

**DOCUMENT OF THE INTER-AMERICAN DEVELOPMENT BANK**

**B R A Z I L**

**GOIANA WATER AND SANITATION PROGRAM**

**Operation No. 1414/OC-BR**  
**Approved on July 17, 2002**

DOCUMENT OF THE INTER-AMERICAN DEVELOPMENT BANK

**BRAZIL**

**GOIÂNIA WATER AND SANITATION PROGRAM**

**(BR-0351)**

**LOAN PROPOSAL**

This document was prepared by the project team consisting of: Hugo de Oliveira (RE1/EN1), Project Team Leader; Antonio Almagro (RE1/EN1); Antonio Rossin (RE1/EN1); Patricio Naveas (COF/CBR); Bernadete Buchsbaum (LEG); and Mario Gallego (RE1/EN1); who assisted with production of the document.

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## ABBREVIATIONS

AGR	Agência Goiana de Regulação, Controle e Fiscalização dos Serviços Públicos [Goiás Public Utilities Regulatory Commission]
INSS	Instituto Nacional do Seguro Social [National Social Security Administration]
PARR	Plano de Ação para a Aquisição de Terras, Reabilitação dos Remanescentes das Propriedades Afetadas e Realocação da População Afetada [Action plan for acquisition of land, rehabilitation of affected property remnants, and resettlement of affected population]
PEU	program execution unit
SANEAGO	Empresa de Saneamento de Goiás S/A
SEDU	Urban Development Secretariat
SEMARH	Goiás State Secretariat for Environment, Water Resources, and Housing



## BRAZIL

### IDB LOANS

APPROVED AS OF MAY 31, 2002

	<i>US\$Thousand</i>	<i>Percent</i>
<b>TOTAL APPROVED</b>	<b>24,244,979</b>	
DISBURSED	18,288,736	75.4%
UNDISBURSED BALANCE	5,956,244	24.6%
CANCELLATIONS	1,361,448	5.6%
PRINCIPAL COLLECTED	6,206,025	25.6%
<b>APPROVED BY FUND</b>		
ORDINARY CAPITAL	22,556,809	93.0%
FUND FOR SPECIAL OPERATIONS	1,558,545	6.4%
OTHER FUNDS	129,625	0.5%
<b>OUTSTANDING DEBT BALANCE</b>	<b>12,082,710</b>	
ORDINARY CAPITAL	11,670,626	96.6%
FUND FOR SPECIAL OPERATIONS	411,546	3.4%
OTHER FUNDS	537	0.0%
<b>APPROVED BY SECTOR</b>		
AGRICULTURE AND FISHERY	965,853	4.0%
INDUSTRY, TOURISM, SCIENCE TECHNOLOGY	6,141,566	25.3%
ENERGY	2,327,838	9.6%
TRANSPORTATION AND COMMUNICATIONS	3,839,569	15.8%
EDUCATION	857,202	3.5%
HEALTH AND SANITATION	2,919,038	12.0%
ENVIRONMENT	600,982	2.5%
URBAN DEVELOPMENT	2,243,922	9.3%
SOCIAL INVESTMENT AND MICROENTERPRISE	2,926,727	12.1%
REFORM PUBLIC SECTOR MODERNIZATION	1,076,202	4.4%
EXPORT FINANCING	244,977	1.0%
PREINVESTMENT AND OTHER	101,103	0.4%

\* Net of cancellations with monetary adjustments and export financing loan collections



**INTER-AMERICAN DEVELOPMENT BANK**  
Regional Operations Support Office  
*Operational Information Unit*

# BRAZIL

## STATUS OF LOANS IN EXECUTION AS OF MAY 31, 2002

(Amounts in US\$ thousands)

APPROVAL PERIOD	NUMBER OF PROJECTS	AMOUNT APPROVED	AMOUNT DISBURSED	% DISBURSED
Before 1996	13	2,601,100	2,321,084	89.23%
1996 - 1997	14	2,493,265	1,291,195	51.79%
1998 - 1999	15	2,805,000	1,231,370	43.90%
2000 - 2001	16	2,597,696	189,574	7.30%
2002	4	484,800	0	0.00%
<b>TOTAL</b>	<b>62</b>	<b>\$10,981,861</b>	<b>\$5,033,223</b>	<b>45.83%</b>

\* Net of Cancellations . Excluding export financing loans.





## Brazil

### Tentative Lending Program

2002

Project Number	Project Name	IDB US\$ Millions	Status
BR0301	Northeast Microenterprise	30.0	APPROVED
BR0355	Santa Catarina Highways Stage IV	150.0	APPROVED
BR0323	Prodetur II Northeast Region	240.0	APPROVED
BR0313	Acre Sustainable Development	64.8	APPROVED
BR0357	Pará Urban Desenvolpemente (para Urbe)	48.0	APPROVED
BR0374	Urban Paraná	100.0	APPROVED
BR0364	Diversity in University	5.0	APPROVED
BR0351	Goiania Water and Sanitation	50.0	
BR0378	Promotion of Ethics and Defense of Public Patrimony	3.0	
BR0365	Modernization Comptroller Office	5.0	
*BR0367	Termoacu Co-Generation Power Project	25.0	
*BR0370	Campos Novos Hydroelectric Power Project	75.0	
BR0324	Ceara Sanitation II	120.0	
*BR0377	Electropaulo Capital Expenditures	75.0	
*BR0394	Sao Salvador	37.0	
*BR0395	Termonorte	56.0	
<b>Total - A : 16 Projects</b>		<b>1,083.8</b>	
BR0318	Tourism Development Program Prodetur Sul	200.0	
BR0254	Florianopolis-Osorio Highway Moderniz.	322.0	
<b>Total - B : 2 Projects</b>		<b>522.0</b>	
<b>TOTAL 2002 : 18 Projects</b>		<b>1,605.8</b>	

2003

Project Number	Project Name	IDB US\$ Millions	Status
BR0373	Promotion of Cultural Development	10.0	
BR0302	Fortaleza Urban Transport	86.2	
BR0372	São Paulo Fiscal Administration	15.0	
BR0297	National Food/Agricultural Research Syst	30.0	
BR0391	Downtown São Paulo Rehabilitation Procentro	100.4	
BR0390	Porto Alegre Socio-Environmental Program	75.0	
BR0392	Cadaster and Land Regularization	65.0	
<b>Total - A : 7 Projects</b>		<b>381.6</b>	
BR0356	Espirito Santo Highways	73.0	
BR0375	Urban Transportation Curitiba2	40.0	
BR0376	Sustainable Development in Amapa	21.0	
BR0369	State Reform Sector Loan	500.0	
<b>Total - B : 4 Projects</b>		<b>634.0</b>	
<b>TOTAL - 2003 : 11 Projects</b>		<b>1,015.6</b>	

Total Private Sector 2002 - 2003	268.0
Total Regular Program 2002 - 2003	2,353.4

**\* Private Sector Project**

# GOIÂNIA WATER AND SANITATION PROGRAM

(BR-0351)

## EXECUTIVE SUMMARY

<b>Borrower:</b>	Empresa de Saneamento de Goiás S/A (SANEAGO)	
<b>Guarantor:</b>	Federative Republic of Brazil, for debt service; and the State of Goiás, for all other commitments assumed by the borrower.	
<b>Executing entity:</b>	Empresa de Saneamento de Goiás S/A (SANEAGO)	
<b>Amount and source:</b>	IDB (OC):	US\$47.6 million
	Local:	<u>US\$47.6 million</u>
	Total:	US\$95.2 million
<b>Financial terms and conditions:</b>	Amortization period:	25 years
	Grace period:	5 years
	Maximum disbursement period:	5 years
	Minimum disbursement period:	3 years
	Interest rate:	variable
	Inspection and supervision:	1.00%
	Credit fee:	0.75%
	Currency:	Single Currency Facility, in U.S. dollars
<b>Objectives:</b>	The general objective is to improve sanitation conditions for residents of Goiânia and contiguous urban areas by upgrading water supply and sewerage services.	
	The specific objectives are to: (i) enhance the continuity and reliability of the drinking water supply in Goiânia and contiguous urban areas; (ii) improve the water quality of rivers flowing through Goiânia; and (iii) make service delivery more efficient.	
	Within the objective of guaranteeing the continuity and reliability of drinking water supply, the program seeks to achieve 24-hour continuous service 365 days a year for 90% of users in Goiânia by the end of 2007. Within the objective of improving river water quality, the program seeks to achieve a biological oxygen demand (BOD) level of 20 mg/l and a dissolved oxygen (DO) level of 6 mg/l by the end of 2007. Lastly, within the objective of improving efficiency in	

service delivery, the program seeks to reduce the percentage of user complaints to 2% by the end of 2007.

The program contributes to achieving the millennium objectives with respect to halving the number of people lacking access to safe drinking water or to an adequate wastewater disposal system by 2015, directly by expanding the sewerage system to 19,481 users and indirectly by increasing the availability of drinking water thereby allowing future expansions of the systems.

**Description:** The program has three components:

**Drinking water system improvement (US\$58.6 million).** The continuity and reliability of the water supply will be guaranteed by means of works to boost production capacity and regulate supply sources, convey the additional water produced to the distribution system, and implement operational upgrades to allow the distribution system to assimilate the additional water volume. This component also includes measures to mitigate the associated environmental impacts. There are two subcomponents:

- a. **Enhancement of service reliability (US\$42.8 million).** An impoundment and flood-control dam 451 m wide and 50 m high will be built on the João Leite River, along with a new water intake and a new 11,827-meter conveyance system 1,727 mm in diameter to convey the additional volume of raw water to the Jaime Câmara treatment plant.
- b. **Enhancement of service continuity (US\$15.8 million).** The plant, pumping stations, and storage tanks for treated water will be upgraded, and critical sections of the city's distribution network will be rehabilitated or replaced to allow the systems to handle the additional flow generated from construction of the dam.

**Improvement in river water quality (US\$16.3 million).** The city's sewage collection and treatment services will be expanded by: (i) building sewerage networks and interceptor sewers in the River Caveirinha watershed; (ii) building interceptor sewers, sewerage networks, and a 115-liter/second-capacity treatment plant in the São Domingos River watershed; and (iii) building networks, an interceptor sewer, and an 8-liter/second-capacity sewage treatment plant in the area of Terezópolis. The program aims to build a total of 268 km of sewage collection networks; 21 km of interceptor sewers measuring between 150 mm and 800 mm in diameter; 18,500 household and intrahousehold connections; and the two treatment plants mentioned above.

**More efficient service delivery (US\$6.4 million).** Under this component, support will be provided to enhance the efficiency of SANEAGO's service delivery by implementing a new management model for the company, with emphasis on modernization of the systems and methods currently in use in the operational, commercial, financial, and administrative areas. To this end, a consulting firm will be hired, which will present a proposal containing the administrative and technical standards for the new management model that provides at least for the following: (i) ways to make SANEAGO permanently competitive, while at the same time incorporating a water-resource preservation and conservation approach to service delivery; (ii) cooperation between the Agência Goiana de Regulação, Controle e Fiscalização dos Serviços Públicos [Goiás Public Utilities Regulatory Commission] (AGR) and SANEAGO with respect to the functions of oversight and evaluation of service delivery indicators; (iii) identification of new partners in investments and service delivery. With program resources, SANEAGO will contract a specialized operator to implement the management model according to the standards defined by the consulting firm and in compliance with the legal framework for the sanitation sector in force in the state when the loan contract is signed. This component could finance the fixed portion of the payments to the specialized operator, the procurement of computer equipment, and the licenses needed to use information technology programs for service management. This component will also finance activities to improve operations, including those in the following categories: at-source and house metering, equipment for locating leaks, automation of the distribution system, establishment of sectors and maintenance districts, and rehabilitation of electromechanical equipment and networks.

The works relating to these components have been divided into four packages, the bidding for which will depend on a series of conditions being met that are indicated in the section of special contractual conditions in this executive summary.

**The Bank's  
country and  
sector strategy:**

The Bank's action in Brazil during the 2000-2003 period focuses on four strategic areas: modernization of the State, competitiveness, poverty, and the environment. In the first area, the Bank is seeking to deepen its action for administrative and fiscal modernization at the federal, state, and municipal levels. In the area of competitiveness, efforts are being made *inter alia* to restore investment levels in infrastructure and establish suitable regulatory frameworks. In the fight against poverty, the Bank is supporting the launching and deepening of reforms in the social sectors, especially urban and municipal development, with an eye to enhancing the efficiency, equity, and quality of services provided to the citizenry.

**Environmental and social review:**

The project will help to improve living conditions for the residents of Goiânia and contiguous urban areas. The works have been defined and sited; and measures to mitigate their impact have been identified, and the estimated costs are included in the program. Permits have been requested in accordance with applicable legislation. The program's environmental management will pursue a strategy of preventing, reducing, eliminating, and compensating as necessary any negative impacts and optimizing the positive ones. The environmental impact assessments have been discussed with the affected communities at public meetings and have been made available to the public in Goiânia and through the Bank's Public Information Center (at Headquarters and the Brazil Country Office). The programs and actions to prevent, mitigate, and compensate impacts are described in the basic environmental project and the action plan for acquisition of land, rehabilitation of affected property remnants, and resettlement of affected population (PARR); the costs are reflected in the program (see paragraph 2.12).

**Benefits:**

The program's principal benefit will be to improve basic sanitation and water supply services in the city of Goiânia and contiguous urban areas. For the city's residents, this will mean: better continuity in the drinking water supply thanks to the flood-control dam that will be built on the João Leite River; better sewerage system coverage as the result of the system's expansion; and better sewage disposal thanks to the São Domingos and Terezópolis treatment plants. In addition, the operational upgrade component and private-sector participation in service delivery will ensure that the higher quality levels are maintained and progressively improved, thus positioning SANEAGO to carry out further projects in the future. The ultimate impact of these direct benefits on Goiânia's population is expected to be a drop in the incidence of water-borne diseases.

**Risks:**

The program poses two types of risks: (i) in terms of the quality of services and their impact on the population, the program's benefits may be cancelled out by: poor management of water resources by the state government, uncontrolled dumping into supply sources, or the lack of oversight by the regulatory agency; and (ii) service efficiency may not improve if it is not possible to bring in a private operator to manage the company.

To mitigate the first risk, work is under way to launch and simultaneously strengthen the state's public utility regulatory agency by means of technical cooperation to develop the sanitation sector's regulatory framework in the state of Goiás (ATN/MT-6003-BR).

To mitigate the second risk, bid documents are being drafted in parallel with program preparation, with close monitoring by the Bank. The private-sector participation model being proposed has been discussed in detail with SANEAGO's board of directors and has the board's full backing. In addition, the bid documents are being prepared with special attention to defining the operator's responsibilities and specifying the features of the service, with an eye to minimizing the risk perceived by potential bidders and thus fostering a better response to the call for bids.

**Special contractual clauses:**

**Conditions precedent to the first disbursement:**

- (i) Appointment of staff and establishment and start-up of the executing unit (paragraph 3.1).
- (ii) Awarding of the contract to the consulting firm that will develop SANEAGO's new management model (paragraphs 3.1 and 3.8).
- (iii) Signature of an agreement between SANEAGO and the Goiás State Secretariat for Environment, Water Resources, and Housing (SEMARH) to draft and implement the land-use plan for the reservoir basin and the related community development and information activities (paragraph 3.17).

**Other special conditions during execution:**

- (i) Prior to the award of the contract for the João Leite dam, SANEAGO will submit evidence of having hired the firm that will provide support in supervising the works and implementing the respective environmental mitigation measures, and evidence is to be provided that those measures are contained in the bid documents (paragraph 3.3 and 3.16).
- (ii) Within the six months following signature of the contract to build the João Leite dam, SANEAGO is to have begun implementing the PARR (paragraph 3.18).
- (iii) Before filling the reservoir, SANEAGO is to show that it has satisfactorily concluded the PARR (paragraph 3.18).
- (iv) Bid documents for the program works must include environmental mitigation measures (paragraphs 3.15 and 3.16).
- (v) Revenue from service fees must cover, as a minimum, 120% of operating and maintenance (O&M) costs and debt

service each year during program execution, starting with the calendar year that begins immediately after loan approval (paragraph 3.26).

- (vi) Commitment of resources for the second group of program works will be contingent upon the hiring of the private operator that will implement SANEAGO's management model and compliance with the performance indicators in paragraph 3.25 for the previous year (paragraph 3.4); commitment of resources for the third group of program works will be subject to compliance with the performance indicators in paragraph 3.25 for the previous year (paragraph 3.26); commitment of resources for the fourth group of works will be subject to startup of the Goiânia treatment plant (paragraph 3.16).

**Poverty-targeting and social sector classification:**

This operation qualifies as a social equity enhancing project, as described in the key objectives for the Bank's activity contained in the report on the Eighth General Increase in Resources (document AB-1704). Furthermore, this operation qualifies as a poverty-targeted investment (PTI), since the percentage of low-income beneficiaries is 64%. The borrower will not be using the 10 percentage points in additional financing (see paragraph 5.24).

**Exceptions to Bank policy:**

No exceptions to Bank policies are foreseen.

**Procurement:**

The consulting services and works called for under the program have been divided into four groups (see Annex II) so that contracts can be awarded as the respective institutional and environmental requirements are met, as outlined in the section on special contractual conditions. All procurements of goods and related services and works contracts will be carried out in keeping with the Bank procedures stipulated in Annex B to the loan contract. The services contracts will observe the procedures stipulated in Annex C to the loan contract. Price will be used as a criterion for the selection of service providers pursuant to the provisions of document GN-1679-3. When selection is based on technical quality and price, the relative weight given to price in the selection criteria may not exceed 20%. International competitive bidding will be mandatory for: (i) goods valued at US\$350,000 or above; (ii) the construction of works valued at US\$5 million or above; and (iii) service contracts above US\$200,000. These ceilings are in line with those recommended by the Bank's Procurement Unit for this sector in Brazil.



## **I. FRAME OF REFERENCE**

### **A. General background**

- 1.1 The state of Goiás is located in Brazil's Center-West region. With a surface area of 340,000 square kilometers, it accounts for 25% of the region and 4% of Brazil's total land surface. The state has a population of over 4 million, which makes it the region's most populous state. The state capital, Goiânia, comprises a metropolitan area of six municípios and a population of over 1.2 million.
- 1.2 Goiânia has undergone rapid urban growth in the past three decades, owing mainly to the building of Brasília (on land that used to be part of the state), the area's limited agricultural capacity to absorb rural population growth, and the process of urbanization that has taken root all across Brazil. Between 1960 and 1970, Goiânia grew at an annual rate of over 10%. Growth continued during the following decade, although at a somewhat slower rate of approximately 7%. Today, Goiânia's annual growth rate averages 3%. Other cities in Goiás display similar rates, including the state's main historical site, the city of Goiás.

### **B. The state's sanitation sector**

- 1.3 According to the study "Sanitation Service Demand, Supply, and Needs" prepared by the Urban Development Secretariat (SEDU) in 1999, nearly 84% of homes in the service area had drinking water (compared with a national coverage level of 85%) and 34% of homes had sewerage connections (compared with 42% nationally). Despite the relatively high level of water service coverage, Goiânia faces problems with supply. As a result of the city's rapid growth, the water supply is no longer able to meet residents' current and future needs. The city's two main water sources—the Meia Ponte and João Leite Rivers—are surface sources and are unable to serve the 130,000 residents who are not connected to the system. Goiânia's dry summers last about six months, which means that these sources are extremely vulnerable in the absence of impoundment dams. This creates serious water shortages for the metropolitan area, especially the city's southern neighborhoods which are subjected to rationing during periods of drought. The João Leite River, which runs through a densely populated area, is especially susceptible to pollution. These problems are exacerbated by the lack of reserve supplies and the lack of interconnections between the Meia Ponte and João Leite rivers' water treatment systems, making it difficult to distribute water during critical periods in the summer months.
- 1.4 Sewage treatment levels in Goiânia are very low. Although 78% of homes are connected to the collection network, only 7% of collected sewage is treated. Over 90% of the city's sewage is dumped untreated into one of the state's main waterways: the Meia Ponte River. A preliminary evaluation of water quality downstream from the discharge point indicates that the river has a stretch of nearly 60 km with extremely low levels of dissolved oxygen and, accordingly, very

limited capacity to sustain aquatic life or provide conditions for agricultural activity.

- 1.5 To identify technical solutions to this problem, master plans for water supply and sewerage were formulated for Goiânia and contiguous urban areas in late 1999. The plans, which call for investments on the order of US\$500 million, were analyzed and discussed with groups of community representatives and government agencies, and they form the base of the program proposed herein. With funding from the federal and state governments, Goiânia's master sewerage plan has been launched with the construction of collector and interceptor sewers along the Meia Ponte River and the Goiânia sewage treatment plant, the system's main treatment plant with a capacity of 2,500 l/s. It is hoped that this will bring about an environmental recovery of the Meia Ponte River.

### **C. Institutional and financial situation of the service**

- 1.6 The delivery of water and sanitation services in Goiás is the responsibility of the firm Saneamento de Goiás S/A (SANEAGO), a public corporation whose main shareholder is the State of Goiás, by way of its Environment Secretariat, which owns 99.7% of the shares. It currently serves 245 urban communities under concession contracts or licenses with the respective municipalities.
- 1.7 SANEAGO serves 1,187,084 users of drinking water services and 484,798 users of sewerage services around the state, for service coverage levels of 84.6% and 34% respectively. Ninety-eight percent of users have house meters; the percentage of unaccounted-for water is 34.9%; and the number of direct employees per 1,000 water users is 2.7. In 2000, SANEAGO covered 134% of its operation and maintenance (O&M) costs and 109% of O&M plus depreciation, with a collection level of 95%, which has been maintained over the past years. The section on viability (see below) contains a detailed analysis of SANEAGO's financial situation. Over the period 2001-2006, the company is expected to invest some US\$145 million in system upgrades and expansions, which will require management efforts in the operations, administrative, business, and financial areas in order to make the investments on schedule, meet new demand for maintenance, and generate sufficient revenue to service debt. It should be noted that the majority of the operating, maintenance, and business systems are outdated and need to be modernized, and that the management achievements attained could be jeopardized if the company lacks the necessary autonomy to optimize its resources; it could also be influenced by external actions.
- 1.8 To overcome existing limitations in terms of management and capacity to make future investments, the state government has embarked on a process to hire a qualified operator to take over full management of SANEAGO for a period of five years. The operator will be required to: (i) implement a new management model in the company mainly by modernizing the systems and methods currently used for

operational, business, and administrative management; (ii) meet specific management targets, to be defined in a timely fashion; and (iii) train SANEAGO staff so that, upon completion of the management contract, the company is able to maintain the high levels of efficiency that are expected to be achieved. These improvements will provide better assurances for successfully carrying out the investment plan contained in the project being proposed here, and once this stage of work is completed, SANEAGO would be strengthened to make the remaining investments under the water supply and sewerage master plan, estimated at US\$350 million.

#### **D. Legal and regulatory considerations**

- 1.9 Responsibility for delivering water and sewerage services in Brazil's metropolitan areas is somewhat ambiguous. While the Constitution entrusts the municipalities with public utilities of local interest, it also indicates that this responsibility is shared by the states in areas where the services are of mutual interest. The lack of clarity in how to implement this shared responsibility has led to conflicting relations between state sanitation companies and the municípios with regard to ownership of water and sanitation services in metropolitan areas. This conflict has impeded several privatization processes initiated by state governments. The modality proposed by SANEAGO for bringing in the private sector—i.e., by means of a management contract—is fully compatible with the existing legal framework inasmuch as it does not raise the issue of ownership of the service.
- 1.10 With regard to regulation, until late 1999, SANEAGO was authorized to set its own rates, without there being a clear separation between the functions of regulator and provider of services. In 1999, the state government embarked on a reform of its administrative structure. Law 13,550 of 11 November 1999 reformulated that structure and reassigned functions among the various component agencies. Some offices were eliminated, while other new ones were created to take on new roles defined by the executive branch, such as regulation of public utilities. In this connection, the aforementioned legislation created the Agência Goiana de Regulação, Controle e Fiscalização dos Serviços Públicos [Goiás Public Utilities Regulatory Commission] (AGR) for the purpose of regulating, monitoring, and inspecting the delivery of public utilities that are the responsibility of the State of Goiás but are actually provided by public or private third parties under applicable law, concessions, licenses, or authorization.
- 1.11 The AGR's legal authority has been consolidated and a state regulatory system is currently being set up in Goiás. Law 13,569 of 27 December 1999 sets forth the AGR's scope and powers, and Decree 5,248 of 19 June 2000 stipulates its bylaws. Pursuant to this legislation, the AGR is now organizing its management board, which is to include representatives of the state government, municípios, users, and concessionaires. The AGR is overseen by a management board that is supported by an executive management group and four directorates: one for each of the basic

regulatory areas (licenses, inspection, and price control) and administration. Sector-based units are being created to serve as the AGR's first-tier regulatory level in the areas of sanitation, electricity, transportation, and water resources. The AGR is fully up and running, with staff already assigned to the Sanitation Unit. The first task will be to define service quality indicators and, for this, it will engage consulting services in accordance with the prepared terms of reference.

- 1.12 Water-sector regulation is being supported through technical cooperation under a project to develop the regulatory framework for the sanitation sector in the state of Goiás (ATN/MT-6003-BR), which was recently reformulated to replace SANEAGO with the AGR as the executing agency. The project entails: (i) devising a legal framework for the state's water sector, including analysis of the sector, establishment of indicators, formulation of a plan to expand services, regulation of service delivery, adoption of a rate policy, and definition of service providers' rights and responsibilities; and (ii) supporting implementation of the Sanitation Unit, including training and equipment. The AGR is drafting terms of reference for the necessary consulting services. It is hoped that the signing of a management contract by SANEAGO and a private operator will strengthen the AGR's regulatory activity and that the preparation of bid documents and comments on them from interested firms will be useful in gauging the scope and content of the regulation.

#### **E. The Bank's strategy in Brazil**

- 1.13 The Bank's action in Brazil during the period 2000-2003 focuses on four strategic areas: modernization of the State, competitiveness, poverty, and the environment. In the first area, the Bank is seeking to deepen its action for administrative and fiscal modernization at the federal, state, and municipal levels. In the area of competitiveness, efforts are being made *inter alia* to restore investment levels in infrastructure and establish suitable regulatory frameworks. In the fight against poverty, the Bank is supporting the launching and deepening of reforms in the social sectors, especially urban and municipal development, with an eye to enhancing the efficiency, equity, and quality of services provided to the citizenry.
- 1.14 In the sanitation sector, the Bank intends to continue supporting the establishment of regulatory frameworks that promote long-term self-sustaining operations, service access for broad sectors of the population, private-sector participation, more efficient service delivery, and environmental protection. Lastly, the Bank's action in the environmental sphere places special emphasis on urban sanitation, including water supply and sewage collection and disposal, as well as solid waste disposal and environmental pollution in general. The present program is consistent with the strategy agreed by the Bank and the country in that it will help to improve residents' living conditions by improving public water supply and sanitation services while supporting greater private-sector participation in the management of those services.

## F. The Bank's experience

- 1.15 Since 1960, the Bank has approved 30 projects and technical-cooperation operations for Brazil in this sector for a total of US\$2.27 billion. Of this amount, approximately 70% was for projects having a large sewage collection and disposal component approved in the past ten years. Since the great majority of these projects involved state-run service providers—e.g., CAESB (Brasília) in 2000, SABESP (São Paulo) in 1999 and 1992, EMBASA (Bahía) in 1995, CEDAE (Rio de Janeiro) in 1993, and CAGECE (Ceará) in 1992—the Bank has extensive experience with this type of project. With specific reference to the state of Goiás, the Bank's experience thus far has been limited to: (i) nonreimbursable technical-cooperation funding to support development of the regulatory framework and concession of a wastewater treatment plant to the private sector (ATN/MT-6003-BR); owing to execution problems encountered by this project—attributable mainly to a poorly defined national legal framework for service concessions and the decision by the state government to finance the treatment plant with public funds—the project has been reformulated to ensure consistency with the present project, as described above (paragraph 1.12); and (ii) the construction of household sewerage connections and networks in the municípios of Anápolis, Catalão, Goiânia, and Rio Verde as part of the PROSEGE program (LO-622/OC-BR and 856/SF-BR).

## G. Lessons learned

- 1.16 The Bank's experience with sanitation projects was examined in detail in a paper submitted recently to the Loan Committee.<sup>1</sup> The paper focused on the problems that often arise in order for reform and/or institutional components to be executed at the same pace and with the same degree of satisfaction as construction components. The main causes of problems during execution, as cited in the paper, are outlined below, along with this program's proposed method of addressing them.
- a. **Problem:** *Stakeholders' lack of commitment to reform processes; delays in legislative approval; social and political resistance to reforms, rate hikes and private-sector participation.* **Proposal:** Two types of reform are provided for: implementation of the regulatory framework, and private-sector participation in SANEAGO by means of a management contract. In both cases, the processes have already been launched, which is a good indicator of commitment. The AGR has already been set up and is being supported through operation ATN/MT-6003-BR. With regard to the management contract, SANEAGO has called for proposals to identify the company that will lend advice for the bid process.

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<sup>1</sup> *Water and Sanitation Subsector: Issues and Options Note*, October 2001.

- b. **Problem:** *Pre-reform utility rates are very low, which causes people to associate reform with rate hikes and thus generates opposition to reform.* **Proposal:** As indicated in the section on viability, current rates are adequate and will only require adjustments for purposes of maintenance of real value.
- c. **Problem:** *Lack of continuity in reforms because of changes of government.* **Proposal:** With regard to regulation, the AGR has been set up as an independent body, which will make it possible to move forward without being affected by political changes. As for improvements in SANEAGO's management, the program seeks to move forward with the process already under way, rather than propose radical changes, inasmuch as inertia protects the company from future political changes.
- d. **Problem:** *Lack of counterpart funds.* **Proposal:** SANEAGO's ability to provide the counterpart was analyzed and it was concluded that, based on its current performance levels, it could provide all of the counterpart.
- e. **Problem:** *Weak executing agencies.* **Proposal:** Given the weakness of the current executing unit, owing mainly to its lack of experience and the complexity of building the dam, the executing unit will receive support from a specialized firm.
- f. **Problem:** *Proliferation of contractual conditions when there are multiple executing agencies and the need to reform legal and regulatory frameworks.* **Proposal:** By having a single executing agency and beneficiary and given the advanced status of the reform process, the conditions precedent for attaining the program's development objectives will be few and very targeted at the execution level.

## H. Program strategy

- 1.17 The program aims to improve the health conditions of Goiânia's residents by addressing the key problems identified in the foregoing analysis: (i) lack of reliability and continuity of the city's drinking water service; (ii) poor environmental quality of the rivers that flow through the city; and (iii) the need to modernize management systems and strengthen SANEAGO's capacity to deliver the service.
- 1.18 Following an analysis of Goiânia's water supply and sewerage master plans in the context of the service's financial restrictions, it was decided that the work recommended in those plans should be carried out in two stages. The first stage would comprise the work needed in order to increase the supply of raw water, thus eliminating seasonal variations in the supply and guaranteeing the quality and continuity of that supply. Sewage treatment capacity would also be increased. The

second stage would increase the supply of treated water, eliminate the water coverage deficit, and expand collection-service coverage.

- 1.19 This program will address the first-stage drinking water investment requirements, which include projects for operational upgrades and loss reduction so as to increase the supply of treated water and thereby serve a portion of the 130,000 users who currently lack this service. With regard to the first-stage sewerage services, the Bank's participation will complement the investments being made by SANEAGO with state and federal budget resources to build the Goiânia treatment plant. The program creates conditions for effective complementarity in this regard, to ensure that, upon program completion, the increase in the supply of drinking water will be accompanied by an increase in wastewater treatment capacity.
- 1.20 Institutionally, the program strategy is to strengthen SANEAGO's service-delivery capacity so as to position it better for the investment challenges of the coming years (see paragraph 1.7). Bringing in the private sector to manage the service will make it possible to consolidate the improvements and achievements already attained by SANEAGO and delivery of the service by means of efficiency criteria, thus protecting the company from possible political influence in its management in the future. In order that the program's physical progress can advance in parallel with the institutional improvements (hiring of the private operator and progress against the performance indicators), the program works have been divided into four bid packages that will be released *pari passu* as the improvements materialize.

## **II. THE PROGRAM**

### **A. Objectives and targets**

- 2.1 The program's general objective is to improve health conditions among the residents of Goiânia and contiguous urban areas by upgrading public drinking water and sewerage services.
- 2.2 The program has the following purposes: (i) guarantee the continuity and reliability of the drinking water supply in the city of Goiânia and contiguous urban areas; (ii) improve the water quality of rivers that flow through Goiânia; and (iii) make for more efficient service delivery.
- 2.3 Within the objective of guaranteeing the continuity and reliability of drinking water supply, the program seeks to achieve 24-hour continuous service 365 days a year for 90% of users in Goiânia by the end of 2007. Within the objective of improving river water quality, the program seeks to achieve a biological oxygen demand (BOD) level of 20 mg/l and a dissolved oxygen (DO) level of 6 mg/l by the end of 2007. Lastly, within the objective of improving efficiency in service delivery, the program seeks to reduce the number of user complaints to 2% by the end of 2007. The program contributes to achieving the millennium objectives with respect to halving the number of people lacking access to safe drinking water or to an adequate wastewater disposal system by 2015, directly by expanding the sewerage system to 19,481 users and indirectly by increasing the availability of drinking water, thereby allowing future expansions of the systems.

### **B. Program structure**

- 2.4 In pursuit of the aforementioned general objective, the program is organized into three components, each linked to one of the specific objectives indicated above.

#### **1. Water supply improvement (US\$58.6 million)**

- 2.5 Under this component, service continuity and reliability will be enhanced through works to increase capacity to produce drinking water and regulate supply sources, works to convey the additional volume of water produced to the distribution system, and operational upgrades so the distribution system can assimilate the additional volume of water. The component also includes measures to mitigate the associated environmental impacts. There are two subcomponents:
  - a. **Enhancement of reliability (US\$42.8 million).** An impoundment and flood-control dam 451 m wide and 50 m high will be built on the João Leite River, along with a new water intake. This will solve the following problems: the risk of the current dam breaking; the current dam's inability to regulate the river's



flow during the summer; and intake of polluted water owing to the intake structure's location in a densely populated urban area. The conveyance works consist of transporting the additional volume of raw water produced by the new dam to the treatment plant (11,827 meters of pipe 1,727 mm in diameter).

- b. **Improvements in treatment and distribution (US\$15.8 million).** The plant, pumping stations, and storage tanks for treated water will be upgraded, and critical sections of Goiânia's distribution network will be rehabilitated or replaced.

## **2. Improvement in river water quality (US\$16.3 million)**

- 2.6 Under this component, Goiânia's wastewater collection and treatment services will be expanded by building: (i) collector sewers and sewerage networks in the area of Caveirinha, whose wastewater will be piped to the Goiânia treatment plant (built simultaneously, with resources from the federal and state governments); (ii) collector sewers, sewerage networks, and a 115-l/s treatment plant in the area of São Domingos; and (iii) an 8-l/s sewage treatment plant in the area of Terezópolis, whose wastewater is currently dumped untreated into the area that will be flooded to create the new reservoir. The project is expected to build 329.2 km of sewage collection networks; 24.3 km of interceptor sewers measuring between 150 and 800 mm in diameter; 19,481 household and intrahousehold connections; and the two treatment plants mentioned, with capacities of 115 l/s and 6 l/s respectively.

## **3. Efficiency enhancements in service delivery (US\$6.4 million)**

- 2.7 Under this component, support will be provided to enhance the efficiency of SANEAGO's service delivery by implementing a new management model for the company, with emphasis on modernization of the systems and methods currently in use in the operational, commercial, financial, and administrative areas. To this end, a consulting firm will be hired, which will present a proposal containing the administrative and technical standards for the new management model that provides at least for the following: (i) ways to make SANEAGO permanently competitive, while at the same time incorporating a water-resource preservation and conservation approach to service delivery, through its functional and organizational reorganization, rate restructuring, customer recovery, optimization of the productive process, reduced losses from leakage, increased efficiency of investments, and evaluation of its regionalization process; (ii) cooperation between the Agência Goiana de Regulação, Controle e Fiscalização dos Serviços Públicos [Goiás Public Utilities Regulatory Commission] (AGR) and SANEAGO with respect to the functions of oversight and evaluation of service delivery indicators; (iii) identification of new partners in investments and service delivery, which may include private initiative and public agencies as well as suggestions for opening up its capital. Once it has the aforementioned management model in place, SANEAGO will use program resources to contract a specialized operator to implement the

management model according to the standards defined by the consulting firm and in compliance with the legal framework for the sanitation sector in force in the state. This component could finance the fixed portion of the payments to the specialized operator, the procurement of computer equipment, and the licenses needed to use information technology programs for service management. This component will also finance activities to improve operations, including those in the following categories: at-source and house metering, equipment for locating leaks, automation of the distribution system, establishment of sectors and maintenance districts, and rehabilitation of electromechanical equipment and networks.

### C. Cost and financing

2.8 The total program cost is estimated at US\$95.2 million, broken down by source of financing and investment category as follows:

<b>Program Costs</b> <b>(thousands of U.S. dollars)</b>				
<b>Category</b>	<b>IDB (OC)</b>	<b>Local</b>	<b>Total</b>	<b>%</b>
<b>Engineering and administration</b>	<b>650</b>	<b>2,600</b>	<b>3,250</b>	<b>3.4%</b>
Studies and projects	0	300	300	0.3%
Executing unit	650	400	1,050	1.1%
Works supervision		1,900	1,900	2.0%
<b>Direct costs</b>	<b>42,794</b>	<b>38,500</b>	<b>81,294</b>	<b>85.4%</b>
Water supply improvement	29,670	28,920	58,590	61.5%
Enhancement of reliability	21,770	21,020	42,790	44.9%
Production	15,000	14,250	29,250	30.7%
Conveyance	6,770	6,770	13,540	14.2%
Treatment and distribution improvements	7,900	7,900	15,800	16.6%
River water quality improvement	8,150	8,150	16,300	17.1%
Caveirinha system	4,200	4,200	8,400	8.8%
São Domingos system	3,450	3,450	6,900	6.7%
Terezópolis system	500	500	1,000	1.1%
Efficiency improvements	4,974	1,430	6,404	6.7%
Consulting services-management contract	0	200	200	0.2%
Management contract	2,250	250	2,500	2.6%
Operational upgrades	2,724	980	3,704	3.9%
<b>Associated costs</b>	<b>1,680</b>	<b>5,500</b>	<b>7,180</b>	<b>7.5%</b>
Land	0	4,000	4,000	4.2%
Social and environmental mitigation	1,490	1,490	2,980	3.1%
Audit	190	10	200	0.2%
<b>Unallocated</b>	<b>2,000</b>	<b>1,000</b>	<b>3,000</b>	<b>3.2%</b>
Contingencies	2,000	1,000	3,000	3.2%
<b>Financial costs</b>	<b>476</b>	<b>0</b>	<b>476</b>	<b>0.5%</b>
Supervision and inspection	476	0	476	0.5%
<b>TOTAL</b>	<b>47,600</b>	<b>47,600</b>	<b>95,200</b>	<b>100%</b>
<b>%</b>	<b>50%</b>	<b>50%</b>	<b>100%</b>	

- 2.9 The following paragraphs describe the activities included in the various investment categories.

**1. Engineering and administration (US\$3.2 million)**

- 2.10 This category, which accounts for 3.4% of the total program cost, comprises the following headings:

- a. **Studies and projects**, which covers the cost of studies and projects related to the program works.
- b. **Executing unit**, which covers the operating costs of the program's executing unit (set up within SANEAGO) during the five years of execution, including the cost of the firm to provide support during execution.
- c. **Works supervision**, which covers the cost of hiring specific consulting services to supervise the firms hired to perform the program works, including environmental supervision of the program.

**2. Direct costs (US\$81.3 million)**

- 2.11 This category, which accounts for 85.4% of the total program cost, comprises the following headings, which reflect the program's three components:

- a. **Water supply improvement**, which includes the necessary labor, materials, and equipment for procuring, transporting, installation, and testing pipes and electromechanical equipment, and carrying out civil engineering works for drinking water production and conveyance as described in the respective component.
- b. **Improvements in river water quality**, which includes the necessary labor, materials, and equipment for procuring, transporting, placing, and testing pipes and electromechanical equipment, and carrying out civil engineering works to expand the wastewater collection, treatment, and disposal system as described in the respective component.
- c. **Improvements in efficiency**, which includes conducting the necessary studies and consulting services for hiring the private operator that will take over management of the service, as well as the fixed component of SANEAGO's payments to the operator under the management contract and the operational upgrade works.

**3. Associated costs (US\$7.2 million)**

- 2.12 This category, which accounts for 7.5% of the total program cost, comprises the cost of procuring the sites for the various systems to be financed under the program

and the social and environmental mitigation measures included in the basic environmental project and the action plan for acquisition of land, rehabilitation of affected property remnants, and resettlement of affected population (PARR), to be implemented by SANEAGO, as described in the section on program execution.

**4. Unallocated (US\$3 million)**

- 2.13 This category, which accounts for 3.2% of the total program cost, comprises the contingencies that may occur during program execution, calculated at approximately 9% of the engineering and administration, direct, and associated costs.

**5. Financial costs (US\$500,000)**

- 2.14 This category, which accounts for 0.5% of the total program cost, represents the cost of program supervision and inspection by the Bank.

**D. Financing**

- 2.15 In accordance with the financing matrix for Brazil, the Bank will provide 50% of the total program cost, equivalent to US\$47.6 million, drawn on the Ordinary Capital and disbursed in foreign exchange pursuant to Bank policies. The local contribution will be 50% of the total program cost, equivalent to US\$47.6 million, which will be provided by SANEAGO and for which it may receive contributions from the State of Goiás.
- 2.16 The prospective loan will have the following terms and conditions: (i) variable interest rate; (ii) credit fee of 0.75% of undisbursed loan amounts; (iii) inspection and supervision fee of 1% of the total loan amount; (iv) disbursement period of 5 years; (v) grace period of 5 years; and (vi) amortization period of 25 years.

### III. PROGRAM EXECUTION

#### A. The borrower and executing agency

- 3.1 The borrower will be SANEAGO, which will also act as the executing agency. To implement the program, SANEAGO will set up a program execution unit (PEU) made up of a general coordinator, three specialists (one administrative-financial expert, one technical expert for water supply, and one technical expert for sewerage services), and an environmental adviser. The PEU will be a restructured version of SANEAGO's current Special Projects Advisory Office, which has been in charge of preparing the program. The PEU will receive support from a specialized firm, which will provide assistance in execution tasks and will provide the necessary staff for this purpose. **SANEAGO's formal appointment of the members of the executing unit and the set-up and functioning of the unit will be conditions precedent to the first disbursement. Moreover, the hiring of the specialized firm to support program execution will be a condition precedent to committing loan resources for the second bid package.**

#### B. Execution arrangements

- 3.2 The PEU will act as SANEAGO's interlocutor with the Bank and will have the following responsibilities: (i) prepare and track bid processes for the various construction work and procurement of goods and consulting services; (ii) coordinate with the respective departments of SANEAGO to monitor contractors; (iii) monitor and oversee work by the construction supervision firms; (iv) verify implementation of the program's environmental mitigation measures; (v) prepare periodic reports on execution and monitor compliance with the program's contractual conditions; and (vi) coordinate with the respective departments of SANEAGO for program accounting. The specialized firm that will support the PEU in program execution will have specific responsibilities in designing and establishing the necessary internal control and accounting systems for this purpose.
- 3.3 To assist the PEU in performing the work for the impoundment and flood-control dam under the water supply component, inasmuch as this work diverges from that normally performed by SANEAGO and in order to ensure proper implementation of the related environmental mitigation measures, provision has been made to hire a specialized firm to supervise this work. **SANEAGO's hiring of the firm that will provide support for overseeing the impoundment and flood-control dam works on the João Leite River and implementation of the environmental mitigation measures contained in the related basic environmental project and the PARR will be a condition for awarding the contract for the construction of the dam.**

- 3.4 To ensure proper execution of the activities to enhance the efficiency of service delivery in synchrony with the construction work, the program works have been divided into four groups (see Annex II). Authorization to commit resources for studies and work in each group will be granted only as the executing agency fulfills the respective institutional and environmental requirements. The first group comprises all the consulting services—including the management contract—and the dam referred to in paragraph 2.5 a. The second comprises the conveyance of raw water (remainder of the works referred to in paragraph 2.5 a), enhancements to operating efficiency (paragraph 2.7), the Terezópolis sewage system, and all the environmental mitigation measures. The third group comprises the works to improve the treatment and distribution of drinking water (paragraph 2.5 b). The fourth group comprises the São Domingos and Caveirinha sewerage systems (remainder of the works referred to in paragraph 2.6). The requirements for granting authorizations to commit resources for the first group of works are the same as the conditions precedent to the first disbursement. For the second group of works, the conditions are: the contracting of the program management firm, the operator that will implement SANEAGO's management model, and compliance with the performance indicators for the year preceding the one in which the authorization is requested, as shown in the table following paragraph 3.25. For the third and fourth groups of works, authorizations will only be granted if the performance indicators in the aforementioned table for the year preceding the request for authorization are met.

### **C. The management contract**

- 3.5 The financial and institutional analysis (see paragraphs 1.7 and 1.8) identified a need to support SANEAGO by hiring a private operator to take full charge of management and train staff so as to sustain the performance indicators attained through modernization of the company. The contract with the private operator will have the following characteristics: (i) duration of five years; (ii) responsibility for day-to-day management of the company, especially in the business and operations tracking areas; (iii) responsibility for modernizing the company's systems, implementing the necessary computer applications; and (iv) remuneration through a fixed component and a variable component linked to outcomes. Although the PEU will be responsible for the process of hiring the private operator, once the management contract has been signed by the president of SANEAGO, administration of the contract will be the direct responsibility of SANEAGO's board of directors.
- 3.6 The private operator will take full charge of managing SANEAGO, and will use existing infrastructure and staff and provide management and systems staff as necessary. Upon signature of the contract, the board is to transfer the necessary functions to the management company so that the latter can manage the company in accordance with the conditions stipulated in the management contract. The management company's performance will be measured by means of performance

indicators, which will be consistent with the indicators established for the program as indicated in paragraph 3.25. The project team has defined two of these indicators and has left the rest to be defined jointly with the consulting firm hired to organize the bid process for the private operator. These additional indicators and other obligations of the private operator will be defined in detail during the preparation of the bid specifications and will be included in the management contract, which will be reflected in the loan contract between SANEAGO and the Bank.

- 3.7 The bid conditions for hiring the firm to advise SANEAGO in selecting a private operator reflect the main points of the management contract as listed in paragraph 3.5. So that potential bidders may correctly assess the risk they would be assuming, the bid documents for hiring the private operator will contain the following information: (i) available technical data on the existing water and sewerage systems, including their condition; (ii) available business indicators for the three years preceding the bid process; (iii) demographic data for SANEAGO's service area; (iv) data on water demand and consumption in the contract area; (v) information on the quality of water supplied and treated; and (vi) information on water and sewerage rates and calculation methodologies. In addition, the management contract should clearly define any causes for early termination of the contract and the respective payments to be made to each of the parties in such case.
- 3.8 With the Bank's support, SANEAGO has initiated the activities leading up to the selection and hiring of a private operator and has published the notice for hiring a consulting firm to support SANEAGO throughout the process. The consulting firm is expected to be hired within the next few months. As a result of this effort, the terms of reference, draft management contract, and bidding documents for hiring the operator will be available. **The awarding of the contract to the consulting firm that will develop SANEAGO's new management model will be a condition precedent to the first disbursement and the hiring of the private operator that will implement SANEAGO's management model will be a condition for committing loan resources for the second bid package.**

**D. Program preparedness**

- 3.9 The final designs of the various works to be performed were prepared on the basis of the water and sewerage master plans for Goiânia and contiguous urban areas. All the projects, which are ready for implementation, were costed using June 2001 unit prices as the benchmark.
- 3.10 With regard to the management contract, terms of reference have been drafted for the firm that will advise SANEAGO in selecting the private operator. The terms of reference for the management firm that will support the PEU are being drafted and are expected to be ready by mid-December.

- 3.11 With regard to the procurement of land, no problems are anticipated inasmuch as a large part of the construction work—e.g., the networks for water supply, sewerage and drainage—will be built along public thoroughfares. Part of the land for the new reservoir basin and protection area has already been expropriated. Additional land for this use must still be acquired, valued at approximately US\$4.2 million. Easements will be established on the land over which raw water will be conveyed to the new reservoir on the João Leite River.
- 3.12 Legislation allows for the expropriation of land for purposes of public utility and, accordingly, no difficulties or conflicts are anticipated in acquiring the aforementioned land and easements. However, before calling for bids on a specific work, the executing agency is to show ownership and availability of the land needed for its construction and that the respective resettlement and expropriation plans have been prepared in accordance with Bank policy.

#### **E. Environmental considerations**

- 3.13 The environmental permit (1998) and license to proceed with construction (2001) have already been issued for the dam and the raw water conveyance works. The environmental impact assessment (EIA) was presented at a public hearing on 20 August 1996. Since then, a number of meetings have been held to make presentations and hold discussions with communities who will be affected positively and negatively by the new reservoir. The EIA was sent to the Public Information Center (at the Bank's headquarters and the Country Office in Brazil) on 24 September 2001.
- 3.14 To complement the EIA, additional studies were conducted and presented in an overview paper discussing the environmental studies on the João Leite dam and the raw water conveyance system. The paper has three parts: (1) update and additional information on the EIA; (2) basic environmental project; and (3) PARR (action plan for acquisition of land, rehabilitation of affected property remnants, and resettlement of affected population).
- 3.15 The basic environmental project is intended to organize and systematically group all environmental mitigation/enhancement actions. Its preparation took into account the environmental programs presented in the EIA and its update, and the requirements of the permit to proceed with construction issued by the Goiânia Environmental Affairs Agency. To facilitate identification, the actions were divided into six categories: (a) physical setting; (b) biotic setting; (c) biophysical setting; (d) anthropic setting; (e) physical-anthropic setting; and (f) biotic-anthropic setting. To facilitate implementation, these actions were grouped into seven programs: tools for prevention, for recovery, for monitoring, for protection, for regulation, for awareness, and for compensation. **Evidence that the projects include the environmental mitigation measures indicated in the basic environmental project shall be a precondition for the bid process for the respective work.**



- 3.16 As part of the environmental management plan that emerged from the basic environmental project and is to be implemented by the firm that will support SANEAGO in performing the work, it will be stipulated that, before issuing a public call for bids or, if there is no bid process, before procuring the goods or services, the following must be at hand: (i) the general plans, technical specifications, cost estimates, and other documents needed for the bid processes or the construction work and, if applicable, the specific conditions and other documents needed for the bid conditions; and (ii) for construction work, evidence must also be presented that: (a) the respective permit to proceed with construction has been issued and that the other conditions required by the government environmental agency have been complied with; and (b) when resettlement or other forms of indemnification are necessary, the respective PARR is available, prepared in accordance with Bank policy, and the community is to have been informed and consulted. The PARR should seek to prevent, reduce, or mitigate the impact on affected families and comprises three activities: replacement of lost property, rehabilitation of damaged property, and resettlement of families. In addition, before beginning execution of each work project under the program, the executing agency is to show, in the event it was necessary to resettle communities or provide indemnity, that this was done in accordance with Bank policy. **Lastly, the awarding of contracts for the fourth group of program works and studies on sewerage works shall not be authorized until the Goiânia wastewater treatment plan has begun operations.**
- 3.17 Preparation and implementation of the land-use plan for the reservoir basin, as well as environmental education activities, community liaison, and institutional action for environmental conservation of the João Leite River basin shall be the responsibility of the Goiás State Secretariat for Environmental Affairs, Water Resources, and Housing (SEMARH). **As a condition precedent to the first disbursement, an agreement is to be signed by SANEAGO and SEMARH for the preparation and implementation of the land-use plan for the reservoir basin (PARR) and the associated community development and information activities.**

**F. Involuntary resettlement**

- 3.18 Eighteen properties have been identified that will have to be partly or totally expropriated in order to prepare the area. Eight families will be resettled to other expropriated areas with sufficient land surface to produce at the subsistence level, in addition to indemnification and technical assistance for 11 nonresident renters in the affected area under Bank Policy OP-710. These actions are part of the PARR to be prepared by SANEAGO and discussed with the affected community. **As a contractual condition, evidence is to be provided that the resettlements and indemnification will begin six months after the signing of the construction contract for the dam and that they will be completed before the reservoir begins to be filled.**

**G. Execution period and disbursement schedule**

- 3.19 The program has an execution period of five years and the following disbursement schedule:

<b>Disbursement Schedule</b> <b>(in millions of U.S. dollars)</b>				
<b>Year</b>	<b>IDB</b>	<b>Local</b>	<b>Total</b>	<b>%</b>
1	7.2	7.2	14.4	15
2	14.7	14.7	29.4	31
3	13.3	13.3	26.6	28
4	7.1	7.1	14.2	15
5	5.3	5.3	10.6	11
<b>TOTAL</b>	<b>47.6</b>	<b>47.6</b>	<b>95.2</b>	<b>100</b>

**H. Bidding procedures**

- 3.20 Procurement of goods and related services and works contracts will be carried out in keeping with the Bank procedures stipulated in Annex B to the loan contract. Services will be contracted pursuant to the procedures set forth in Annex C to the loan contract. Price will be used as a criterion for the selection of service providers pursuant to the provisions of document GN-1679-3. When selection is based on technical quality and price, the relative weight given to price in the selection criteria may not exceed 20%. International competitive bidding will be mandatory for: (i) goods valued at US\$350,000 or above; (ii) the construction of works valued at US\$5 million or above; and (iii) service contracts for amounts above US\$200,000. These ceilings are in line with those recommended by the Bank's Procurement Unit for this sector in Brazil.

**I. Recognition of expenses**

- 3.21 SANEAGO has requested that the Bank recognize as local counterpart the expenses incurred during the 18 months preceding the estimated date of approval of the program in the amount of up to US\$3 million. These expenses include the feasibility studies for the dam and sewerage system; economic and environmental studies; and the engineering designs. During the analysis mission and with support from the Brazil Country Office, it was established that the bid processes for these activities and consulting services were carried out in accordance with Bank policies on procurement with local resources.

**J. Flow of funds**

- 3.22 The loan proceeds and counterpart contribution to be provided by SANEAGO will be channeled through separate bank accounts opened in the program's name by SANEAGO. SANEAGO will draw on these accounts to pay for the various

consulting services and construction work and to procure the goods and services included in program. **SANEAGO's opening of two separate bank accounts in the program's name to channel the loan proceeds and counterpart resources will be a condition for the first disbursement.**

**K. Operation of the systems**

- 3.23 Operation and maintenance of the systems will be the responsibility of SANEAGO in its capacity as service provider in the state of Goiás. To ensure proper monitoring of the upkeep of program works, SANEAGO will present to the Bank—each year during the five years beginning with the completion of the first program work and within the first quarter of the calendar year—an annual operation and maintenance plan for program-funded systems. The plan should include a report on the previous year's performance in this regard and on the current condition of the systems.

**L. Program monitoring**

- 3.24 Program execution will be monitored by the Bank's Country Office in Brazil. To this end, SANEAGO will present to the Bank an initial report with the program's work plan and detailed execution schedule. It will also present to the Bank semiannual progress reports reflecting the logical framework indicators (described in the following section). The Country Office's reports on the loan's status are to note problems arising during execution and the remedial measures taken.

**M. Performance indicators**

- 3.25 Program progress will be assessed through the indicators set forth in the logical framework (see Annex I). The key indicators are presented below, with the cumulative value expected to be achieved for each of them at the end of each year of execution. These two indicators sum up the expected improvements in SANEAGO's financial situation and operating efficiency, respectively. In addition, during the preparation of the bid documents for the management contract, service quality indicators and targets will be defined, e.g., service continuity and time taken to address user complaints.

Performance Indicators					
	Year 1	Year 2	Year 3	Year 4	Year 5
Revenue / O&M+DebtService <sup>2</sup>	120%	120%	120%	120%	120%
Unaccounted-for water <sup>3</sup>	33%	32%	31%	30%	29%

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<sup>2</sup> O&M+DebtService = Costs of operation and maintenance of systems (including administrative, business, and tax-related costs, but excluding provisions), plus service of all existing debt.

<sup>3</sup> Unaccounted-for water = (volume produced-volume invoiced) / volume produced.

- 3.26 Compliance with the aforementioned performance indicators will be a condition for committing loan resources for the second and third bid packages, using as a benchmark in each case the values for the immediately preceding year. The loan contract will stipulate that SANEAGO agrees to take the necessary measures, acceptable to the Bank, so that rate-derived revenue covers at least 120% of O&M costs and debt service each year. Such measures will consist of increasing revenue, revising current rates, paring back costs or a combination of these measures.

**N. Accounting, internal control, and audit**

- 3.27 The PEU will be responsible vis-à-vis the Bank for: (i) keeping accounting and financial records and an internal control system for managing program resources pursuant to the General Conditions of the loan contract; the system must be able to display and manage program resources separately from other programs administered by SANEAGO; (ii) preparation and presentation to the Bank of financial statements, semiannual reports on the revolving fund, and other financial reports that may be required; (iii) presentation of disbursement requests and supporting documentation to the Bank; and (iv) proper filing of supporting documentation for hirings and disbursements charged against program resources.
- 3.28 The annual financial statements of the program and of SANEAGO are to be presented to the Bank within the 120 days following the close of each fiscal year, duly audited by an independent auditing firm selected in accordance with Bank policy and terms of reference previously approved by the Bank. The audits are to cover the environmental monitoring program and tracking of the management contract indicators. The audits will be conducted throughout the program's execution period and the respective costs will be financed out of the loan proceeds.

**O. Program evaluation**

- 3.29 Although SANEAGO will not conduct an ex post evaluation of the program, it will gather and process data in case the Bank should decide to conduct such an evaluation with its own resources. The evaluation would follow a methodology similar to the one used in the ex ante assessment, including an analysis of cost-benefit, internal rate of return, and other relevant socioeconomic outcomes. The data gathered are to be forwarded to the Bank through annual reports as of the first year of execution. The first report should include a detailed description of the procedure used to gather and process the data, including: (i) budgeted and actual costs of construction work; (ii) number of homes actually hooked up to drinking water and sewerage services; (iii) physical and chemical quality of water in the reservoir; (iv) physical and chemical quality of effluent from the treatment plants; (v) cost and effectiveness of measures to mitigate environmental impacts; (vi) incidence of acute diarrhea in children under 5 as reported by health centers in the program area; and (vii) incidence of other water-borne diseases as reported by health centers in the program area.

## **IV. THE BORROWER AND EXECUTING AGENCY**

- 4.1 The borrower and executing agency of the program will be Saneamento de Goiás S.A. (SANEAGO). The State of Goiás will participate in the program by providing a portion of the local counterpart and by providing the guarantee to the Bank for the entire counterpart and counter-guarantee to the Government of Brazil for the guarantee that the latter must provide to the Bank for the loan.

### **A. SANEAGO**

#### **1. Legal status and structure**

- 4.2 SANEAGO is a semipublic company organized under Law 6680 of 13 September 1967 to promote basic sanitation in the state by preparing studies and projects, building systems, and operating drinking water and sewerage services. SANEAGO currently serves 219 of the state's 242 municípios under concession agreements or licenses with the respective municipalities.
- 4.3 SANEAGO's structure is similar to that of a private corporation. Its decision-making bodies are the general meeting of shareholders, the management board, and the board of directors. Its main shareholder is the State of Goiás by way of the Secretariat for Environmental Affairs, which holds 99.7% of the shares. The remaining 0.3% is held by other agencies of the state government.
- 4.4 SANEAGO has a staff of 3,274 employees, divided among four areas: the president's office, finance, administration, and production and engineering. At the operations level, it has a network of regional offices that are responsible for the various systems, client services, and user portfolio management.

#### **2. Key operations indicators**

- 4.5 SANEAGO's key operations indicators were as follows<sup>4</sup>: 1,187,084 users of drinking water services and 484,798 users of sewerage services, representing service coverage levels of 84.6% and 34% respectively; 98% of users had house metering coverage; unaccounted-for water stood at 34.9%; and the number of employees per 1,000 water users was 2.7. Except for the percentage of unaccounted-for water, these indicators reflect acceptable performance levels for service delivery. It is worth noting that the reported level of unaccounted-for water is not entirely reliable inasmuch as the at-source metering system has not been completed.

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<sup>4</sup> Data from fiscal year 2001.

### 3. Rates and collection

- 4.6 In 2001, the average rate charged by SANEAGO was R\$1.60/m<sup>3</sup>, which provided an acceptable coverage level of 134% of O&M costs and 109% of O&M plus depreciation. The collection rate that year was 95% and has remained relatively stable over the past four years, leaving the receivables portfolio (both current and past due) equivalent to only three months of invoices.
- 4.7 SANEAGO's current tariff chart was approved in April 2002 and included a nominal increase of 13.42% over the previous one (approved in April 2001). The tariff structure is based on four categories of users (residential, industrial, commercial, and government), which are invoiced progressively by consumption blocks. Sewerage services are invoiced at 80% of the water invoice.

### 4. Financial situation

- 4.8 The following table presents a summary of SANEAGO's year-end results (in millions of current *reais*) for the period 1997-2001. By way of reference, the *real*-dollar exchange rate over the period was: R\$1.08/US\$1 for 1997, R\$1.16/US\$1 for 1998, R\$1.81/US\$1 for 1999, R\$1.83/US\$1 for 2000, and R\$2.40/US\$1 for 2001.

SANEAGO. Year-end results (millions of <i>reais</i> )					
	1997	1998	1999	2000	2001
Operating revenue	198	218	236	258	268
Operating expenses	(122)	(157)	(174)	(197)	(200)
<b>Operating margin</b>	<b>76</b>	<b>61</b>	<b>62</b>	<b>61</b>	<b>68</b>
Depreciation	(36)	(37)	(37)	(43)	(45)
<b>Operating results</b>	<b>40</b>	<b>24</b>	<b>25</b>	<b>18</b>	<b>23</b>
Other revenue/(expenses) <sup>5</sup>	4	(106)	54	17	(32)
<b>PBIT<sup>6</sup></b>	<b>44</b>	<b>(82)</b>	<b>79</b>	<b>35</b>	<b>(9)</b>
Financial revenue/(expenses)	(36)	(43)	(32)	(30)	(29)
<b>PBT<sup>7</sup></b>	<b>8</b>	<b>(126)</b>	<b>46</b>	<b>5</b>	<b>(38)</b>
Taxes	(8)	0	(9)	(6)	(2)
<b>Net result</b>	<b>0</b>	<b>(126)</b>	<b>37</b>	<b>(1)</b>	<b>(40)</b>

- 4.9 As the table shows, SANEAGO has been posting positive operating results, with sufficient income to cover the costs of service operation, maintenance, and depreciation, at a level of 125% in 1997, 112% in 1998, 112% in 1999, 108% in 2000, and 109% in 2001. Although operating results have remained at about R\$20 million over the last four years, net income has been fluctuating rather

<sup>5</sup> Mainly accounting transactions into and out of provisions for contingencies.

<sup>6</sup> Profit before interest and taxes.

<sup>7</sup> Profit before taxes.

significantly from one year to the next. The explanation for these fluctuations is the variability of the other revenues and expenses line, which stems from the emergence (and subsequent settlement) of expenses mostly from previous years<sup>8</sup> that had not been posted in the accounts. This process is the result of the effort undertaken by the State of Goiás and SANEAGO to reorganize the company's finances. The last step in this process has been recognizing a debt with the Instituto Nacional do Seguro Social [National Social Security Administration] (INSS) in 2001, which led to the R\$40 million loss indicated. Close to half the debt with the INSS precedes 1994, while the other half is for the 1994-1999 period. Responsibility for paying this debt was assumed by the State of Goiás in an agreement signed with the INSS in August 2001, once the aforementioned financial reorganization process was completed. As a result, SANEAGO now has financial statements that properly reflect its net worth and a healthier financial situation that is reflected in the financial projections appearing in a section below.

4.10 SANEAGO's cash flow has been as follows:

<b>SANEAGO. Cash Flows</b> (in millions of reais)					
	<b>1997</b>	<b>1998</b>	<b>1999</b>	<b>2000</b>	<b>2001</b>
<b>Initial Cash on Hand</b>	<b>7</b>	<b>9</b>	<b>6</b>	<b>12</b>	<b>6</b>
<b>Operating revenue</b>	<b>49</b>	<b>113</b>	<b>0</b>	<b>74</b>	<b>69</b>
Interest payments	(36)	(43)	(32)	(30)	(30)
<b>Revenue from investments and loan payments</b>	<b>13</b>	<b>70</b>	<b>(32)</b>	<b>44</b>	<b>39</b>
Fixed-capital investments	(61)	(165)	(79)	(105)	(70)
Other revenue/(payments)	4	97	83	(49)	8
<b>Excess/(shortfall)</b>	<b>(44)</b>	<b>2</b>	<b>(30)</b>	<b>(110)</b>	<b>(23)</b>
Lending operations (net)	33	(15)	(58)	0	5
Capital contributions	13	10	94	104	19
<b>Net cash movement</b>	<b>2</b>	<b>(3)</b>	<b>6</b>	<b>(6)</b>	<b>1</b>
<b>Final Cash on Hand</b>	<b>9</b>	<b>6</b>	<b>12</b>	<b>6</b>	<b>7</b>

4.11 SANEAGO has generated revenue for investment in every year except 1999, owing paradoxically to an improvement in the firm's financial situation that year as a result of which available cash was used mainly to pay off past-due debts to suppliers. Except for 1999 (for the reasons stated), SANEAGO's tariffs have generated sufficient cash to promptly cover all payments for system operation and maintenance, as well as honor its financial commitments. In terms of financial structure, SANEAGO has a low level of indebtedness, with a debt-equity ratio of

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<sup>8</sup> Primarily tax, labor, and commercial contingencies.

11% in 2001, made up almost entirely of loans from *Caixa Econômica Federal*. Accordingly, SANEAGO can be said to enjoy a healthy financial situation.

## **B. State of Goiás**

### **1. Financial situation**

- 4.12 In 2001, the financial position of the State of Goiás continued to experience the gradual improvement that began in 1999, when it once again was able to post a positive primary result after several years of negative results. Moreover, in 2000 and 2001, earnings were sufficient to cover debt service, a situation that it is hoped will persist in the coming years. Tax revenue—which accounted for nearly 80% of the state’s current revenue—grew 17% in real terms in 2001 and investments in the amount of R\$185 million were financed without having to increase borrowing.
- 4.13 This process of gradual improvement is the result of the Fiscal Adjustment and Restructuring Program signed with the federal government as part of the March 1998 debt rescheduling agreement. The program’s fiscal-adjustment targets are to be achieved within a period of three years, and are revised at the end of each year in keeping with the macroeconomic parameters and financial situation of the State.

### **2. Fiscal Adjustment and Restructuring Program**

- 4.14 With an eye to fostering the states’ financial health, the Fiscal Adjustment and Restructuring Program with the federal government sets targets for tax revenue increases, lower payroll spending, and benchmarks for sustained debt growth. The following table shows the targets and their status in 2000 for the State of Goiás.

Indicator	Target	Actual
Borrowing/real net income <sup>1</sup>	3,82	3,76
Primary result <sup>2</sup>	R\$296 million	R\$219 million
Payroll costs/net current income <sup>3</sup>	65%	65.26%
Own revenue	R\$2,519 million	R\$2,424 million
Investments/real net income	9%	2%
<sup>1</sup> Current revenue less financial income, revenue from sale of assets and transfers made to cover capital costs; less legal transfers to FUNDEF and less statutory and constitutional transfers to municípios. <sup>2</sup> Total nonfinancial revenue, less statutory and constitutional transfers to municípios and less nonfinancial expenses. <sup>3</sup> Current revenue less statutory and constitutional transfers to municípios.		

- 4.15 As can be seen, targets 1 and 5 were met, 3 and 4 were nearly met, and 2 was not met. The Secretariat of the National Treasury reviewed the progress report prepared by the State of Goiás and concluded that the state was not in a situation of noncompliance with the signed agreement. Information on whether the targets were met in 2001 is not yet available since results will be verified during the second half



of 2002. However, with the information that is available, it is anticipated that the finances of the State of Goiás remained within the expected parameters. The targets for 2001, as in previous years, were calculated taking into account the Bank program presented here, although in practice the debt will be assumed not by the State of Goiás but rather by SANEAGO, and the state's only responsibility—in addition to the counter-guarantee to the federal government—will be to contribute a portion of the local counterpart, which it will do by using resources from the privatization of the state's electric company, as explained below in the section on the program's financial viability.

## **V. VIABILITY AND RISKS**

### **A. Technical viability**

- 5.1 The work to be financed under the program, except for the dam, does not pose any special technical difficulties, in either its construction or operation, inasmuch as the technologies are widely used in the delivery of water and sanitation services. The dam was sized on the basis of hydrological studies that provide significant security to withstand abnormal levels of precipitation (statistical recurrence period of 10,000 years) and it will use compacted-concrete construction technology, providing both economic and construction advantages. This technology also forms part of the construction safety measures, since if heavy rains occur during construction, the dam could withstand the impact of flooding without unfinished structures being damaged. To minimize even further the risks of landslides owing to heavy rainfall during construction, the work schedule will be adjusted to the area's rainfall season. The dam is located in a nonseismic area, and geotechnical studies were done and will be fleshed out during the initial phase of construction, so as to neutralize any foreseeable risk of instability and to provide the necessary safety to this type of work. Furthermore, SANEAGO will receive technical support from a firm specialized in work of this type and size. The Bank hired a consultant specialized in dams, who reviewed the studies and projects and was favorable to this type of construction.
- 5.2 The other works under the project have engineering studies that are sufficiently advanced and with acceptable cost estimates; and they were prepared in accordance with generally accepted engineering standards and principles. The designs represent the options that have the least cost, are technically viable, and have been widely tested in similar conditions in the country.
- 5.3 As for execution, the schedule reflects suitably the necessary time frames for the scheduled activities. The schedule was prepared taking into account the features of the construction work, the periods for processing prequalifications and tenders, and SANEAGO's experience in carrying out similar projects.

### **B. Environmental viability**

- 5.4 The project works are consistent with the master water plan for Goiânia and contiguous urban areas, in that they examined various alternatives and selected the most viable one from the technical, economic, and socioenvironmental standpoints. The program will help to improve the health and well-being of area residents.
- 5.5 The construction work has been sited and defined, and the environmental impact studies have been completed and presented to the communities involved directly and indirectly. The environmental impact assessment (EIA/RIMA) was presented at

a public hearing in August 1996. The communities of Goiânia and the affected municipios have been informed about the project, and, according to available information, all organized sectors of society, including the NGOs, support the program works. Permits will be secured apace with the various phases, and presentation of the respective construction permit will be a condition precedent to the call for bids. The proposal of using the lake exclusively as a source of drinking water introduced changes in the dam's design reducing the area to be flooded and the respective impacts. Further studies were conducted and yielded a number of mitigation programs, which will be financed by the Bank and are specified in the basic environmental project and the PARR, and their costs are included in the program cost.

- 5.6 Construction of program works will produce modest, temporary negative impacts owing to changes in the physical environment caused by activities during this process. The construction and operation of the dam and reservoir could have negative impacts, namely: (i) degradation of water quality in the case of eutrofication of water in the reservoir; (ii) expropriation and resettlement; and (iii) loss of plant and animal resources. To prevent contamination of the reservoir water in the future from single-point or widespread discharges, a plan will be prepared and launched for use of the land around the lake, financed by the program and managed by the recently established committee for the watershed that includes the João Leite River. Lastly, the sludge produced at the São Domingos treatment plant will be dried and spread over the area's plentiful farmland.
- 5.7 The program's negative impacts will be minimized through application of the basic environmental project and PARR drawn up as part of program preparation. The PARR was discussed and accepted by the affected parties and was disseminated to the entire community. The costs associated with implementing the mitigation measures for the construction work are included in the work's costs and will be included in the respective bid specifications. Other actions will be carried out by SANEAGO and SEMARNH. The costs of these measures are included in the program's associated costs (paragraph 2.12).
- 5.8 SANEAGO will receive support from a firm that will have on hand an environmental expert and field inspectors to be responsible for monitoring and supervising work as well as technical and construction-related features of environmental impact mitigation, with a view to ensuring implementation of the respective plans. The Meia Ponte River Basin Committee, which covers the João Leite River basin as well, has already been established and will be a key agency for water conservation in this basin. The program will support the committee by preparing and launching the land-use plan for the area around the lake. Applicable legislation on water use will ensure the plan's sustainability.

## **C. Institutional viability**

- 5.9 The program's institutional viability was analyzed from the standpoint of SANEAGO's ability to carry out the respective work and operate the resulting systems once the construction phase is completed. The analysis also covered the viability and expected contribution of the private operator that would be hired to enhance SANEAGO's service-delivery capacity.

### **1. SANEAGO's ability to build and operate the systems**

- 5.10 Although SANEAGO lacks experience in carrying out similar programs with the Bank, the program works—except for the dam—do not differ much from the type of work normally performed by the company. For instance, SANEAGO already has an executing unit that has been operating satisfactorily in carrying out the program preparation work. With regard to the dam (as indicated in the section on technical viability), SANEAGO will receive support from a supervisory firm specialized in the oversight of this type of construction work. Moreover, it will strengthen the executing unit by hiring a firm that will provide advisory services for execution, so as to ensure a proper pace of program execution, while preventing an overload on the firm's structure through additional staff and costs.
- 5.11 With regard to operating the systems, SANEAGO is already satisfactorily operating and maintaining the current systems, as shown by the acceptable performance indicators discussed in the previous chapter. Accordingly, SANEAGO is felt to have sufficient capacity to operate and maintain the systems built under the program.

### **2. The management contract**

- 5.12 Bringing in the private sector under management contracts will help to: define and separate the functions of service regulation and service management; consolidate the reforms launched in 1998; avoid changes in management during the next political cycle; and modernize management systems and make the investment program more efficient.
- 5.13 To increase the chances for successful inclusion of a private operator to manage the entire service, the following steps have been taken: (i) advice from a specialized firm, which is to prepare bid documents and work with SANEAGO during the entire process; (ii) identification of the most sensitive aspects that should be covered in the bid documents, e.g., description of current status and features of the service, exact definition of responsibilities between SANEAGO and the operator, and the assumptions and determination of payments in the event of early termination of the contract; and (iii) arrangements for paying the operator, which include a fixed component—intended to cover its fixed costs and, thus, minimize

the business risk involved—and a variable component—intended to promote management improvements.

- 5.14 The fixed component will be financed by the program using loan proceeds. This is expected to reduce the risk perceived by potential firms and encourage more of them to submit bids and thereby bring down the overall cost of the management contract.

#### **D. Socioeconomic viability**

- 5.15 A socioeconomic assessment was conducted for each of the projects under the program. The study was based on a comparison of the economic costs and benefits in with- and without-project scenarios. The program comprises two types of project: drinking water supply and sanitary sewerage. The costs considered in the evaluation were the incremental costs of investment, O&M, valued at efficiency prices.

##### **1. Drinking water projects**

- 5.16 For purposes of the economic analysis, these projects are grouped as follows: (i) dam and conveyance of raw water from the João Leite system; and (ii) optimization of the systems, including improvements to the water treatment capacity of the João Leite system and rehabilitation of networks in the Goiânia city distribution system.
- 5.17 Under the first project, the without-project scenario would have unacceptable water quality at the source owing to the high population density around the water intake, which did not exist when the system was built. In addition, the features of the current dam do not allow for regulation of the flow, which would severely affect the supply of water to the city in the summertime. Accordingly, it was decided to change the location of the water intake and the type of dam. The new dam will be able to regulate the flow of the João Leite River, thus solving these problems. A new dam will also produce the indirect benefit of increasing the dilution capacity of the Meia Ponte River, thus improving that river's environment quality. Improvements to the water treatment capacity and rehabilitation of the distribution network are intended to optimize operation of the systems and increase the supply by reducing losses.
- 5.18 The increase in consumption and release of resources, consisting in cost savings, were considered as benefits in the economic evaluation of the water projects. Data on current consumption and the release of resources were obtained by a survey in the areas to be served by the projects. Data on future consumption and elasticity were obtained from a survey in the city of Goiânia, which were processed and used to estimate an econometric model of demand (price elasticity of  $-0.29$  and income elasticity of  $0.35$ ). The SIMPO model was used to calculate the net present value

(NPV) and economic internal rate of return (EIRR) of each project, with the following results:

	<b>Cost (R\$ millions)</b>	<b>NPV (R\$ millions)</b>	<b>EIRR %</b>
Dam and conveyance of raw water	120.2	27.6	16.1
Improvements to water treatment capacity and distribution system	24.2	14.0	40.5
Institutional development Reduction of losses	28.7	2.5	15.4

## 2. Sanitation projects

- 5.19 Two types of projects are proposed: (i) sewage networks and interceptor sewers in the Caveirinha River basin that feed into the Goiânia Water Treatment Plant, currently under construction; and (ii) sewage networks, interceptor sewers and treatment plants along the São Domingos River. In the first set, the without-project scenario would entails wastewater being dumped into public watercourses in 30% of case and use of septic tanks that contaminate groundwater in the remaining 70%. In the second set, the without-project scenario shows the São Domingos River contaminated with foul odors in riverside towns and neighborhoods.
- 5.20 The first set of projects would yield the following benefits: better environmental quality and better health of area residents; and savings generated by discontinued maintenance and building of septic tanks. The second set of projects will enhance well-being through better environmental quality thanks to the elimination of odors and other possible uses of the cleaned-up river, e.g., recreation. These benefits were calculated using the willingness to pay (WTP) approach, which was determined on the basis of the contingent evaluation methodology. The WTP value was calculated at R\$30.32 per family per month for the sewage network and R\$38.00 for the system overall. The findings of the economic evaluation were as follows:

<b>River</b>	<b>Project type</b>	<b>Cost (R\$ millions)</b>	<b>NPV (R\$ millions)</b>	<b>EIRR %</b>
Caveirinha	Network and Interceptor sewers	21.2	9.5	16.7
São Domingos	Complete	5.0	3.3	14.9

## 3. Sensitivity analysis

- 5.21 A sensitivity analysis was conducted on the benefits, especially the estimated parameters that could affect the outcome of the economic evaluation. The

parameters are price elasticity in projects that include drinking water, willingness to pay in sewage projects, and project costs.

- 5.22 The analysis consisted of calculating the value of the parameters that would make the project unfeasible. In accordance with the following table, it was found that the viability results were robust except in the case of the São Domingos system, which has a low probability of not being profitable. Nevertheless, this was a conservative analysis bearing in mind that the economic analysis included an additional 10% for contingencies in the direct costs in the area.

Project/Parameter	Percentage of sensitivity (%)	EIRR (%)
Dam and water conveyance		
Elasticity	+20	12.5
Demand	-20	11.9
Costs	+20	13.7
Caveirinha		
WTP	-20	13.0
Costs	+20	13.8
São Domingos		
WTP	-20	11.3
Costs	+20	12.3

#### 4. Analysis of beneficiaries

##### a. Ability to pay

- 5.23 The ability to pay of water-and-sanitation system beneficiaries was calculated, and it was found that the amount of the monthly bill for the service was less than 5% of the family income. The basic payment would be R\$15.00. Based on income-distribution information in Goiânia, where the service will be provided, 7.1% of families would have problems paying the bill. From the water company's viewpoint, this would not represent a financial problem inasmuch as these accounts account for less than 1% of the company's invoicing.

##### b. Impact on low-income groups

- 5.24 The proposed program qualifies as a poverty-targeted investment (PTI). The percentage of low-income beneficiaries is 64%, based on a low-income threshold in Brazil of R\$124 per capita per month updated in May 2002. The table below presents the low-income beneficiaries and a calculation of the program's impact indicator by project group. Although the program qualifies as a PTI, the borrower will not be using the 10 percentage points in additional financing.

Project	Total beneficiaries ('000s)	Percentage of low-income beneficiaries (*)	Low-income population ('000s)
Dam and water conveyance	1,354	63.9	865
Operating improvements	1,354	63.9	865
Caveirinha	57	59.9	34
São Domingos	38	59.9	23
Terezópolis	4	64.6	2
Total(**)	1,453	63.5	924

(\*) Estimate based on the Bank's poverty line and the income distribution calculated by the 1991 Brazilian Census and socioeconomic surveys conducted as part of the program's analysis.

(\*\*) The population of Metropolitan Goiânia was only accounted for once.

## E. Financial viability

5.25 The program's financial viability was analyzed from two standpoints: SANEAGO's ability to assume this loan and make the respective payments; and the ability of the State of Goiás to guarantee and participate in the counterpart contributions and grant the counter-guarantee required by the federal government in exchange for its guarantee to the Bank of the loan.

### 1. SANEAGO's ability to borrow

5.26 Since SANEAGO would be the borrower, financial projections were drawn up for the company using the following assumptions: (i) consumption would remain at present levels<sup>9</sup> during most of the execution period, and gradually rise thereafter up to a level of around 15 m<sup>3</sup>/month for residential users and 19 m<sup>3</sup>/month for nonresidential users by the end of the tenth year, reflecting the greater availability of water and higher standard of living; (ii) rates would remain at their present level in real terms; (iii) physical losses would decrease, as part of the program's targets; (iv) the cost structure in place during the first half of 2001 would be maintained; (v) the State of Goiás would provide US\$25 million of the US\$40 million of the program counterpart; and (vi) an investment plan of approximately US\$145 million would be implemented in addition to the program for the period 2001-2006, to include the Goiânia water treatment plan, which would be financed with support from the State of Goiás.

5.27 The projections were made in current *reais*, assuming annual inflation of 6.5% in Brazil and 2.5% in the United States, and a *real*-to-dollar exchange rate—for purposes of calculating debt service—based on the inflation differential. The

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<sup>9</sup> Approximately 12 m<sup>3</sup>/month for residential users and 17 m<sup>3</sup>/month for nonresidential users.



outcomes of the financial projections and are summarized in the following tables in terms of the company's year-end results and cash flows.

<b>SANEAGO. Year-end results</b> <b>(in millions of current R\$)</b>									
	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>
Operating revenue	333	367	421	498	557	625	701	786	882
Operating expenditures	(223)	(247)	(272)	(307)	(336)	(366)	(400)	(437)	(479)
<b>Operating results</b>	<b>110</b>	<b>120</b>	<b>149</b>	<b>191</b>	<b>221</b>	<b>259</b>	<b>301</b>	<b>349</b>	<b>403</b>
Depreciation	(54)	(59)	(63)	(67)	(70)	(73)	(75)	(77)	(79)
Portfolio provisioning	(14)	(17)	(18)	(21)	(25)	(28)	(31)	(35)	(39)
<b>PBTI (1)</b>	<b>42</b>	<b>44</b>	<b>68</b>	<b>103</b>	<b>126</b>	<b>158</b>	<b>195</b>	<b>237</b>	<b>285</b>
Financial revenue/(expenditures)	(29)	(29)	(29)	(30)	(19)	(23)	(11)	5	27
<b>PBT (2)</b>	<b>13</b>	<b>15</b>	<b>39</b>	<b>73</b>	<b>107</b>	<b>135</b>	<b>184</b>	<b>242</b>	<b>312</b>
Taxes	(3)	(4)	(9)	(17)	(25)	(32)	(43)	(57)	(73)
<b>Net result</b>	<b>10</b>	<b>11</b>	<b>30</b>	<b>56</b>	<b>82</b>	<b>103</b>	<b>141</b>	<b>185</b>	<b>239</b>
O&M+D coverage	120%	120%	126%	133%	137%	142%	148%	153%	158%

(1) Profits before taxes and interest.

(2) Profits before taxes.

<b>SANEAGO. Cash-flow statement</b> <b>(in millions of current R\$)</b>									
	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>
<b>INITIAL BALANCE</b>	<b>9</b>	<b>15</b>	<b>18</b>	<b>48</b>	<b>3</b>	<b>56</b>	<b>139</b>	<b>258</b>	<b>420</b>
Cash generated	78	90	122	157	178	209	251	298	355
Existing debt service	(24)	(25)	(25)	(25)	(25)	(26)	(26)	(25)	(24)
Investments	(199)	(179)	(148)	(182)	(111)	(78)	(83)	(88)	(94)
Contribution of capital	111	78	67	41	2	0	0	0	0
Additional financing	53	53	28	36	20	0	0	0	0
Additional debt service	(13)	(14)	(14)	(72)	(11)	(22)	(23)	(23)	(23)
<b>FINAL BALANCE</b>	<b>15</b>	<b>18</b>	<b>48</b>	<b>3</b>	<b>56</b>	<b>139</b>	<b>258</b>	<b>420</b>	<b>634</b>

<b>Financial adequacy</b> <b>(in millions of current R\$)</b>									
	<b>2002</b>	<b>2003</b>	<b>2004</b>	<b>2005</b>	<b>2006</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>
Receipts	309	344	392	462	520	583	654	734	823
O&M costs	(223)	(247)	(272)	(307)	(336)	(366)	(400)	(437)	(479)
Debt service	(37)	(39)	(39)	(97)	(36)	(48)	(49)	(48)	(47)
Receipts / O&M+Debt Service	119%	120%	126%	114%	140%	141%	146%	151%	156%

- 5.28 As can be seen, these projections show positive results for SANEAGO, with capacity to cover costs of operation, maintenance, and depreciation with service revenue that will increase gradually from 120% in 2002 to 137% in 2006 at project completion, and to 158% in 2010. Cash flows are able to cover the costs of operation, maintenance, and debt service with income, that will increase gradually from 119% in 2002 to 143% in 2006 at project completion, to 157% in 2010. Even if the State of Goiás does not contribute any of its portion of the counterpart, SANEAGO would be able to borrow from the *Caixa Econômica Federal* or from a commercial bank to make that contribution. Accordingly, SANEAGO is felt to have sufficient revenue as to cover all the costs of debt service and that this revenue produces sufficient income to honor all its financial commitments, including service of the debt with the Bank upon completion of the program.
- 5.29 The gradual improvement in SANEAGO's financial situation is explained by two factors: (i) new connections under the proposed investment plan; and (ii) the service's fixed costs will remain unchanged and the variable unit costs will be maintained in real terms. No significant increases are foreseen in average consumption level per user<sup>10</sup> nor will any cost savings be generated by management by the private operator<sup>11</sup>, making the proposed scenario rather conservative. The possible savings generated by further efficiency enhancements could be channeled towards reducing the state governments participation in the company's investment plan.

## **2. Ability of the State of Goiás to provide the counterpart contribution and counter-guarantee**

- 5.30 The ability of the State of Goiás to act as guarantor for the counterpart contribution and simultaneously hold direct responsibility for the contribution of a portion of the same, estimated at US\$25 million, was analyzed from the standpoint of its resource-generation capacity, taking into account as well the proceeds from the privatization of the electric company *Companhia Energética de Goiás* (CELG), which by law must be used in part for infrastructure investments.
- 5.31 Financial projections were run for the State of Goiás using the same growth assumptions for the state's GDP, inflation and fiscal performance implicit in the latest Fiscal Adjustment and Restructuring Program signed with the State. The projections show that the state has sufficient resources to cover the entire counterpart contribution for the program, if necessary. Pursuant to Law 13,707 of 11 August 2000, 18% of the net proceeds from the privatization of CELG, after making the deductions stipulated under said legislation, is to be divided up, upon

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<sup>10</sup> Except for those mentioned earlier in the presentation of the scenarios for the financial projections, which remain below normal consumption levels for this type of service.

<sup>11</sup> Except for the targets to reduce unaccounted-for water.

completion of existing construction, between the payment of the counterpart for a roads program with the World Bank and the payment of roughly US\$21 million in counterpart for the program presented here.

- 5.32 The commitment by the State of Goiás to contribution its part of the local counterpart has been formalized in the request it submitted to COFIEIX to carry out this operation, the CELG privatization legislation, the internal relations with SANEAGO, and the guarantee contract with the Bank.
- 5.33 The counter-guarantee that the State of Goiás is to present to the federal government was deemed to be viable in light of: (i) the financial projections run; and (ii) the inclusion of this operation in the Fiscal Adjustment and Restructuring Program. In addition, in October 2001 the Federal Senate authorized the State of Goiás to sign a loan for external borrowing in the amount of US\$65 million for a roads program with the World Bank, guaranteed by the federal government. This implies that there will be no major problems with the processing of this operation in the Senate.

#### **F. Benefits**

- 5.34 The program's main benefit with improved drinking water supply and basic sanitation in the city of Goiânia. From residents' standpoint, this will mean better continuity of drinking water service thanks to the dam that will be built on the João Leite River; better coverage of the water and sewerage systems as the result of their expansion under the program; and better disposal of wastewater thanks to the São Domingos and Terezópolis treatment plants. Moreover, the component on operational improvements and private-sector participation in service delivery will ensure sustainability of the higher quality levels as well as gradual improvements in the same, placing SANEAGO in a suitable position to undertake new projects in the future. The end impact of these direct benefits on the population of Goiânia is expected to be lower incidence of water-borne diseases.

#### **G. Risks**

- 5.35 The program poses two types of risks: (i) in terms of service quality and their impact on the population, there is the risk that program benefits will be undermined by improper management of water resources by the State of Goiás, by the presence of uncontrolled dumping in water sources, and by the lack of oversight by the regulatory body; and (ii) in terms of enhanced service efficiency, there is the risk that this will not be achieved if it is not possible to bring in the private sector to bring a private operator to manage the company.
- 5.36 To mitigate the first risk, work is under way in parallel to implement and strengthen the AGR through technical cooperation to develop the regulatory framework for the sanitation sector in the state of Goiás (ATN/MT-6003-BR). To mitigate the second

risk, a process has been launched to prepare bid documents in parallel with the program's preparation, with very close monitoring of the process by the Bank. The model for private-sector participation being proposed here has been discussed amply with SANEAGO's board of directors and has its full backing. The bid specifications are being drafted with special attention to defining the responsibilities of the operator and specifying the service features, with an eye to minimizing the risk perceived by potential bidders and thus foster a greater response.

# **GOIÂNIA WATER AND SANITATION PROGRAM (BR-0351)**

## **LOGICAL FRAMEWORK**

<b>OBJECTIVE</b>	<b>INDICATORS</b>	<b>MEANS OF VERIFICATION</b>	<b>ASSUMPTIONS</b>
<b>GOAL</b> To improve sanitation conditions for residents of Goiânia by upgrading water supply and sewerage services.	Community approval indices for the services exceed 80%.	Annual socioeconomic surveys	Economic and social conditions remain stable
<b>PURPOSE</b> To reduce the incidence of water-borne diseases in Goiânia	By the end of 2007, the number of hospitalizations for water-borne diseases is reduced by 5% with respect to 1995, when there were approximately 22,529 hospitalizations.	Annual statistics of the Health Surveillance Center of the Health Department of the State of Goiás and the National Health Foundation.	The public health system operates under normal conditions and other factors that impact the health conditions of the population do not deteriorate.
<b>CONSTITUENT PROJECTS</b>  1. Project to improve the drinking water production system.  2. Project to improve the water quality of rivers flowing through Goiânia.  3. Project to make service delivery more efficient.			

OBJECTIVE	INDICATORS	MEANS OF VERIFICATION	ASSUMPTIONS
<b>PURPOSE OF PROJECT 1</b> Increase and improve the continuity and reliability of the water supply in Goiânia.	By the end of 2007, there is 24-hour continuous service 365 days a year for 90% of the 800,000 users in Goiânia.	Daily service quality statistics of SANEAGO	The regulatory agency monitors service quality.  Water resource management in the affected basins is adequate.
<b>RESULTS</b> System of regulation and storage of drinking water is placed into operation.  Reductions in service interruptions and rationing during dry seasons.	By the end of 2007, the percentage of stored water with respect to the volume of water produced daily is no less than 30% (the current figure is 0%).  By the end of 2007, the amount of water available in the system per inhabitant per day is no less than 150 liters at all times and in all service areas in the city (the current figure is 125 liters).	Monthly production statistics of SANEAGO  Monthly production statistics of SANEAGO	There are no prolonged periods of drought.  The population makes rational use of the service.
<b>ACTIVITIES</b> Construction of a new water intake in the João Leite system and construction of a conveyance system for the conveyance of raw water. Upgrading of the treatment plant and construction of storage tanks.	<b>BUDGET</b> Contracting of works: US\$42.8 million.  Contracting of works: US\$15.8 million.	Six-month progress reports and program financial statements.	Contractors satisfactorily comply with works construction contracts.

OBJECTIVES	INDICATORS	MEANS OF VERIFICATION	ASSUMPTIONS
<b>PURPOSE OF PROJECT 2</b> Improve the water quality of rivers flowing through Goiânia.	By the end of 2007, the level of BOD and DO in the rivers flowing through Goiânia is 20 mg/l and 6 mg/l respectively (the current figures are 60mg/l and 2mg/l, respectively).	Monthly service quality statistics of SANEAGO	Other factors that impact the quality of river water do not deteriorate (such as uncontrolled dumping).
<b>RESULTS</b> Coverage of sewerage systems is expanded.  Wastewater treatment system in the São Domingos and Terezópolis areas operating.	By the end of 2007, 19,481 new subscribers have been added to the sewerage service system. By the end of 2007, the São Domingos plant is treating wastewater at a rate of 121 l/s.	Six-month commercial statistics of SANEAGO.  Monthly operational statistics of SANEAGO systems.	The population has the resources to connect to the service.
<b>ACTIVITIES</b> Construction of sewerage systems in Caverinha and São Domingos.  Construction of the Terezópolis treatment plant.	<b>BUDGET</b> Contracting of works: US\$15.3 million  Contracting of works: US\$1 million.	Six-month progress reports and program financial statements.	Contractors satisfactorily comply with works construction contracts.

OBJECTIVES	INDICATORS	MEANS OF VERIFICATION	ASSUMPTIONS
<b>PURPOSE OF PROJECT 3</b> Make service delivery more efficient.	By the end of 2007, a new management model has been established in the company through the hiring of a private operator.	Inventory of systems set up in SANEAGO, with details on their impact on the structure of the company, the design of processes, and the decision-making mechanisms.	Private operators are interested in assuming responsibility for managing service. There is political support for hiring the private operator.
<b>RESULTS</b> Existing resources optimized.  Customer service is improved.  The financial capacity of SANEAGO is improved.	By the end of 2007, the percentage of unaccounted-for water is 28% as compared with the current level of 34%.  By the end of 2007, a new customer care service is in place and the percentage of user complaints is under 2%. SANEAGO is able to earn revenues covering at least 120% of O&M costs and debt service each year.	Monthly operational statistics of SANEAGO.  Monthly commercial statistics of SANEAGO.  Financial statements of SANEAGO.	The operator conducts its activities normally and is supported by the rest of the SANEAGO structure. The regulatory agency monitors the private operator's activities.
<b>ACTIVITIES</b> Consulting in support of hiring the private operator.  Payments to private operator (fixed component). Equipment and consulting to improve efficiency and specifically to reduce the present level of unaccounted-for water.	<b>BUDGET</b> Contracting of services: US\$0.2 million.  Contracting of services: US\$2.5 million. Procurement of meters and equipment, and contracting of services: US\$10.3 million.	Six-month progress reports and program financial statements.	The bidding procedures for consulting services are successfully completed and execution and the final outcomes are satisfactory.



Provisional Procurement Schedule						
	Number of Bids	Total Cost (US\$ milions)	Financing		Type of Bidding	Quarter of Publication
			IDB	Local		
<b>1. First Group</b>						
Studies and projects	3	0.3	0.0	0.3	LCB	II / 02
Preparation, management bid	1	0.2	0.0	0.2	DC	II / 02
Supervision of work	1	1.9	0.0	1.9	(*)	
Executing unit	1	1.05	0.65	0.40	ICB	II / 02
João Leite dam	1	29.25	15.0	14.25	ICB	I / 02
Management contract	1	2.5	2.25	0.25	ICB	I / 03
Auditing	1	0.2	0.19	0.01	LCB	IV / 02
<b>2. Second Group</b>						
Conveyance of raw water	1	13.54	6.77	6.77	ICB	IV / 02
Improvements in water treatment and distribution	1	11.8	5.9	5.9	ICB	I / 03
Environmental mitigation measures	5	2.98	1.49	1.49	LCB	III / 02
Terezópolis sewerage system	1	1.0	0.5	0.5	LCB	IV / 02
Operational improvements I	2	1.7	1.0	0.7	LCB	IV / 02
<b>3. Third Group</b>						
Operational improvements II	2	2.0	1.7	0.3	ICB/LCB	II / 03
Rehabilitation of distribution networks	1	4.0	2.0	2.0	LCB	II / 03
<b>4. Fourth Group</b>						
Sewerage system, Caveirinha	1	8.4	4.2	4.2	ICB	II / 03
Sewerage system, São Domingos	1	6.9	3.45	3.45	ICB	III / 03

DC: Direct contracting 1  
 ICB: International competitive bidding 10  
 LCB: Local competitive bidding 12  
 (\*) Addition to existing contract 1