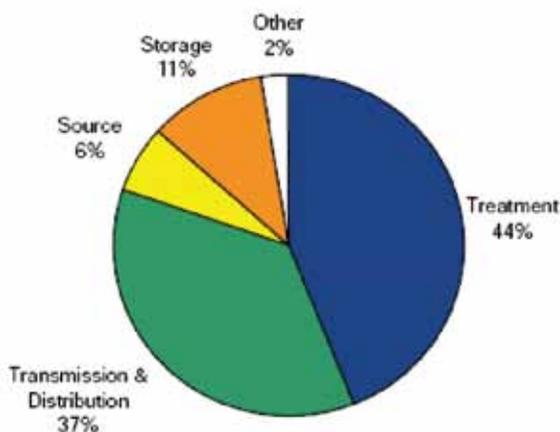
States may also prioritize projects for assistance based on other criteria such as water efficiency, security needs, consolidation, and restructuring.

Projects that are ineligible for DWSRF funding include the following:

- expenditures for monitoring, operations, and maintenance;
- projects whose primary purpose is to facilitate growth;
- projects to construct or rehabilitate dams and reservoirs (unless the reservoir is for finished water or part of the treatment process);
- projects to obtain water rights (unless they are owned by a system being purchased through consolidation); and
- projects needed primarily for fire protection.

Figure A.3 shows how the funding from all loan agreements executed in 2006 was allocated by type of eligible project. Over 80 percent of the funding executed in the fiscal year of 2006 financed investments in water treatment, transmission, and distribution infrastructure. “Other” corresponds to planning and design, land acquisition, and the purchase of systems.

Figure A.3: Portion of Funding of Executed Loan Agreements, 2006



Source: “Drinking Water State Revolving Fund: Increasing Impact. 2006 Annual Report.”

Priority projects

The DWSRF program emphasizes providing assistance to small water systems, and those serving disadvantaged communities. Small water systems are considered to be those that serve 10,000 or fewer people. These systems cannot exploit the economies of scale inherent in water infrastructure. In 2006, 69 percent of all loans from the DWSRF program were allocated to small systems. Disadvantaged communities are those with a low ability to pay for water services. States set their own affordability criteria to determine whether a community is “disadvantaged,” and they must release these criteria for public comment.

Uses of the “Set-asides” for technical assistance and administration

The 31 percent of the capitalization grant that states may set aside for technical assistance programs and administration is detailed as follows:

- Administration and Technical Assistance (4 percent) to administer the DWSRF program and provide technical assistance to public water systems.
- Small System Technical Assistance (2 percent) to provide technical assistance to small systems serving no more than 10,000 people.
- State Program Management (10 percent), although states must match these expenditures on a dollar-for-dollar basis) to

- administer the state PWSS program;

- administer and provide technical assistance through source water protection programs; and

- develop and implement a capacity development strategy and/or operator certification program.

- Local Assistance and Other State Programs (15 percent, and

no more than 10 percent per activity, per capitalization grant) to

- delineate and assess source water protection areas;
- provide loans to systems to acquire land or conservation easements;
- provide loans to systems to assist in voluntary, incentive-based source water protection measures;
- make expenditures to establish and implement wellhead protection programs; and
- provide technical or financial assistance to systems as part of a capacity development strategy.

Through these “set-aside” allowances, the DWSRF program aims to help states address underlying issues that have an impact on a water system’s institutional capabilities.

Sources:

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A.2 Brazil’s River Basin Restoration Program (PRODES)

In 2001, the Government of Brazil established a program to promote the restoration of water quality in key river basins. The program is called PRODES (Programa Nacional De

Despoluicao de Bacias Hidrograficas—also referred to as “the program”) and is managed by the National Water Agency (Agencia Nacional de Aguas—ANA). The main characteristics of the program are summarized in Table A.2.

Table A.2: Summary of Brazil’s River Basin Restoration Program Case Study

Dimension	Brazil’s River Basin Restoration Program (PRODES)
Objectives	<ul style="list-style-type: none"> ▪ Improve environmental conditions through the restoration of water quality in key river basins ▪ Increase investment in sewage treatment plants ▪ Stimulate modern water resources management instruments such as river basin committees
Financing instrument	<ul style="list-style-type: none"> ▪ Grants—output-based
Degree / form of concession	<ul style="list-style-type: none"> ▪ Up to 50% of the capital costs of the projects
Target	<ul style="list-style-type: none"> ▪ More efficient utilities that make sanitation investments and meet pre-established performance targets
Funding arrangements	<ul style="list-style-type: none"> ▪ Source: Federal government funds through an escrow account ▪ Decision-maker: Government agency (Agencia Nacional De Aguas) on the recommendation of an independent certification agency ▪ Rules: Meeting pre-established performance targets at evaluation periods

In Brazil, municipalities are responsible for water supply and sanitation. In some cases, the governments have delegated sanitation service providers to private companies. Although funding water supply and sanitation is primarily the responsibility of municipalities, most municipalities receive subsidies from Congress. The financial resources allocated to state utilities are mostly loans from either national (such as CAIXA or BNDES) or international institutions (such as the World Bank, IDB or JBIC).

Prior to 2001, the federal government provided input subsidies to public or private companies to cover part of the costs of establishing and maintaining sewage treatment plants. However, these subsidies did not improve plant maintenance and water quality, the key problem areas for the sector. Accordingly, in 2001 the federal government introduced a new program, named PRODES. As with the previous program, PRODES provides subsidies to improve sewage treatment, but instead of providing input subsidies, the federal government provides output-based aid (OBA) subsidies to sanitation service providers that invest in sewage treatment. Consequently, the sanitation service provider has a strong performance incentive.

A.2.1 Program Objectives

The objectives of PRODES are

- to prevent river basin pollution and reduce the existing water pollution levels;
- to increase investment in sewage treatment plants; and
- to stimulate modern water resources management instruments such as river basin committees.

The expected outcomes from PRODES by end of 2007 were the abatement of 100,000 kgs of Biochemical Oxygen Demand (BOD) per day of pollution discharge, along with a 15 percent decrease in the number of hospitalized people with water-related diseases in areas benefiting from PRODES.

A.2.2 How the Program Operates

PRODES provides payments to sewage treatment plant owners, either public or private, who invest in new facilities and demonstrate effective sewage treatment.

To be eligible for PRODES financial support, the sewage treatment plant must be located in a river basin where there is a legally established and operational “river basin committee.” In addition, the plant must be part of the investment program approved by the river basin committee and it must meet the discharge requirements specified by the committee.

The process for a project within the program is as follows:

- **Proposal registration.** The sanitation service provider (“project sponsor”) presents its project proposal to invest in sewage treatment to ANA. The project proposal includes performance targets for the sewage treatment process. River basin committees and municipalities express their interest in the project and approve the performance targets. These targets are measured both

- quantitatively, including operational results such as influent flow, influent organic load, and removal efficiency of specific pollutants (BOD, suspended solids, coliforms, Total Kjeldahl Nitrogen (TKN) and total phosphorus); and

- qualitatively, including management issues such as training of operational staff, operational planning, maintenance of civil works and equipments, and management and disposal of solid waste and sludge.

- **Proposal evaluation.** ANA ascertains that the proposed project satisfies PRODES requirements. It should be a new or ongoing project to construct sewage treatment facilities or improve existing facilities (upgrading treatment processes or enlargement of treatment capacity). ANA also analyzes the technical and financial feasibility of the projects.

- **Proposal selection** is made according

to the criteria pre-established by ANA. At the commencement of the program, each river basin committee individually selected the preferred proposals within its region. However, by 2007, ANA selected proposals based on a multiple-criteria ranking system. Although river basin committees were no longer able to decide individually they continued to participate in evaluating selection criteria.

· **Contracting.** ANA determines the value of the contract as 50 percent of the lower value between

- the project budget (informed by the project sponsor);
- the reference value (estimated by ANA). The reference value of each project is determined as the product of two variables:
 - population affected by the treatment capacity at the final stage of the project, and
 - capital costs per capita from the table of reference values.

Table A.3 illustrates the reference values. A treatment plant removing 60 percent of BOD for a final stage population of 25,000 inhabitants would receive a reference value

in the table of 25,000 inhabitants * US\$ 14/inhabitants = US\$ 350,000. In this case, ANA would commit to reimburse the lower value between 50 percent of the project budget advanced by the project sponsor, and 50 percent of the reference value. This would be $50\% * US\$ 350,000 = US\$ 175,000$.

ANA commits to the selected projects, within the budgetary limit of the program, and signs the contract with the sanitation service provider, the river basin committee, and the municipality concerned.

- **Certifying process.** PRODES reimburses the determined sum quarterly over a five to seven year period as long as the sanitation service provider meets the pre-established performance targets. The sanitation service provider conducts a quarterly self-evaluation and an independent party may audit the sewage treatment plant. If the results are not satisfactory, ANA issues a warning and suspends the quarterly payment. If the sanitation service provider does not meet the standards for a second time, ANA cancels the quarterly payment. If the sanitation service provider does not meet the standards three times in a row, the provider is removed from the

Table A.3: Table of Reference Values

Table of Reference									
Parameter	Classes of Efficiency in Sewage Treatment (%)								
	A	B	C	D	E	F	G	H	I
BOD	30%	60%	75%	85%	85%	90%	90%	90%	90%
TSS	40%	60%	75% ⁽¹⁾	85% ⁽¹⁾	85% ⁽¹⁾	90%	90%	90%	90%
FC					99,999%		99,999%		99,999%
Phosphorus and/or Nitrogen								85% and/or 85%	85% and/or 85%
Population (inhab.)	Capital costs per capita (US\$/inhab) ⁽²⁾								
up to 10.000	14	23	36	50	55	64	68	77	77
from 10.001 to 20.000	14	18	32	45	45	59	59	68	73
from 20.001 to 50.000	9	14	27	36	41	50	55	64	68
from 50.001 to 100.000	5	14	27	36	36	45	50	59	64
from 100.001 to 200.000	5	14	27	36	36	45	50	59	64
over 200.000	5	14	27	36	36	45	50	59	64

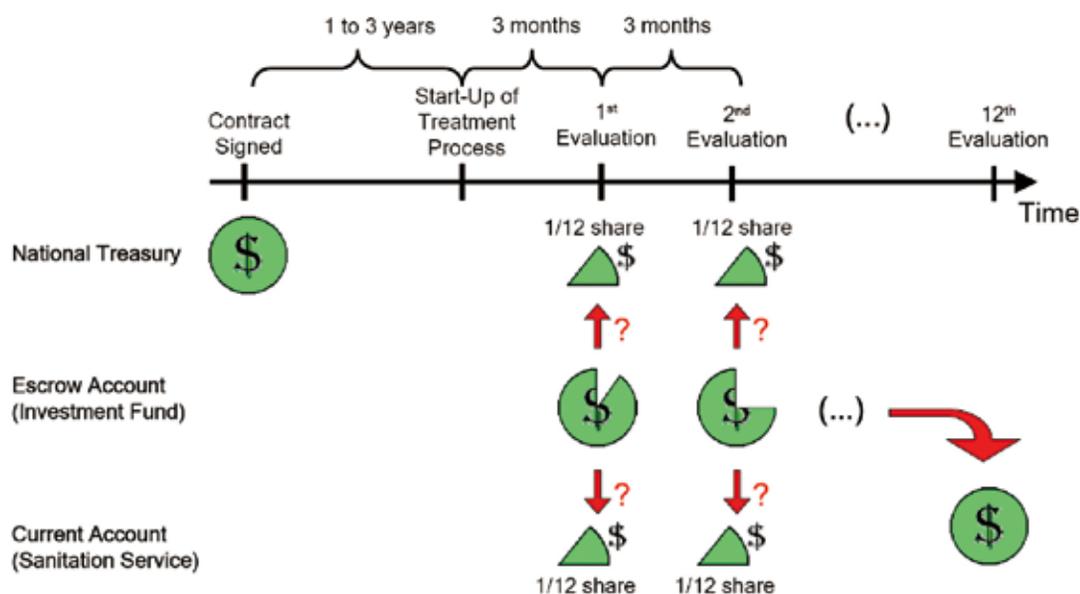
(1) - 60% allowed only for treatment processes that involve algae production in stabilization ponds.

(2) - Currency ratio: 2,2 US\$:1 R\$

Source: ANA, Brazilian National Water Agency

program and does not receive any further payments. Figure A.4 shows the PRODES fund disbursement scheme.

Figure A.4: PRODES Fund Disbursement Scheme



Source: Agencia Nacional De Aguas

Institutional and funding arrangements for the program

The sectoral regulator at the federal level, the Agencia Nacional De Aguas (ANA) administers PRODES. ANA was created in 2000 as an executive branch of the Ministry of Environment. A Board of Directors manages ANA with administrative and financial autonomy.

Funding for PRODES comes from national government grants making it susceptible to annual grant funding reductions. However, to address concerns by the developers of sewage treatment plants regarding the government's commitments to make the quarterly payments, the full sum relative to this contract is "locked away" when a contract is signed in an escrow account (as shown in Figure A.4).

A.2.3 Program outcomes

In its first year, 2001, ANA received 104 project proposals and signed 17 contracts

with a total value of US\$ 22.5 million. In 2006, ANA signed 38 contracts representing US\$ 44 million. The total investment made in 2006 was US\$ 136 million, three times more than PRODES's commitment. The population benefiting from the program was more than 3.5 million.

PRODES pays only for results, and the value of the contracts is determined exclusively upon the final benefits of the project (and not according to the project budget). Therefore, the project sponsors have a strong incentive to adopt least-cost methods for sewage treatment. This system is encouraging a transition from capital intensive projects (which were often poorly managed) to more economical alternatives for sewage treatment.

The technical and financial support from PRODES during the certifying process helps the sanitation service providers, especially the smaller providers, to develop high-quality plans. The financial reward offered by PRODES is also a strong incentive for sanitation service providers to overcome their initial difficulties in carrying out tasks such

as operational monitoring, maintenance, or training of staff.

After the conclusion of the certifying period, and if the operational performance targets set by ANA have been accomplished, it is expected that the sanitation service providers have built sufficient capability to continue to operate with adequate standards, and have achieved all the complementary investments (sewers, pumping stations) to reach the project performance targets.

ANA also uses PRODES as an important tool to implement and support initiatives toward a modern water resources management. PRODES promotes the role of river basin committees and water agencies in water resources management, as well as the implementation of water management systems at state level.

Sources

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A.3 Colombia’s Specialized Operators for WSS

The Government of Colombia encourages municipalities to engage “Specialized Operators” for water supply and sanitation (WSS) services. “Specialized Operator” is a term used in Colombia to denote the water system operators that are engaged by municipalities under the type of schemes described in this case study. These Specialized Operators are usually private-sector firms, or joint ventures between the municipality

and a private firm, under Operation and Investment or Construct-Operate contracts with a municipality. Specialized Operators receive subsidies for capital investment based on the gap between the tariff levels prevailing in their service areas and the infrastructure investments necessary to achieve performance targets set by the municipality. These subsidies are paid out from a trust account directly to the companies that are contracted by the Specialized Operator to build the infrastructure. Thus, the government is assured that the subsidies are translated directly into WSS infrastructure.

The initiative is structured to minimize the government subsidy needed to reach service standards, which relate to coverage and water quality. Tariffs and service standards are set before the commencement of the bidding process for a Specialized Operator contract. Bidders must present an investment plan that will permit them to meet the service targets set by the municipality for WSS in the service area. Bidders must specify the amount of government subsidy that they would require in order to make these investments. The firm that requires the least subsidy is awarded the contract. The type of contracting structure used is sometimes referred to as a “negative concession.”

The Specialized Operator approach has been implemented in three stages. First as a World Bank project targeting small and medium-sized towns in the northern part of the country, second as a World Bank project in the Department of La Guajira, and third as a national-level initiative. The government is replicating, at the departmental and national levels, what was originally a successful small-scale initiative.

According to the World Bank, the approach of engaging Specialized Operators has been successful in leading to the creation of a genuine market of utility operators within Colombia. As of January 2008, approximately 180 municipalities had incorporated Specialized Operators. Twenty-nine had done so with support from the World Bank. As of November 2003 (latest data available), the Specialized Operators existing in Colombia

had investment plans for US\$ 355 million, of which US\$ 152 million were to be financed by the operators, and the remainder by government funds from various sources ¹⁵.

the WSS sector, the government corporatized the sector, creating WSS companies with mixed public-private ownership (“*empresas mixtas*”) This was largely an attempt to de-

Table A.4: Summary of Colombia Specialized Operator Initiative

Dimension	Colombia—Specialized Operators for WSS Services
Objectives	<ul style="list-style-type: none"> ▪ Increase WSS coverage through new investment ▪ Improve quality and efficiency in WSS services
Financing instrument	Construction grants
Degree / form of concession	Level of subsidy depends on socially acceptable tariff levels and investments required to meet service targets, varies by municipality
Target	Municipalities located in Departments with Strategic Plans, or targeted through specific World Bank projects
Funding arrangements	<p>Source: Central and municipal government funds and World Bank loans, supplemented by other departmental funds and cross subsidies</p> <p>Decision-maker: Municipality grants Specialized Operator contract on the basis of least subsidy. Trust account manager approves disbursements in line with Specialized Operator’s investment plan</p> <p>Rules:</p> <p>Specialized Operators must fund the amount of investment in the WSS system that is financially viable given pre-established tariff levels</p> <p>Subsidies must be administered through a trust account</p> <p>To receive government funding for WSS projects, a department must have a Strategic Plan in place and must comply with other institutional and procedural rules.</p>

Section A.3.1 explains the context of this initiative and the three stages in which it is being implemented. Section A.3.2 states the objectives of the initiative. Section A.3.3 explains in more detail how the initiative operates, while Section A.3.4 provides examples of its application and performance in practice.

A.3.1 Context

Since the early 1990s, the Government of Colombia has attempted various approaches to support the development of the WSS sector. The use of Specialized Operators to provide WSS services evolved from earlier policies and programs that did not fully address the sector’s challenges.

In the early 1990s, in response to a crisis in

politicize the administration of WSS systems. However, this approach did not lead to the anticipated improvements in coverage and service continuity.

The Public Services Law of 1994 promoted the introduction of Specialized Operators for WSS systems. In 1998, the Business Modernization Program (*Programa de Modernización Empresarial, or PME in its Spanish abbreviation*) was created with a loan from the World Bank. The purpose of the PME was to assist municipalities and departments to engage the private sector in the provision of basic WSS services. The PME had two main focuses:

- implementing private-sector participation in at least five cities with between 100,000 and 500,000 inhabitants; and
- helping national and local governments promote a policy of private-sector participation in WSS, to improve the

¹⁵-Ministerio de Ambiente, Vivienda y Desarrollo Territorial. “*Importancia Estratégica del Programa de Modernización Empresarial en el Sector de Agua Potable y Saneamiento Básico.*” November 2003.

quality, efficiency and coverage of WSS services.

A subsequent phase of the PME helped the government to define new contractual arrangements for engaging Specialized Operators in the WSS sector and supported the implementation of these types of contracts. Two contracting models were developed:

- the Specialized Operators model (also referred to as Operation with Investment model) for small and medium cities with populations of 12,000 and 40,000; and
- the Constructor-Operator model for very small towns with populations of 2,000 to 20,000.

Later, a third model was added, referred to as the “Operation Only” contract model.

This policy note mainly covers the Specialized Operators model. However, it should be noted that the Constructor-Operator model has proven to be an effective way to encourage the generation of local operators. This may be important for China, since it has a large number of municipalities and will require many local operators. It is even possible that a hybrid model combining the two could be considered. A supplementary note on the Constructor-Operator model has been provided at the end of this Appendix.

The first Specialized Operators were engaged with technical assistance and a US\$ 40 million loan from the World Bank. The subsidies to these operators were paid from the proceeds of the loan. This project—the Water Sector Reform Assistance Project—targeted both of the above groups (very small municipalities and small-medium-sized municipalities), and was implemented starting in June 2002. As of February 2008, 29 municipalities had received assistance in engaging Specialized Operators from this or other World Bank projects.

Based on the success of the Water Sector Reform Assistance Project and the first Specialized Operators, the Government of Colombia decided to apply the Specialized Operator model in the department of La Guajira. The World Bank also supported this

initiative, with a loan of US\$ 150 million, to be disbursed from 2007 through 2011. The World Bank’s support is through the La Guajira Water and Sanitation Infrastructure and Service Management Project. La Guajira contains 15 municipalities and has a population of 623,000 (according to the 2005 census). The project began implementation in March 2008.

The government was also interested in implementing the Specialized Operator approach at a national level and found that for this approach to have its desired impact, it was necessary to create a WSS industry structure that

- was more compact;
- allowed economies of scale to be achieved; and
- resulted in less fragmentation of the resources invested in the sector.

To achieve this, and to involve departmental governments in the implementation of the Specialized Operator approach, the government created the Departmental WSS Strategic Plan initiative, and included the following two principal components:

- each department will formulate a Strategic Plan for its WSS sector, including a works and investment plan (Plan de Obras e Inversión, POI) over the medium term; and
- each department will set up a trust fund to administer the government subsidies received for WSS services. Funding is derived from a variety of sources but is only disbursed in line with the Strategic Plan and POI. Only municipalities in departments with approved Strategic Plans, and those that subscribe to these Strategic Plans, are authorized to receive government funds for the WSS sector. Some of the subsidies directed to support the POI are channeled to the Specialized Operator for investments in infrastructure improvements.

The national-level initiative requires that Specialized Operators be engaged as part of a departmental Strategic Plan. As of March

2008, four departments out of 32 had an approved and functioning Strategic Plans. These were La Guajira, Magdalena, Cesar, and Atlantico, while the department of Antioquia was in transition to a Strategic Plan.

A.3.2 Program Objectives

With the use of Specialized Operators for WSS services, the government wishes to achieve two main objectives:

- improve the coverage and quality of WSS services through the investments made by the Specialized Operator; and
- improve the efficiency of WSS services through a private-sector management approach and efficiency requirements (in terms of employees per 1000 users) included in the Specialized Operator's contract.

The objective of the departmental Strategic Plan initiative is to

- promote inter-governmental coordination at each level of government (central, departmental, and municipal) and between the different levels of government;
- take advantage of economies of scale by adopting a departmental approach to service provision (as opposed to municipality-by-municipality);
- clarify the different origins of government resources for the sector and facilitate access to credit;
- allow the government to exercise more control over the destination and use of resources given to WSS sector actors; and
- plan investments and institutional strengthening strategies.

A.3.3 Eligibility Criteria

Although differences exist between the eligibility criteria of small municipalities and medium-size cities, the criteria in both cases are similar. The main eligibility criteria are: (i) the water coverage rate in the municipality is lower than a pre-established value; (ii) the

mayor and the municipal council agree to PSP and accept the proposed PSP model; (iii) the mayor and the municipal council agree to new tariffs at a level which will ensure coverage of, at a minimum, the operation, maintenance and depreciation costs, and that this coverage will be as high as is socially and politically possible; (iv) the mayor and municipal council agree to contribute to the investment program a certain percentage (to be established specifically for each case) of the government transfers to the municipality or other municipal resources; (v) the mayor commits to conduct a campaign aimed at informing the community about the reform, the PSP model and the tariff adjustment involved; (vi) the investment per capita is capped and cannot exceed a pre-determined value; and (vii) the proposed works will not include any resettlement.

A.3.4 How the Program Operates

Specialized Operators provide WSS services in a municipality or region (group of municipalities). The Specialized Operator may be a fully-private company or a joint venture between the private and public sectors. The Specialized Operator is usually a joint venture, in which the municipality retains a significant (usually controlling) share of the ownership of the utility, while the private firm sits on the board of the utility and operates the utility. Investment is co-financed to varying degrees between the public and private sector.

A Specialized Operator's responsibilities may include a combination of

- construction of WSS system components (for example, the expansion of an existing network);
- rehabilitation of WSS systems;
- management and operation of WSS systems; and
- financing of investments in WSS systems.

The degree of responsibility that a given Specialized Operator assumes depends on the level of tariffs that it is authorized by the

municipality to charge. If tariff levels make it financially viable for the Specialized Operator to finance investments in the WSS system, then the Specialized Operator must finance the viable level of investments.

At each stage of the Specialized Operator initiative (see Section A.3.1), there have been institutional structures dedicated to the initiative's operation and the channeling of subsidy funds. The second sub-section below explains the institutional structure applicable to the Specialized Operator initiative at the national level, and how it evolved from the earlier projects supported by the World Bank.

Financial Structures for Specialized Operators

Subsidies to the Specialized Operators are linked to the operator's investment plan and paid directly to the construction companies that build the infrastructure included in the investment plan. Therefore, subsidies are translated directly into infrastructure. Subsidies are targeted to low-income consumers—those in the lower three of six income strata.

The level of investment each Specialized Operator is required to make, and the level of government funds it receives to make these investments, is determined by the tariff levels and the yearly service standards established by the municipality. The municipality also prepares an indicative Works and Investment Plan (POI).

Tariff Structure. Mayors in municipalities that engage a Specialized Operator must agree to increase tariffs to the maximum socially-acceptable level, and also agree that the water consumption of low-income consumers will be subsidized. Municipalities and the WSS regulator (Comisión Reguladora de Agua, CRA) set tariffs by taking into account

- existing WSS service coverage and drinking water quality;
- the levels of coverage and quality that the municipality wishes to achieve (targets); and
- the capital and operation and

maintenance (O&M) costs of the target levels.

The municipality hires consultants to calculate the level of tariff required to recover the full cost of service (full capital and O&M costs of the target levels). This is the cost-recovery tariff. The municipality and the CRA then negotiate this tariff level, which must be above O&M costs. In practice, it is only slightly above O&M costs.

The tariffs charged to consumers are then determined by the consumers' income levels. Residential consumers in socio-economic strata one, two, and three (out of six) are eligible to receive a subsidy of up to 50, 40, and 15 percent, respectively, of the cost-recovery tariff. Customers in socio-economic strata four are charged the cost-recovery tariff. Customers in socio-economic strata five and six, and non-residential consumers, are not eligible for a subsidy and may be charged a surcharge of up to 20 percent of the cost-recovery tariff. Thus, wealthier and non-residential consumers cross-subsidize lower-income consumers.

Service standards. During the bidding process through which a Specialized Operator is selected, the municipality makes available yearly water quality and service coverage standards that the Operator must meet. These standards require improved performance over the life of the Specialized Operator's contract. When it submits its bid, and periodically after it is awarded the contract, the Specialized Operator must specify the investment plan it will follow to ensure that it continues to meet the standards.

Works and Investment Plan (Plan de Obras e Inversión, POI). The municipality prepares an indicative Works and Investment Plan (POI) in line with the Works and Investment Plan established in the department's Strategic Plan. However, in the bidding process the Specialized Operator submits its own investment plan, which could differ from the POI. This investment plan must allow the Specialized Operator to meet the yearly service standards.

The Specialized Operator is required to

finance the amount of investment it can recover through tariff revenue once the costs of administration and O&M are deducted from tariff revenue. The operator's required investment is equal to the present value of this amount as calculated during the contracting process.

When tariff levels permit the Specialized Operator to make investments in the WSS system, the Specialized Operator is engaged under an Operation with Investment contract. In this structure, the Specialized Operator makes a commitment to fund a certain amount of investment in the system, and the government funds the additional investment required to comply with the service standards specified. This is the subsidy for capital investment, and it is paid to the Specialized Operator. The government owns any assets that it has financed even if these assets are operated by the Specialized Operator.

When tariff levels do not permit the Specialized Operator to make investments in the WSS system, it may be engaged under two types of contracts:

- Construct-Operate—under which the Specialized Operator has responsibility for building the investments, but not financing them; or
- Operation only—under which the Specialized Operator is only responsible for operating and maintaining the system.

It is feasible to engage Specialized Operators under an Operation with Investment contract when the municipality includes residents in socioeconomic strata four, five, and six, as well as non-residential consumers that can cross-subsidize lower-income residents. A significant share of the Specialized Operators engaged with World Bank assistance under the Water Sector Reform Assistance Project were low-income municipalities where tariff levels did not permit the Specialized Operator to make an investment of its own.

Companies submitting proposals to become Specialized Operators under any type of contract must provide

- the yearly investment plan they expect

to carry out to meet the required service standards, and firms bidding for Construct-Operate contracts must also include an investment plan, even though investment will be fully funded by the government;

- the amount of the capital works subsidy requested to fill the gap between the cost of the investments and tariff revenue; and
- the part of the investment plan to be constructed by the requested subsidy.

The contract is awarded to the bidder that requests the lowest subsidy—this is considered the “negative concession” approach.

A Specialized Operator's contract may last for 10 to 30 years. Generally, the more investment the Specialized Operator is required to make, the longer the duration of the contract.

The government has established tax incentives for municipalities to join together in engaging a Specialized Operator over a region covering several adjoining municipalities. This allows economies of scale to be achieved. In these cases, the municipalities collaborate and also work with the departmental government to establish tariffs, service standards, and the components of the departmental POI applicable in the service area.

Institutional Structure

As discussed in Section A.3.1, the Specialized Operator initiative began as a World Bank-supported program targeting small and medium-sized towns, and expanded to include the department of La Guajira, and is now a national initiative linked to departmental WSS Strategic Plans.

At each stage of the initiative's growth there have been institutional structures dedicated to the initiative's operation. This includes calculating cost-recovery tariffs, preparing bidding documents for the Specialized Operators and the construction companies that will receive the subsidy payments directly, along with other tasks and institutional structures dedicated to channeling the subsidy funds. The first sub-

section below describes the institutional structure used for the Water Sector Reform Assistance Project and the La Guajira Water and Sanitation Infrastructure and Service Management Project, funded by the World Bank. The second sub-section below describes the institutional structure that the government is implementing for the national-level Specialized Operator initiative.

Institutional Structure of World Bank Projects (Stages One and Two)

Under the first stage—the Water Sector Reform Assistance Project funded by the World Bank—consultants assisted municipalities with the operational components such as determining the cost-recovery tariff and designing bidding documents. This was part of the technical assistance provided by the World Bank as part of the project. In terms of channeling subsidy funds, the World Bank funds and matching funds contributed by the municipal governments were deposited into a trust account. Payments were made from the trust account directly to companies that the

Specialized Operator had hired to build the new infrastructure.

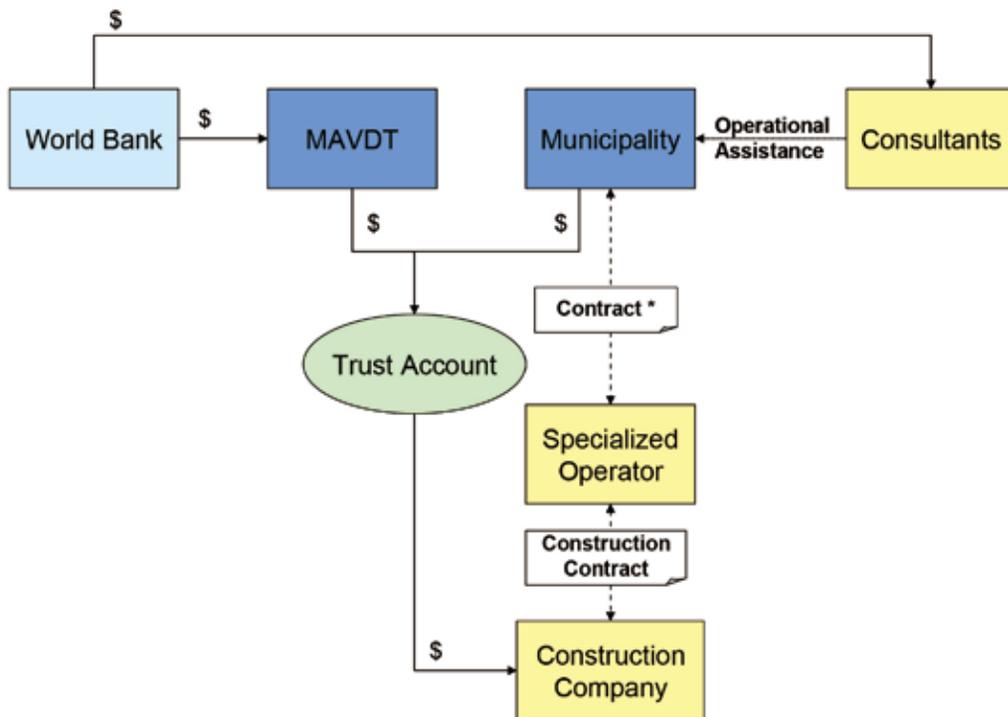
The institutional structure of the second stage—the La Guajira Water and Sanitation Infrastructure and Service Management Project—was similar to the first. Consultants were hired to help municipalities determine appropriate tariff levels, engage Specialized Operators, and establish procedures for contracting construction firms that would receive the subsidy payments directly. A trust account was established to hold the World Bank and municipal government funds used to pay the subsidies, and the subsidies were paid directly from the trust account to the companies that the Specialized Operator hired to build the new infrastructure.

Figure A.5 illustrates this institutional structure of the first and second stages of the Specialized Operator initiative.

Institutional Structure of National-Level Initiative (Stage Three)

Launching the Specialized Operator initiative on a national scale, and separate from a World Bank project, required creating a more

Figure A.5: Institutional Structure of World Bank Projects Supporting Specialized Operators



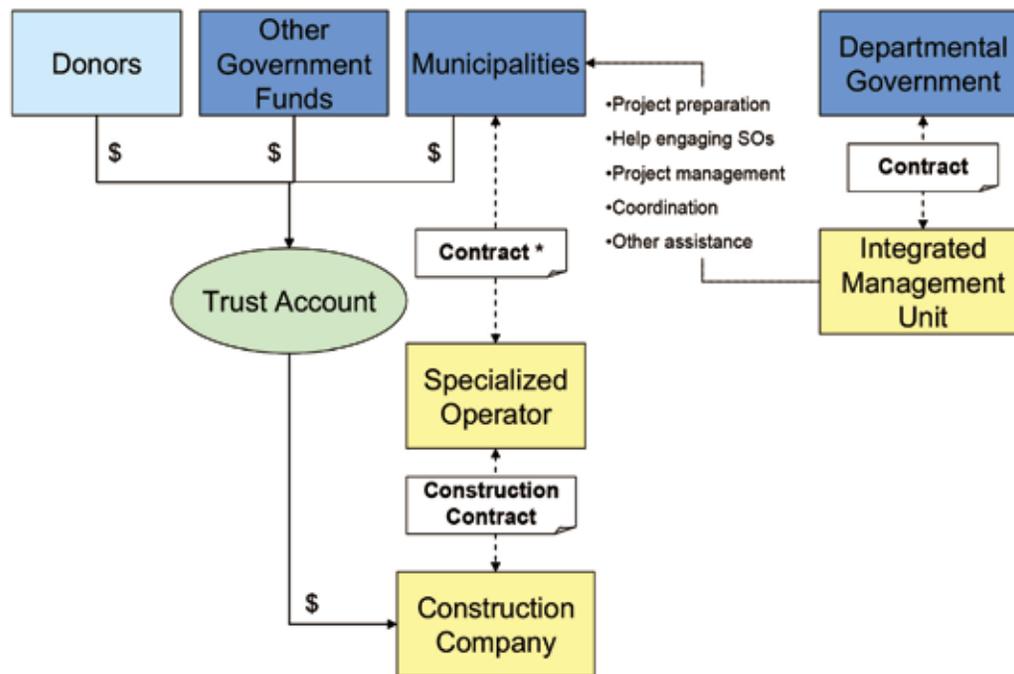
* May be an Operation with Investment, Construct-Operate, or Operation Only contract

widely-applicable institutional structure. The operational component of the structure is an Integrated Management Unit. The financial component of the structure is a trust account into which all government funding for the sector is deposited.

Under the national initiative, only departments that have Strategic Plans are

framework in order to be implemented effectively. In Colombia, a sophisticated tariff structure involving cross-subsidies to poorer users, an independent regulator, and strong central government institutions were built to facilitate development of the sector. The central government has had a key role in the structuring of transactions and in guiding local officials to participate in the program.

Figure A.6: Institutional Structure of National Specialized Operator Initiative



* May be an Operation with Investment, Construct-Operate, or Operation Only contract

eligible to receive subsidies from the central government. The Ministry of Environment, Housing and Regional Development (MAVDT) reviews and approves each department's Strategic Plan, in accordance with pre-established standards. An Integrated Management unit at the department level oversees the implementation of the Strategic Plan. All government funding disbursed to the department and to its municipalities, including capital investment subsidies paid to Specialized Operators, is channeled through a trust account and must go towards implementing this Strategic Plan.

It should be noted that the Specialized Operator approach requires a relatively developed institutional and regulatory

Integrated Management Unit

Under the World Bank-financed projects, consultants advised municipalities on various stages of engaging Specialized Operator, including calculating cost-recovery tariffs and preparing bidding documents for the Specialized Operators and the construction companies that would receive the subsidy payments directly. However, implementing the Specialized Operator approach throughout Colombia would require an approach that is both more systematic and which uses less of the central government's resources. Accordingly, the central government delegated responsibility for these tasks to an Integrated Management Unit at the departmental level.

Each department must establish an Integrated Management Unit to oversee implementation of its Strategic Plan. This unit is responsible for managing, supervising, planning, and coordinating the Strategic Plan. It assumes some of the responsibilities carried out by consultants under the previous World Bank projects in stages one and two. The Integrated Management Unit

- coordinates the actions of the government agencies involved in the WSS sector;
- promotes the Strategic Plan among municipalities and helps them link up to the plan;
- communicates information about the Strategic Plan throughout the Department;
- coordinates project formulation and prepares projects for execution;
- manages technical, administrative and financial aspects of the projects;
- prepares terms of reference for operators in the WSS sector, including Specialized Operators; and
- provides technical assistance to WSS sector actors in all phases of carrying out the Plan.

The Integrated Management Unit may be a specialized consulting firm, a public service company (but not the utility that provides WSS service in the department), or a unit within the departmental government. The departmental government hires the firm or company to run the Integrated Management Unit.

The Integrated Management Unit reports to a Committee of Directors established by the department. Representatives of the central and departmental governments sit on the committee. The Committee of Directors has the following responsibilities:

- to approve each project for financing under the Strategic Plan, and approve each project's contracting plan; and
- to approve the process of engaging

Specialized Operators.

Trust Account

To manage the government funding, each department must establish a trust account and hire a trust account manager who oversees disbursements to municipalities for projects that are in line with the Strategic Plan. The disbursements may be made directly to construction companies for capital works performed under contract to Specialized Operators, or may be used to engage and pay capital investment subsidies to Specialized Operators.

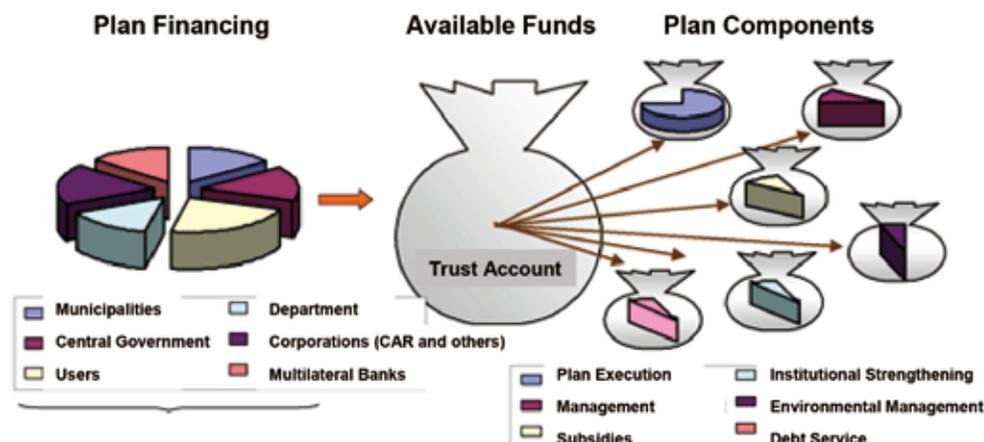
The trust account manager administers all of the resources available to the department in accordance with the department's Strategic Plan for WSS services. Specialized Operators in the department must present investment plans every five years, and these investment plans must be consistent with the service standards in the Specialized Operator's contract. The trust account manager approves disbursement of capital investment subsidies according to the Specialized Operator's investment plan, provided the Specialized Operator is in compliance with its contract. This includes meeting the service standards established in the contract.

Figure A.7 illustrates the structure of the trust account for the Departmental WSS Strategic Plans.

Government financing for WSS comes from a variety of sources. The central government has approved the following sources of funding for the water sector:

- Tariffs—accounting for approximately 40 percent of funding for WSS investments in 2005.
- Royalties—accounting for approximately 10 percent of funding for WSS investments in 2005 and consisting of
 - direct royalties which allow departments and municipalities to designate up to 90 percent of the direct royalties they receive to investment in the WSS sector;
 - indirect royalties for which

Figure A.7: Trust Account Structure for Departmental WSS Strategic Plans



Source: Ministerio de Ambiente, Vivienda y Desarrollo Territorial. "Planes Departamentales de Agua y Saneamiento: Página 2." Available at: <http://www.minambiente.gov.co/contenido/contenido.aspx?catID=539&conID=215&pagID=217>

government agencies with access to indirect royalties may request funding for projects from the Advisory Council of the National Royalty Fund; and

- phased royalties which may be used for debt service or as collateral or a guarantee to access credit. Departments that wish to use this type of royalty may make a request to the Advisory Council of the National Royalty Fund.

- Resources from Law 715 of 2001 (on the General System of Participations, SGP in Spanish). These are transfers from the central government and accounted for approximately 40 percent of funding for WSS investments in 2005. Municipalities must allocate 5.4 percent of central government funds available through the SGP to the WSS sector. A significant percentage of these resources must be used for subsidies and investments in WSS infrastructure (including capital investment subsidies paid to Specialized Operators). The amount a department/municipality receives from the central government through the SGP depends on criteria such as service coverage, population, capacity to secure debt,

poverty index (NBI, unsatisfied basic needs), and others.

- Local financial resources including lines of credit available from FINDETER (Financiera de Desarrollo Territorial, a second-tier development bank) and others.

- Co-financing from the central government budget which accounted for approximately 10 percent of sector funding in 2005. The level of the central government funds directly available for co-financing is established in National Development Plans (the most recent being 2006-2010).

- Credit from multilateral banks, including the World Bank.

- Resources from Regional Autonomous Corporations.

- Other sources, such as non-governmental organizations.

Only 40 percent of WSS sector investment in 2005 was financed from tariffs, indicating that 60 percent of financing for sector investments is essentially grants from the central government. These grants are either transfers of government revenue from royalties, transfers of other central government revenue, or financing directly

from the central government budget.

A.3.5 Examples of Specialized Operator Performance

There are many successful examples of Specialized Operators. This section presents three—the Operation with Investment contract in Cartagena; the Operation with Investment contract in Soledad; and the Construct-Operate contract in Nátaga.

Operation with Investment Contract in Cartagena¹⁶

In Cartagena, the Operation with Investment contract model has been successful in improving service standards and the utility's management practices. Cartagena, located on the Caribbean coast, is one of Colombia's larger cities with a population of around one million inhabitants. In 1993, the mayor decided to liquidate the over-staffed and inefficient municipal utility, which was providing low levels of service, and was unable to finance an estimated P\$ 230 million worth of new investments necessary to improve service and expand coverage.

The Cartagena District Council elected to create a "mixed-capital", or joint venture, company for the operation and management of the water system. A private firm from Barcelona, Spain (AGBAR) was chosen as the operator owning 46 percent of the shares, with Cartagena District owning 50 percent, and private shareholders the remaining 4 percent. This privately managed joint venture company was named Aguas Cartagena (ACUACAR). Although this model is commonly used in Spain, it was the first time such an arrangement had been attempted in Latin America.

ACUACAR's Board of Directors consists of five members: two nominated by Cartagena District, two nominated by AGBAR, and one nominated by the private shareholders. Decisions in the Board have to be approved

by at least four members, meaning that the District and AGBAR must reach consensus. The General Manager of ACUACAR is nominated by AGBAR and must be approved by the Board.

Originally, ACUACAR had an operations and management contract for 26 years. The contract included various performance targets that required ACUACAR to improve the quality of service and maintenance, reduce unaccounted-for-water, and improve the collection rate. It stipulated that 50 percent of net income would be declared as dividend to shareholders. In addition, AGBAR would receive a management fee calculated as a percentage of revenues and set to decrease over time. The District retained the responsibility for financing future capital investment needed to expand water and wastewater coverage, while ACUACAR was responsible for implementing capital expenditures.

The 1995 arrangement between ACUACAR and the District continued to evolve and now takes the form of a partial concession contract, known as an "operation with investment" contract. A major part of the investments are provided by the municipality (with financial support from the national government) and the balance from ACUACAR. The operator, bolstered by improved cash generation, mutually agreed annual tariff increases, and growing consumer confidence has taken a pragmatic, step-wise approach to investment. Over a six year period, more than P\$ 47 million (or 35 percent of total investments) has been invested by ACUACAR without contractual mandates. Under this new arrangement, the operator invests up to a level that can be recovered from tariffs, with the rest of the investments coming from local and national governments.

The ACUACAR arrangement has produced some significant improvements:

- **Physical:** Water coverage has increased from 68 percent to 99 percent, and sewerage from 56 percent to 85 percent, drinking water quality standards are

¹⁶-Source: Libhaber et al (2003). "A Public-Private Partnership for the Provision of Water and Sewerage Services in Cartagena, Colombia: Looking Back at the First Seven Years", Internal Report, The World Bank.

consistently met, and 24 hour service coverage increased from 65 percent to 100 percent;

- **Commercial:** Modern commercial and management information services were

The government's capital investment subsidies financed emergency investments allowing the operator to achieve rapid progress. Table A.5 shows the evolution of major indicators for the water utility.

Table A.5: Soledad: Evolution of Major Indicators

	Units	2001	2003	2006
Water Coverage	% of population	43	73	81
Sewerage Coverage	% of population	41	64	69
Continuity	Hours/day	12	18	23
Productivity of Service	Employees per 1000 users	5.0	2.1	2.3
Collection Ratio	%	50	87	88
No. Of Users	Unit	59,677	68,537	77,867

Source: Libhaber, Menahem, "Fifteen Years of Experience in PPP in Urban WSS in Latin America." Presented at the World Bank's SDN week, February 20-22, 2008, Washington, DC.

introduced resulting in all customers being metered while staffing has been reduced from 1300 employees to approximately 270;

- **Customer Service:** ACUACAR now has three offices within reach of all customers who are now able to pay their bills in banks and supermarkets while attention to customer concerns has increased.

Operation with Investment Contract in Soledad

The city of Soledad had a population of 380,000 residents when the Operation with Investment contract was signed with AAA, the private operator of the Barranquilla water utility. Almost all (98.74 percent) of the users of the system that AAA was engaged to operate are in poor neighborhoods that qualify for receiving government subsidies (placing them in socio-economic strata one, two, and three).

The Specialized Operator's investment plan amounted to P\$ 60,000 million (US\$ 20 million). It is financed as follows:

- Government and World Bank: P\$ 4,000 million (US\$ 2.5 million)
- AAA: P\$ 22,000 (US\$ 7.5 million)
- Municipal subsidy and other sources: P\$ 34,000 million (US\$ 10 million).

Table A.6 illustrates how service coverage targets increase over the life of the operator's contract.

Table A.6: Soledad: Service Coverage Targets

	Water	Sewerage
2002-2004	75	40
2005-2009	88	62
2010-2014	92	80
2015-2021	94	90

Construct-Operate Contract in Nátaga

When the Construct-Operate contract was signed in Nátaga the town had a population of 2,000 residents of whom approximately 75 percent were connected to the water distribution network and 55 percent were connected to the sewerage system. The major problem at the time of contract signing was low water service availability which averaged just 2 hours per day.

The Specialized Operator is in charge of carrying out investments in water intake, water treatment, and expansion of water distribution networks and sewerage networks. The investment plan amounts to US\$ 254,850 and is financed completely by the government, as follows:

- Municipality of Nátaga: US\$ 54,550

- Central and Departmental governments: US\$ 200,300

The Specialized Operator has improved continuity of service to 24 hours per day and has increased water quality from “non-potable” to “potable”. The evolution of major indicators is presented in Table A.7.

Table A.7: Nátaga: Evolution of Major Indicators

	Units	2000	2002	2003	2006
Water Coverage	% of population	75	90	100	100
Sewerage Coverage	% of population	55	66	100	100
Continuity	Hours/day	2	14	24	24
Productivity of Service	Employees per 1000 users	NA	4.8	4.8	4.8
Collection Ratio	% of invoice	23			50
Water Quality		Non-Potable	Non-Potable	Potable	Potable

Source: Libhaber, Menahem, “Fifteen Years of Experience in PPP in Urban WSS in Latin America.” Presented at the World Bank’s SDN week, February 20-22, 2008, Washington, DC.

A.3.6 Supplementary Note on Constructor-Operator Model

Small municipalities

A contract with private operators in small municipalities with populations in the range of 2,000-12,000 is termed a “Constructor Operator” contract. This concept addresses the concern that it is exceedingly difficult to privatize small utilities because the private sector lacks interest in utilities serving less than 300,000 inhabitants. However, experience has shown that in Colombia, as well as in other countries, there are successful small-size private operators in the water and sanitation sector, managing utilities without any government support. The assumption underpinning the Constructor Operator concept is that large scale operators are interested in managing utilities of large and medium-size cities, while small utilities can attract small operators. The concept of the Constructor Operator model in small municipalities contends that through competitive bidding small and medium-size construction companies, possibly in association with small consulting firms,

will compete for the construction and/or rehabilitation of the water supply and sewerage systems in a small municipality and the winning bidder will have to commit to operate the systems for a period of 10 to 15 years from the date of signing the contract. No prior experience in operation of water

systems is required from the bidders. It is assumed that because the systems are small and simple, construction companies with the capacity to construct the systems will also have the technical and management capacity to operate them after minimal training. The winning bidder will receive training in management of water utilities as well as written material and management software, from the line Ministry (provincial or central). Although the bidding process for selecting the Constructor Operator may appear to be similar to the process for selecting a constructor for small works, it is actually a process for selecting a private operator, in which the selection criterion of the winning bidder is the lowest subsidy that is required to construct, operate and maintain the specified water and sewerage infrastructure in the municipality. Bidders will estimate the present value of surplus operating revenue and determine how much they can contribute from future income to finance the works, and how much they will request as public sector (government and municipality) subsidy. The winning bidder will be required to establish a special purpose company with, separate accounts, to construct and operate the water

and sewerage systems of the municipality.

The Constructor-Operator model is essentially a concession tailored for small poor municipalities, in which the government finances, in the form of a subsidy, most of the required water and sewerage infrastructure investment in the participating small municipalities. The requirement for a high level of government subsidy is the result of the small municipalities suffering a significant backlog in infrastructure and not having the population capacity to finance this backlog through tariff increases. The Constructor Operator model is similar to the operation model in medium-size cities, albeit with three significant differences. These are: (i) in small municipalities the operator is also the constructor, and this was required for the creation of the operators market; (ii) the level of government subsidy will likely be greater (in terms of percent of total investment) in small municipalities; and (iii) the duration of the contracts in small municipalities is 10-15 years while the duration of the contracts in medium-size cities is 20-30 years. Although initially constructors may not find such an operation attractive, they may agree to be responsible for system operation and management due to their interest in the construction portion of the contract. After constructing the system and then operating it for ten years the Constructor Operator is likely to recognize the advantages of performing as a system operator, i.e., benefiting from a stable, reliable and continuous source of income, while performing a relatively simple task. It is anticipated that this will convince entrepreneurs to remain an operator on a permanent basis. In that manner, through the concept of Constructor-Operator, it is expected that a market of private operators will be created for small municipalities.

Ensuring the Provision of Services to the Poor

In medium-size cities (Operation with Investments) services in poor neighborhoods will be ensured via two sets of pre-established performance targets (for instance services

coverage rates). These targets will be varied and improved over the years and will be stipulated in the operation contracts, one for the entire city and one for the low income neighborhoods. The operators will commit to achieve both sets of targets, thus ensuring the provision of services to the poor in the medium-size cities. In small municipalities (Constructor-Operator) the eligibility criteria will provide a screening mechanism which will ensure that only municipalities with a high portion of low income population will be eligible to obtain the subsidies. This can be achieved through the use of social indicators.

Subsidy Policy

The tariffs can be structured in such a manner that high income consumers will pay their share in the investment program through the tariff and will not receive any subsidies. As a result, all the investment subsidies will benefit only consumers residing in low income areas. In this manner, high income consumers will pay the real tariff, without subsidies, while low income consumers will pay a subsidized tariff. This approach requires adjustment of tariff structures.

Clarification on the Differences between the Operation with Investment model and the Constructor-Operator model

In the Operation with Investment model the operator decides what will be the investment program and prepares the design. The operator does not carry out the construction but instead hires constructors to perform the work. The subsidy funds are paid by the government directly to the constructors, usually through a fiduciary fund but not through the operator, so the operator does not directly receive government funds but instead receives the right to use the infrastructure.

In the Operation with Investment model the public sector (government or municipality) decides the investment program and prepares the design. The operator is also the constructor and directly receives the subsidy funds from the government as periodical payments against the progress of works,

under the conditions of a construction contract.

It is also possible to use the Constructor-Operator model for medium cities

In Colombia, the Constructor-Operator model was used only for small cities, with populations up to 30,000. This was justified on the grounds that the Constructor-Operator was not required to have operation experience and would be able to function only in small cities, in which the operation was simple and where even a constructor with no operation experience could be successful. However, in China, the Constructor-Operator model could also be piloted for medium cities. Construction companies that are capable of handling construction in medium cities will be larger than those companies in small cities, and will likely have the capacity to learn to manage the larger systems in medium cities.

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Appendix B: Administrative Structure of China's State Bonds Program

Procedures for administering loans and grants under China's State Bonds program differ. Figures 5.3 and 5.4 in Section 5.2.2 illustrate the administrative structures and financial flows. The detailed administrative procedures and financial flows are as follows:

- The provincial Development and Reform Commission (DRC) and the provincial financial bureaus determine the types and sizes of projects that are eligible for funding through the program. They make their determinations based on local development plans and financial capacities.
- Project executing agencies apply for funds while provincial governments decide the projects for which they will request funding from NDRC and the Ministry of Finance (MOF).
- NDRC and MOF review the applications and decide which projects should be financed and how much financing each project should receive. In their assessment, they consider
 - local economic conditions;
 - amount of funding available for investment in the national budget;
 - local economic planning;
 - Central Government guidelines on investment subsidies and concessionary interest rates;
 - whether relevant documentation submitted is complete and valid; and
 - other conditions required by NDRC.
- NDRC and MOF recommend a portfolio of projects to be funded and the amount of funding, to the State Council for its approval.
- State Council issues the final approval.
- MOF signs an agreement with the provincial government to transfer the State Bonds funds to the provincial government. This agreement specifies
 - the projects that the funds are to be used for;
 - the loan amount, interest rate, repayment period, and other conditions; and
 - administrative procedures.
- The provincial government signs financing agreements with individual project executing agencies, for the projects that were approved at the Central Government level.
- The provincial government opens an ad-hoc account in the state-owned commercial bank to administer State Bond funds and MOF appropriates the money to the account.
- The financial bureau of the provincial government disburses the concessional loans and grants to the project executing agencies.
- The financial bureau of the provincial government monitors the loan to ensure that
 - the funds are being used for the authorized project(s);
 - the project executing agency is making timely repayments on the principal and interest; and

- Over the life of the agreement between the provincial government and MOF, the provincial government repays MOF.

The administrative procedures and financial flows for grants involve the following:

- Project executing agencies that report to the provincial or central governments apply directly to NDRC for funding;

- Local utilities and other local executing agencies apply for funding through the provincial DRC who then passes these applications on to NDRC;

- NDRC approves each grant; and
- NDRC disburses the grants.



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