

DRINKING WATER SUPPLY AND SANITATION IN SMALL COMMUNITIES

(PR-0118)

EXECUTIVE SUMMARY

Borrower:	Republic of Paraguay		
Executing agency:	Servicio Nacional de Saneamiento Ambiental [National Environmental Sanitation Service] (SENASA)		
Amount and source:	IDB (OC):	US\$12.0 million	
	Local:	US\$ 5.1 million	
	Total:	US\$17.1 million	
Financial terms and conditions:	Amortization period:	25 years	
	Grace period:	5 years	
	Disbursement period:	5 years	
	Interest rate:	variable	
	Inspection and supervision:	1%	
	Credit fee:	0.75%	
	Currency:	Currency pooling	
Objectives:	<p>The general objective of the program is to contribute to the improvement of health conditions in small communities in Paraguay through the provision of drinking water and basic sanitation services.</p> <p>The specific objectives of the program are: (i) to extend the coverage of drinking water and basic sanitation systems to small communities of up to 3,000 inhabitants that currently lack such services and to assure their sustainability; (ii) to promote the extension of services to indigenous communities through the execution of a pilot component to put in place 10 systems in these communities; and (iii) to strengthen the institutional framework for the expansion and administration of services in order to accelerate present and future increases in coverage.</p>		
Description:	<p>These objectives will be pursued through three program components. The first two have to do with the expansion of the drinking water and basic sanitation systems and the third, with strengthening of the institutional structure for the expansion of services under the existing legal framework. The descriptions and estimated direct costs of these three components are presented below. In addition to these direct</p>		

costs, US\$3.1 million will be needed for administration and management, US\$300,000 for contingencies, and US\$1.7 million for financing costs, bringing the total cost of the program to US\$17.1 million.

- 1. Drinking water systems for small communities (US\$11 million):** The aim of this component is to bring drinking water service to small rural communities that currently lack such service and to implement a sustainable system of administration and maintenance in each community. The average population of these communities is around 750, and the cost per inhabitant for the systems would be around US\$160, which includes both a drinking water system with house connections and individual solutions for the disposal of wastewater. This component also includes community development activities needed to promote rational and efficient water use and creation and training of the entities responsible for operating the systems. This component has been designed to target 100 communities, with a total estimated beneficiary population of 75,000.
- 2. Drinking water systems for indigenous communities (US\$400,000):** This component will serve as a pilot experience. Its objective is to construct drinking water systems for 10 indigenous communities in the Chaco region and implement a sustainable management and maintenance system in each community. The population that will benefit from this component is estimated at 2,000. Like the preceding component, this component will include the community development activities needed to promote rational and efficient water use and creation and training of the entities responsible for operating the systems.
- 3. Institutional strengthening for the expansion of services (US\$600,000):** This component will seek to strengthen SENASA's capacity in its role as promoter of the expansion of drinking water and sanitation services in accordance with the current legal framework. In particular, support will be provided to SENASA for: (i) promotion of associations of sanitation boards and the design of schemes to facilitate proper operation and maintenance of the services by their members; and (ii) design and implementation of the necessary procedures and controls to ensure systematic collection of payments on loans granted to sanitation boards.

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

The Bank's strategy in Paraguay is geared toward supporting efforts to achieve accelerated and sustainable economic growth in the long term in order to meet the social needs of the population and help reduce poverty and inequality. The principal areas of action are: (i) *development of the production structure and protection of the environment* in order to promote sustainable development and effective participation by Paraguay in the regional integration process; (ii) *reform of the State* with the objectives of strengthening its role as regulator and promoter of economic and social development, improving its efficiency in the delivery of basic social services, and enhancing governance; (iii) *rural development*, promoting integrated development in order to bring about enduring improvements in living standards among the rural population, reduce rural poverty, and increase the potential for growth of the economy; and (iv) *modernization and reform of the social sectors* in order to contribute to the reduction of poverty and improve the quality of life for the population.

The program proposed here will clearly contribute to the implementation of this strategy, since it is aimed at improving quality of life in the beneficiary communities. It fits primarily within the area of reform of the social sectors, in particular the drinking water and sanitation sector, inasmuch as it seeks to increase the coverage of services and improve their quality.

**Environmental
and social
review:**

As part of the program preparation process, an analysis of environmental and social impacts was carried out. The draft version of this document was made available to the public for comment on 9 November 2000 and was sent to the Public Information Center (PIC) on 1 December 2000. The preparation of an environmental impact assessment (EIA) was not required.

The environmental impact of the program will be generally positive, as it will enhance health conditions in the beneficiary communities. The negative impacts will be minimal and will occur mainly during the system construction phase. Inclusion of the necessary mitigation measures in bidding documents will be a prerequisite for opening the bidding on all construction works.

With regard to social impact, consulting services were retained to identify communities that might participate in the program and to lend the necessary support for the development of the associations and sanitation boards that would be responsible for the systems. This consultancy also included a gender analysis in the identified communities, which sought to ascertain the roles of men and women in the provision of the service with a view to promoting a framework

for equitable participation in all activities of the program. Another consultancy identified indigenous communities that might participate in the program and provided support to make that participation possible, both in regard to technical aspects and social concerns.

The Operating Regulations for the program include annexes on environmental management of the program and community development, gender, and indigenous communities, which are the result of the aforementioned consultancies.

Benefits:

The program is expected to have a positive impact, since increased access to drinking water and sanitary sewerage services will improve levels of health and quality of life for the beneficiary population. In particular, the program will benefit the country's poorest populations, which are distributed across a wide geographic area. Its effects will also extend to indigenous communities in the case of the pilot component. The total beneficiary population for the program is estimated at 77,000. The program will promote the active involvement of women in program activities and a gradual increase in their participation on the sanitation boards.

Risks:

There are three main risks to the program's success:

- (i) SENASA's capacity to channel the program funds to the sanitation boards together with the funding already available from the International Bank for Reconstruction and Development (IBRD) without one operation interfering with the other. **Mitigation:** Harmonization of the program regulations with those of the IBRD operation already in progress, and support from a private firm in the execution of the program.
- (ii) Sustainability of the systems after they are constructed and turned over to the sanitation boards. **Mitigation:** The rates to be applied by the sanitation boards will be sufficient to cover all the costs of the services, as well as service of the debt to SENASA; the construction works will be carried out with participation from the community in order to foster a sense of ownership in the systems; and private-sector participation in management of the systems will be facilitated.
- (iii) Sustainability of the current system of service promotion used by SENASA. **Mitigation:** Promotion of the formation of associations of sanitation boards to relieve SENASA of its technical support functions after transfer of the systems, and strengthening of SENASA's capacity for the recovery of loans granted to sanitation boards.

Special contractual clauses:**Prior to the first disbursement:**

- (i) Evidence that the Operating Regulations for execution of the program have entered into force in accordance with the terms agreed with the Bank (see paragraph 3.3).
- (ii) Evidence that the contract with the program management firm (PMF) that will assist SENASA in executing the program has been signed (see paragraph 3.10).
- (iii) Evidence that the borrower has opened a special bank account for the exclusive purpose of disbursing the loan and that SENASA has opened two bank accounts for the administration of the loan and counterpart funds (see paragraph 3.13).

Other special conditions during execution:

- (i) Signature of the agreements between SENASA and the sanitation boards, as a condition for calling for bids for the construction works (see paragraph 3.11).
- (ii) Application of the environmental mitigation plan by the PMF for each specific project and inclusion of the corresponding mitigation measures in the bidding documents, as a condition for calling for bids for the works (see paragraph 3.23).
- (iii) Verification that the rates to be charged by the sanitation boards are sufficient to cover all costs of the services and also service the debt to SENASA, as a condition for project eligibility (see paragraph 5.16).

Poverty-targeting and social sector classification:

This operation qualifies as a social equity enhancing project, as described in the indicative targets mandated by the Bank's Eighth Replenishment (document AB-1704). Furthermore, this operation qualifies as a poverty-targeted investment (PTI), since the percentage of low-income beneficiaries is 71%; however, the borrowing country will not be using the 10 percentage points in additional financing because it is not necessary, given the structure of counterpart funding implicit in the current financing scheme for the systems with which this operation is concerned.

Exceptions to Bank policy:

None.

Procurement: All bidding and contracting for goods, services, and works will be carried out by SENASA in accordance with the Bank's rules and procedures. International competitive bidding will be required for procurements valued at US\$250,000 or higher in the case of goods, US\$2,000,000 or higher in the case of construction works, and US\$200,000 or higher in the case of consulting services. Bidding for items valued at under these amounts will be carried out in accordance with national legislation, which is compatible with the Bank's procedures. The projects for construction of the various systems will be grouped in three packages of 30, 40, and 30 systems for which calls for bids will be issued in the second, third, and fourth years, respectively, in accordance with the procurement schedule presented in Annex II. Bidders will have the option of bidding on all or only some of the works included in each package. Contracting for consultancies will be carried out in conformity with the Bank's rules and procedures.

I. FRAME OF REFERENCE

A. Socioeconomic situation

- 1.1 Paraguay has a population of approximately 5 million inhabitants, 54% of whom live in urban areas (any area with a population of more than 4,000 is considered urban) and 46% reside in rural areas. The indigenous population makes up approximately 1% of the total population and comprises 17 ethnic groups belonging to five major language families.
- 1.2 According to official figures, around 32.1% of the population lives in poverty, with 17.3% living in extreme poverty. These poverty levels are linked to low levels of education and development in rural areas, which is a result of lack of access to means of production and basic social services such as health care, education, and sanitation. The uneven incidence of poverty in rural and urban populations is reflected in a rural poverty rate (42.5%) that is almost double the rate in urban areas (23.1%); the rate of extreme poverty in rural areas (28.9%) is four times the rate found in urban areas (7.3%).
- 1.3 As for the economic situation, the country made gains in 1999 with respect to the previous year, with GDP growth of 0.5% (versus -0.4% in 1998). Nevertheless, Paraguay has experienced little economic growth over the last decade, resulting in steady erosion of per capita income, which by 1999 had not risen above 1980 levels. This situation can be explained by three factors: (i) a sharp reduction in trilateral trade activity as a result of the liberalization of trade regulations in Brazil and Argentina and tighter customs controls at the border; (ii) a slowdown in the growth of agricultural production; and (iii) low investment productivity.
- 1.4 The new Paraguayan government, which came to power in August 1999, hopes to make the agricultural and infrastructure sectors the focus of development efforts over the next few years. However, in order to achieve this development it will be necessary to overcome a series of challenges: at the macroeconomic level a way must be found to reduce the existing fiscal deficit¹ without hindering economic recovery, while in the social sphere action is needed to alleviate rural poverty and improve equity. This operation will address mainly these latter challenges.

B. The drinking water and sanitation sector in Paraguay

1. Coverage of drinking water and sanitation services

- 1.5 The Paraguay River is the source for the drinking water system of Asunción. In the rest of the country, the population relies on individual solutions to access underground water sources. Coverage levels for drinking water and sewerage services are among the lowest in Latin America—53% and 24%, respectively, in

¹ In 1999 the nonfinancial public sector registered a deficit equivalent to 1.8% of the GDP.

urban areas and 20% and 5% in rural areas. Moreover, these coverage figures do not reflect problems with the continuity and quality of the services or the population's level of knowledge about how to utilize them appropriately. Taken together, the existing deficiencies have created a situation of precarious health conditions and high incidence of waterborne diseases.

2. Legal, institutional, and financial aspects of the sector

a. Legal framework

- 1.6 The legal framework applicable up to now has been rather fragmented. The principal legal provisions relating to drinking water and sewerage services were set out in the Health Code (Law 836, enacted in 1980), Article 2 of which concerns health and the environment. Under the Health Code, primary responsibility for establishing and overseeing health policy is entrusted to the Ministry of Public Health and Social Welfare (MSPBS), which was created in 1936. In addition to its public health functions, the MSPBS carries out programs in the areas of environmental sanitation and eradication of communicable disease vectors. In particular, the MSPBS is empowered to (i) set tolerance limits for emission or discharge of pollutants into the air, water, and soil; (ii) establish standards for labor, industrial, commercial, and transport activities; (iii) promote programs aimed at anticipating and controlling environmental pollution; (iv) conduct periodic environmental assessments to detect possible deterioration in air, water, soil, and food quality.
- 1.7 Recently, with the support of the Bank, a new law was developed and adopted: Law 1614 of 2000, or the General Law on the Regulatory and Rate Framework for Public Drinking Water Supply and Sewerage Services (see paragraphs 1.19–1.23). This law unifies the legal provisions relating to the sector and calls for the creation of the Ente Regulador del Servicio Sanitario [Sanitation Service Regulatory Entity] (ERSSAN), which will be responsible for establishing the regulations applicable to the sector, supervising service suppliers, and ensuring compliance with the legislation and other applicable regulatory provisions.

b. Service suppliers

- 1.8 At an operational level, the sector relies on two public entities for the supply of drinking water and sewerage services: Corporación de Obras Sanitarias [Sanitary Works Corporation] (CORPOSANA) and Servicio Nacional de Saneamiento Ambiental [National Environmental Sanitation Service] (SENASA). The former, an agency of the Ministry of the Interior, serves the metropolitan area of Asunción and other cities with a population of more than 10,000.² The latter, an agency of the

² This figure was 4,000 until the approval of Law 1614 in 2000.

MSPBS, provides drinking water and sewerage services to smaller communities with fewer than 10,000 inhabitants.

- 1.9 CORPOSANA was created by Law 244 of 1954, which assigned it the functions of developing projects, carrying out works, and operating and maintaining the drinking water and sewerage services in the Asunción metropolitan area. Law 1095 of 1966 expanded its sphere of action to all cities in the country and also gave CORPOSANA responsibility for the design, construction, operation, and maintenance of storm drainage systems. Today, CORPOSANA serves a population of approximately one million inhabitants, with a total of 215,000 connections between Asunción and another 26 communities.
- 1.10 SENASA is a technical agency of the MSPBS, created by Law 369 of 1972. Its functions are to plan, promote, and oversee environmental sanitation programs, including drinking water and sanitation services. SENASA does not supply such services directly, however; instead, it promotes their supply through sanitation boards, which are entities governed under private law, whose members are chosen by the communities in which they are located. The creation and implementation of the sanitation boards is accompanied by community development activities which are essential to ensure the proper operation of the systems and the supply of services after the construction phase. As a result of the work that SENASA has undertaken since 1972, today sanitation boards manage more than 400 systems, which supply a population of approximately 600,000, with a total of 123,000 connections. These boards bill an average of US\$13,500 per year. The rates charged vary widely, both in amount and in terms of rate structure, since they are set by each individual sanitation board, but the average monthly charge per connection is estimated at 3 or 4 dollars.
- 1.11 Completing the institutional overview of the sector, there are almost 400 private companies that supply water mainly in periurban areas not served by CORPOSANA. In general, these are small suppliers, with an average of 50 to 500 connections. Once the urban market becomes saturated, these companies have a natural area for expansion in surrounding rural areas. These private suppliers serve a population of approximately 350,000, with a total of 70,000 connections.

3. Current financing scheme for rural systems

- 1.12 As noted above, SENASA promotes the creation of sanitation boards, which are entities governed by private law whose members are chosen by the community. SENASA come to an agreement with the community regarding the type of system to be constructed, the way in which it will be financed, and the rates that consumers will pay in order to assure the sustainability of the service. SENASA then contracts for the construction of the system, which it subsequently turns over to sanitation boards for operation and maintenance. The sanitation board bills users to cover the costs of operation and maintenance and debt service. The payments that sanitation

boards make to SENASA for debt service are deposited into an account which can be used only for the construction of new systems.

- 1.13 The typical financing conditions included in the contract between SENASA and the sanitation boards for the construction of water systems are as follows: (i) a cash contribution from the community amounting to 5% of the cost of the system before construction begins; (ii) a 10% cash contribution³ from the community during construction; (iii) an in-kind contribution from the community (land and labor) of 15%; (iv) a contribution from SENASA for the difference, 40%–60% of which in the form of a subsidy, depending on the socioeconomic characteristics of the community.
- 1.14 Under the current financing scheme, it is left up to the beneficiaries to find solutions for wastewater disposal. These solutions generally consist of cesspools which are dug on the beneficiary's land. However, in the case of larger, consolidated sanitation boards that are interested in constructing a wastewater collection and disposal system, SENASA also provides support in the form of a loan equal to 30% of the value of the works and a 10% investment subsidy. The remainder of the costs are assumed by the sanitation boards.
- 1.15 As for the rates charged for services, the financing agreements between SENASA and the sanitation boards stipulate that the sanitation boards are to generate sufficient resources to cover all operating costs, repairs and replacement of parts, and service on the debt to SENASA. The rates are set by the sanitation board in mutual agreement with SENASA.

4. Current subsidy scheme

- 1.16 The current SENASA subsidy scheme was put in place under a program of the International Bank for Reconstruction and Development (IBRD) currently in progress (see paragraph 1.27) and has the following characteristics:

Objective	To increase the coverage of drinking water services
Modality	Direct supply subsidy in the form of investments to permit extension and improvement of the quality of services
Amount	Variable: between 40% and 60% of the initial investment; a minimum initial contribution of 30% is required from the community, half in cash and half in kind (land and labor)
Criteria for deciding the subsidy amount	Socioeconomic level of the community as determined by a socioeconomic survey

- 1.17 The current subsidy scheme is justified by the fact that most of the systems are small in scale, which results in relatively high unit costs for the provision of the

³ May be reduced to 5% in the case of the poorest communities.

services. That, combined with the low socioeconomic level of the communities, leads to a situation in which the vast majority of users cannot afford to pay for services. The scheme takes into account operating costs, each community's ability to pay, and the debt service on the loan from SENASA to each sanitation board.

- 1.18 In applying the subsidy scheme, SENASA has a certain amount of discretion with regard to the percentage awarded to each community. The following procedure is used: (i) SENASA carries out a socioeconomic survey, which mainly assesses level of income and water consumption in the community; (ii) based on these elements, SENASA establishes a rate, taking into account that the total cost of supplying the service will include operating and maintenance costs plus debt service, which represents around 30% of the total cost of the necessary investments; (iii) this total cost divided by the number of project beneficiaries yields the basic rate applicable to the community. If the resulting rate is considered excessive, SENASA may adjust the percentage of the total cost to be recovered through the rate. Otherwise, the amount to be contributed by users is adjusted.

C. The new regulatory framework and the government's priority

- 1.19 The Bank, through technical cooperation ATN/ MT-4865-PR, is supporting the Government of Paraguay in its efforts to establish the legal and institutional framework for the sector and strengthen the corresponding regulatory entity, separating policy-setting, regulatory, and service-delivery functions.
- 1.20 The General Law on the Regulatory and Rate Framework for Public Drinking Water Supply and Sewerage Services (Law 1614 of 2000), enacted in November of 2000, establishes that the State is the owner of the services and reaffirms SENASA's responsibility to promote services, execute works, and provide organizational, administrative, and technical assistance to communities. This law also establishes the possibility that service may be provided by suppliers other than the State under two modalities: licensing and concession. Licensing applies only to communities with fewer than 2,000 inhabitants, while concession applies to all communities. In addition, the law establishes that the right to supply services will be awarded to a concessionaire or licensee through competitive bidding, which is not necessary when the suppliers are sanitation boards. In the case of current private suppliers, the law gives them an automatic right to obtain a license from the service owner for a period of ten years.
- 1.21 As noted above, the new law provides for the creation of the Sanitation Service Regulatory Entity (ERSSAN) as an autonomous, legally recognized entity under the executive branch of government. ERSSAN's functions will be regulation of the supply of services, supervision of the level of quality and efficiency of those services, protection of the interests of the community and users, and verification of the correct application of the relevant legal provisions.

- 1.22 The provisions of the new legal and institutional framework are compatible with the design and the operation presented in this document. In this respect, it is worth noting that (i) the new law does not modify the functions of SENASA in so far as its responsibilities and functions for the promotion of services are concerned, nor does it modify the provisions relating to the sanitation boards, which are the entities involved in this program; and (ii) the private-sector participation envisaged under this program has been designed to ensure compliance with the requirements established by the law for the provision of services by the private sector in small communities under the licensing modality.
- 1.23 The government's priority is to increase the current low levels of coverage, especially in rural areas. A study commissioned by the MSPBS and conducted by the Pan American Health Organization in 1998 estimated that investment amounting to around US\$825 million would be needed to achieve, by the year 2010, 80% coverage for water supply and 60% for sewerage in urban areas and 60% and 45% coverage, respectively, in rural areas. By way of reference, investment in the sanitation sector as a percentage of GDP in recent years has ranged between 0.30% and 0.39%. Achieving the aforementioned coverage objectives would mean raising this percentage above 1%. It is unlikely that all this investment could be channeled through the existing institutions (CORPOSANA and SENASA). It is therefore crucially important to put in place the new legal framework in order to open the sector to private investors who are in a position to contribute the resources needed to achieve the coverage goals.

D. The Bank's country strategy

- 1.24 The Bank's strategy is geared toward supporting efforts to achieve accelerated and sustainable economic growth in the long term in order to meet the social needs of the population and help reduce poverty and inequity. The principal areas of action are: (i) *development of the production structure and protection of the environment* in order to promote sustainable development and effective participation by Paraguay in the regional integration process; (ii) *reform of the State* with the objectives of strengthening its role as regulator and promoter of economic and social development, improving its efficiency in the delivery of basic services, and enhancing governance; (iii) *rural development*, promoting integrated development in order to bring about enduring improvements in living standards among the rural population, reduce rural poverty, and increase the potential for growth of the economy; and (iv) *modernization and reform of the social sectors* in order to contribute to the reduction of poverty and improve the quality of life for the population.
- 1.25 The program proposed here will clearly contribute to the implementation of this strategy, since it is aimed at improving quality of life in the beneficiary communities. It fits primarily within the area of reform of the social sectors, in

particular the drinking water and sanitation sector, inasmuch as it seeks to increase the coverage of services and improve their quality.

E. Action by the Bank and other donors in the sector in Paraguay

- 1.26 **The Bank's actions:** The Bank has played a major role in financing projects for investment in the water and sanitation sector in Paraguay through six projects and five technical cooperation operations, contributing a total of US\$160.8 million in funding. Currently under way is a program, approved in 1995, to improve drinking water supply and basic sanitation in urban areas (LO-861/ OC-PR and 862/ OC-PR, for a total cost of US\$140.0 million, of which US\$79.3 are loan funds). This program is aimed at enlarging drinking water and sewerage systems in Asunción and other cities of the country and strengthening CORPOSANA in order to improve efficiency in the delivery of services. The executing agency is CORPOSANA, and to date 65% of the program funds have been disbursed. However, the emphasis of the Bank's operations thus far has been on urban areas. Participation by rural areas have been very limited and has always occurred as part of larger rural development projects.
- 1.27 **Action by other donors:** Other international agencies and organizations have participated in the following ways: (i) The Japanese Overseas Economic Cooperation Fund (OECF) is cofinancing the program on urban potable water and sanitation mentioned in the previous paragraph (LO-861/ OC-PR and 862/ OC-PR) for US\$53.2 million; (ii) Kreditanstalt für Wiederaufbau [Reconstruction Loan Corporation] (KfW) financed a US\$3.2 million project on rural water supply systems for SENASA in four departments; and (iii) the IBRD has a project under way with CORPOSANA aimed at granting service concessions to the private sector; it has also financed three stages of the construction of rural water supply systems through SENASA for a total of US\$40.8 million, and is currently financing a fourth stage. This fourth stage of the IBRD–SENASA project is a US\$55.7 million operation designed to expand the coverage of water supply and sanitation systems in rural areas within the SENASA scheme described above (see paragraphs 1.12 to 1.15). It is expected to increase the coverage of water supply systems in rural areas from 20% to 30% and that of sewer systems from 5% to 7%. The IBRD operation opens up the possibility for private participation in the development of rural systems with a view to increasing the number of agents involved in developing these systems. However, to date no rural systems have been constructed outside of the sanitation board scheme described above.
- 1.28 **Coordination between the Bank and the IBRD:** As the preceding paragraph indicates, the two main donors in the Paraguayan water and sanitation sector are the Bank and the IBRD, which are working simultaneously and in coordination on all fronts. In relation to urban areas, the IBRD operation—which grew out of the reformulation of an existing operation—is aimed primarily at opening the way for private-sector participation in CORPOSANA, for which there is clear political will

and for which all the necessary documentation is being prepared. This process of private-sector participation is developing parallel to the execution of the Bank operation. As for rural areas, with this program the Bank is initiating an operation with SENASA along the same lines as the existing IBRD-SENASA program. Finally, with regard to the regulatory framework, the Bank has been supporting the country through the aforementioned technical cooperation (ATN/ MT-4865-PR). The IBRD has shown great interest in collaborating with the Bank in helping to define the regulatory framework for the sector, given the implications that this will have for private-sector participation in CORPOSANA.

F. Incorporation of the lessons learned from financing rural water supply systems in the country

- 1.29 An analysis of SENASA's performance, particularly in the programs financed by the IBRD, suggests the following lessons:
- a. SENASA's performance in the phase of promoting services and creating sanitation boards has been acceptable. However, without external help it does not have the means to increase the rate of growth in rural coverage to the levels sought under the government's strategy.
 - b. After the systems are built, SENASA has difficulty in providing ongoing technical assistance to the sanitation boards during the operating phase, a problem which is becoming more conspicuous as the number of sanitation boards increases.
 - c. SENASA does not have an effective methodology and procedures for collecting the debt service owed to it by the sanitation boards for the funds it lends to them. Even though the sanitation boards bill and collect from users for the services supplied, this does not automatically mean that they are current in their debt service to SENASA, which is largely due to SENASA's inefficiency with regard to collections.
- 1.30 The program proposed here, which will provide financing to enable SENASA to continue promoting services, seeks to address the foregoing problems through the following actions: (i) contracting of an external company to support and complement SENASA's efforts to prepare communities to receive services and contract for the construction of systems; (ii) support for the formation of sanitation board associations that can lend technical assistance to their members; and (iii) establishment of procedures and systematization of the collection of loan payments.
- 1.31 The program also allows for participation by the private sector in financing and operation of systems. Accordingly, the private sector could advance SENASA part of the initial contribution required from the community, serve as an intermediary in

the recovery of SENASA loans to the sanitation boards, and take responsibility for the operation and maintenance of systems. Nevertheless, it should be noted that the studies undertaken during the preparation of the operation indicate that private operators have little interest in financing and operating rural systems, even when these systems receive the same financial support as those managed and financed through sanitation boards. The majority of the program will therefore be executed under the traditional financing scheme described above.

G. Conceptualization of the program

- 1.32 The program strengthens the Bank's participation in financing drinking water systems and individual solutions for wastewater disposal in rural areas in Paraguay, which up to now had been quite limited. The proposed actions are similar to those already being carried out successfully by the IBRD, strengthening the areas in which weaknesses have been encountered, such as: (i) the weaknesses in SENASA's operating capacity, which will be addressed by contracting an outside firm to assist it; (ii) the sanitation boards' difficulties in operating systems, which will be addressed by promoting the formation of sanitation board associations; and (iii) the sustainability of the financing scheme in the future, which the program will help to ensure by strengthening SENASA's capacity to recover loans granted to sanitation boards and by introducing the private sector as an intermediary between SENASA and the sanitation boards. Both the Bank and the IBRD operations, which share the common objective of gradually increasing the coverage of services in rural areas, are consistent with the government's priorities (see paragraph 1.23).

II. THE PROGRAM

A. Objectives and targets

- 2.1 The general objective of the program is to contribute to the improvement of health conditions in small communities in Paraguay through the provision of drinking water and basic sanitation services.
- 2.2 The specific objectives of the program are: (i) to extend the coverage of drinking water and basic sanitation systems to small communities that lack such services and assure their sustainability; (ii) to promote the extension of services to indigenous communities through the execution of a pilot component to put in place 10 systems in these communities; and (iii) to strengthen the institutional framework for the expansion and administration of services in order to accelerate present and future increases in their coverage.
- 2.3 The target for the program is to increase the coverage of drinking water and basic sanitation systems in rural areas through the construction of a total of 100 drinking water supply systems to serve an estimated 75,000 beneficiaries. In addition, a pilot component for indigenous communities will include the construction of 10 systems to serve an estimated beneficiary population of 2,000.

B. Structure of the program

- 2.4 The program will comprise three components. The first two have to do with the expansion of the drinking water and basic sanitation systems and the third, with strengthening of the institutional structure for the expansion of services under the existing legal framework.

1. Drinking water systems for small communities

- 2.5 The aim of this component is to bring drinking water service to small rural communities that currently lack such service and to implement a sustainable system of administration and maintenance in each community. The average population of these communities is around 750, and the cost per inhabitant for the systems would be around US\$160, which includes both a drinking water system with house connections and individual solutions for the disposal of wastewater. This component has been designed to target 100 communities, with a total estimated beneficiary population of 75,000.
- 2.6 **Subject to the provisions of the legislation currently in force**, to complement the traditional modality for financing and management of water services that has prevailed until now, this component allows for the possibility of participation by the

private sector for those communities that so desire. This means that a private company could take responsibility for delivering services—under a contract that would set prices and quality levels—and participate in their financing.

2.7 This component, with a direct estimated cost of US\$11.0 million, will include the following activities:

- a. *Community development*, consisting of (i) educational activities in the communities to promote rational and efficient water use; (ii) support for the formation of sanitation boards and participation by the community in the construction of the systems.
- b. *Construction works*, including construction of drinking water supply systems and solutions for the disposal of wastewater.
- c. *Support for the management of water systems*, including technical training for sanitation board members in the operation and maintenance of systems under the modality of direct management and financing of those systems and support for the incorporation of the private sector in the management of services in the event that the community chooses this option rather than direct supply of the service.

2. Drinking water systems for indigenous communities

2.8 This component will serve as a pilot experience. Its objective is to construct 10 drinking water systems in indigenous communities in the Chaco region—which have already been selected—and implement a sustainable management and maintenance system in each community. The population that will benefit from this component is estimated at 2,000, and the direct cost will be US\$0.4 million. This amount includes the cost of constructing the systems and the community development activities needed to promote rational and efficient water use and the creation and training of the entities responsible for operating the systems.

3. Institutional strengthening for the expansion of services

2.9 This component will seek to strengthen SENASA's capacity in its role as promoter of the expansion of drinking water and sanitation services in rural areas. In particular, support will be provided to assist SENASA in (i) promoting associations of sanitation boards and designing and implementing frameworks to facilitate proper operation and maintenance of the services by the sanitation boards; and (ii) designing and implementing the necessary procedures and controls to ensure systematic collection of payments on loans granted to sanitation boards. The associations of sanitation boards contemplated under this component are regional forums through which the members—i.e., the sanitation boards—can provide one another with mutual support and share services such as equipment repair. They are to be financed by contributions from their members. The direct cost of this component is estimated at US\$0.6 million.

C. Cost and financing

- 2.10 The total cost of the program has been estimated at US\$17.1 million. The following table shows the distribution of this amount by source of financing and category of investment.

Program cost table (thousands of U.S. dollars)					
Categories	IDB/OC	Local		Total	%
		GoP	Beneficiaries		
Administration and Management	2,781	309	0	3,090	18.1%
Program management firm	1,800	200	0	2,000	11.7%
Supervision	900	100	0	1,000	5.8%
Auditing	81	9	0	90	0.5%
Direct Costs	8,829	1,196	1,934	11,959	69.9%
Drinking water systems	7,929	1,096	1,934	10,959	64.1%
Pilot in indigenous communities	360	40	0	400	2.3%
Institutional support	540	60	0	600	3.5%
Unallocated	270	30	0	300	1.8%
Contingencies	270	30	0	300	1.8%
Financing costs	120	1,631	0	1,751	10.2%
Interest	0	1,416	0	1,416	8.3%
Credit fee	0	215	0	215	1.3%
Inspection and supervision	120	0	0	120	0.7%
TOTAL	12,000	3,166	1,934	17,100	100.0%
%	70%	19%	11%	100%	

- 2.11 The financing matrix for the program is 70-30. The 30% local contribution will be derived from the indirect taxes included in the cost of the works and services and the contribution of the communities to the cost of the systems. With regard to the various categories of investment, the items included in each one are described below.

1. Administration and Management (US\$3.1 million)

- 2.12 This category, which accounts for 18.1% of the total cost of the program, comprises the following items:
- Program management**, which includes the cost of contracting the program management firm (PMF) which will assist SENASA during the five years of the program.

- b. **Supervision**, which includes the cost of the supervising firms that will monitor the construction of the various systems and the community development activities; they will report to the PMF.
- c. **Auditing**, which includes the cost of hiring an independent auditing firm to audit the financial statements of the program.

2. Direct costs (US\$12.0 million)

2.13 This category, which accounts for 69.9% of the total program costs, consists of the following items:

- a. **Drinking water systems**, including (i) construction of drinking water systems and individual systems for wastewater disposal by contractor companies, and (ii) support to beneficiary communities to enable them to provide in-kind contributions (in the form of labor for the installation of systems) and ensure proper operation of the systems after construction.
- b. **Indigenous communities**, including (i) construction of drinking water systems and individual systems for wastewater disposal by contractor companies, and (ii) support to beneficiary communities to enable them to provide in-kind contributions (in form of labor for the installation of systems) and ensure proper operation of the systems after construction.
- c. **Support for the expansion of services**, which includes (i) training for SENASA personnel in community organization processes; (ii) technical training for personnel of the sanitation board associations to enable them to assist the sanitation boards when necessary; (iii) design of a system for monitoring by SENASA of the evolution and performance of the sanitation board associations and the operation of the sanitation boards; (iv) design and implementation of procedures and controls for the systematic collection of the payments on the loans from SENASA to the sanitation boards.

3. Unallocated (US\$0.3 million)

2.14 This category, which represents 1.8% of the total program costs, provides for a possible rise in costs due to contingencies or increases in costs for administration and management and has been estimated at 10% of the budget for these activities.

4. Financing costs (US\$1.8 million)

2.15 This category, which accounts for 10.2% of the total program costs of the program, includes interest during the period of program execution, the credit fee, and the cost of inspection and supervision of the program by the Bank.

D. Program financing

- 2.16 The Bank will contribute approximately 70% of the total cost of the program, providing the equivalent of US\$12.0 million in ordinary capital resources, to be disbursed in various currencies according to Bank policy. The local contribution will be approximately 30% of the total program cost, equivalent to US\$5.1 million, of which US\$3.2 million will come from the borrower and US\$1.9 million from the sanitation boards that are beneficiaries of the program.
- 2.17 The loan, if approved, will be subject to the following conditions: (i) variable interest rate; (ii) credit fee of 0.75% of undisbursed loan amounts; (iii) inspection and surveillance costs equal to 1% of the total loan; (iv) disbursement period of 5 years; (v) grace period of 5 years; and amortization period of 25 years.

III. PROGRAM EXECUTION

A. Borrower and executing agency

- 3.1 The borrower will be the Republic of Paraguay, which will transfer the loan funds to SENASA, which will execute the program. SENASA will execute the program with the support of a program management firm (PMF), which will be selected by means of international competitive bidding.
- 3.2 To ensure proper execution of the program, SENASA will create within its Division of Administration and Finance an executing unit, which will consist of a general coordinator, an administrative-financial specialist, a technical-environmental specialist, a specialist in institutional development, and a specialist in procurement. This executing unit, which will have the support of the rest of the SENASA structure, will coordinate its activities with the PMF as described in the section on the project cycle below.

B. Program execution and administration

1. Operating Regulations

- 3.3 The program will be carried out in accordance with the Operating Regulations, the preliminary version of which has been agreed with SENASA. These regulations will set out, inter alia, the eligibility conditions for communities to participate in the various components; eligibility conditions for projects; the conditions for transfer of program resources to sanitation boards, with a detailed breakdown of the contributions from the communities and the subsidy levels; and the conditions for participation by the private sector in the delivery of services, where applicable. **Approval of the final version of the Operating Regulations by resolution of the executive management of SENASA will be a condition precedent to the first disbursement.**

2. Eligibility criteria for communities and projects

- 3.4 The program is designed to meet the demand of small communities for water services. To that end, a fundamental requirement for participating in the program will be the communities' agreement and organization to enable them to benefit from the program. More concretely, all communities under the jurisdiction of SENASA will be eligible if they fulfill the requirements set out in the Operating Regulations, which include, among others, the creation of a sanitation board, easy vehicular access to the community and the work area, availability of electricity, and proof of ownership of the land on which the works are to be constructed, with authorization of any necessary easements. To ensure that program resources are sufficient to serve the number of communities envisioned, eligibility will be limited

to communities of no more than 3,000 inhabitants. The 10 indigenous communities that will participate in the program were selected during the preparation phase.

- 3.5 Projects will be evaluated on the basis of the technical, economic, financial, and socioenvironmental criteria established in the Operating Regulations. The Regulations will also stipulate that the rates charged should be sufficient to cover operating and maintenance expenses and payments on the debt to SENASA.

3. Financing of systems and investment subsidies

- 3.6 SENASA will contract for works only after signing a financing contract with the sanitation board, which will establish the amount to be contributed by the community, the SENASA loan to the sanitation board, the investment subsidy, and the financing conditions and rates to be charged by the sanitation board once the systems are operational.
- 3.7 For water supply systems, the contract will establish a commitment by the sanitation board to contribute 5% of the value of the work in cash before construction begins and an additional 10% in cash during construction. SENASA will make up the difference through a 55% investment subsidy in communities with more than 150 connections and a 70% subsidy in those with fewer connection. The remainder of the SENASA contribution will be in the form of a loan. The subsidy will be provided as a non-reimbursable contribution at the time the construction contracts are signed with the contracting firms. The subsidy percentage has been determined on the basis of the socioeconomic analysis of the beneficiary communities undertaken during the program preparation phase. By way of comparison with the existing financing scheme, the same summary table presented in the background section is shown below with the proposed changes. The consistency between the two schemes is discussed in greater detail in the analysis of the program's socioeconomic feasibility (see paragraph 5.23). In the case of the indigenous communities, given the fact that this is a pilot experience and these communities have almost no capacity for payment, the community contribution will be 15% and will be in-kind; the rest will be provided by SENASA in the form of a subsidy. The SENASA loans to the sanitation boards will be in local currency with a repayment period of 10 years. The interest rate will be variable and will be equal to the monthly average of the rate charged by commercial banks on their loans in local currency—published by the Central Bank of Paraguay in its official bulletins—minus six points.

	CURRENT	PROPOSED
Objective	To increase the coverage of drinking water services	To increase the coverage of drinking water and sanitation services
Modality	Direct supply subsidy in the form of investments to permit extension and improvement of the quality of services	Direct supply subsidy in the form of investments to permit extension and improvement of the quality of services
Amount	Variable: between 40% and 60% of the initial investment; a minimum initial contribution of 30% is required from the community, half in cash and half in kind (land and labor)	55% of the initial investment in communities with more than 150 connections (70% in those with fewer connections) A 15% cash contribution will be required from the community; in-kind contributions not be reflected in the program accounting 85% of the initial investment in indigenous communities 15% in-kind contribution required; will not be reflected in the program accounting
Criteria for deciding the subsidy amount	Socioeconomic level of the community as determined by a socioeconomic survey	Population of the beneficiary communities (as an approximation of the socioeconomic level)

4. Private-sector participation

- 3.8 Participation by the private sector is an option for the community and is provided for in the Operating Regulations. The studies conducted during the preparation of the operation indicate that, in principle, the private sector is not interested in participating in the financing and management of water systems in communities as small as those targeted by the program. However, the same studies show that it would be feasible to group neighboring communities—thus gathering together a total of 700-800 inhabitants—and then contract with a single operator to serve all of them. In this case, the private sector would be interested. The program therefore includes this option, which would be subject to the same financing and subsidy conditions as in the other cases.
- 3.9 The community might find it appealing for the private sector to advance part of the cash contributions it is required to make for the construction of systems; these amounts would then be collected from users after the systems go into operation. For the private sector, this option would offer the opportunity to expand into areas other than urban areas, where private operations are currently concentrated.

C. Program management

- 3.10 The purpose of the program management firm will be to support SENASA in carrying out the program. To do so, it will carry out the following activities:
(i) intermediation to enable communities to gain access to the program;

(ii) planning, bidding, and monitoring of works; (iii) support for the implementation of the component of institutional strengthening for the future expansion of services; and (iv) financial administration and accounting for program. SENASA will remain the party responsible to the Bank and will sign the financing agreements with the sanitation boards, award contracts to bidders, sign contracts with contractors, and transfer systems to sanitation boards. The PMF will work in coordination with SENASA so as to foster the transfer of technology, and its remuneration will have a variable, performance-based component. **Signature of the contract with the PMF will be a condition precedent to the first disbursement.**

D. Project cycle and flow of funds for the program

- 3.11 The project cycle will have the following sequence: (i) the PMF will promote the program among possible beneficiary communities and will prepare and evaluate the preliminary plans for construction works and will submit requests for financing to SENASA; (ii) once the preliminary plans have been declared eligible by SENASA, the PMF will draw up the final designs and prepare the documentation for the bidding process, and it will assist the sanitation boards in signing financing agreements with SENASA (**signature of the agreements between the sanitation boards and SENASA will be a condition precedent to opening the bidding process**); (iii) once the agreements have been signed, SENASA will issue calls for bids and will evaluate the bids received with support from the PMF; (iv) after the works have been awarded, the contractors will build the systems and perform the activities in support of the community for follow-through on the labor contribution and operation and maintenance of the systems; and (v) lastly, once the works have been build, SENASA will deliver them to the sanitation boards which will be in charge of delivering the service.
- 3.12 As for the flow of program funds, SENASA, in its capacity as executing agency, will administer the loan funds, the counterpart funds from the national budget, and the counterpart funds contributed by the beneficiary communities, with which it will pay the various suppliers of works and services. The loan funds will be disbursed to a special account held by the Ministry of Finance in the Central Bank, from which they will be transferred to an account that SENASA will open for that purpose. In the case of the counterpart resources, SENASA will submit the corresponding requests to the Ministry of Finance, which will transfer the resources to another account to be opened by SENASA. This last account will also receive payments from the sanitation boards prior to and during the construction of systems. The payments received from the boards for debt service will be deposited into a special existing account at Banco Nacional de Fomento [National Development Bank]. These funds may only be used to finance new systems.
- 3.13 SENASA will have the following responsibilities: (i) establish specific, separate bank accounts for the management of the loan and local counterpart funds, and (ii) establish an effective record-keeping system for all the documentation

submitted to justify eligible expenses under the program. These records must always be available for review by the Bank and the program's external auditors. **Opening of the special account by the Ministry of Finance at the Central Bank and the bank accounts through which SENASA will channel the loan and counterpart funds will be a condition precedent to disbursement.**

E. Community involvement

- 3.14 The beneficiary communities, through the sanitation boards, will be actively involved in the process of planning, execution, operation, administration, and maintenance of the works in order to assure the program's sustainability. In the case of the indigenous communities, their particular cultural and social features will be borne in mind, both in the design and construction of the systems and in the training for effective management of the systems and proper use of water.
- 3.15 The studies on community organization conducted as part of the preparation phase point up the importance of promoting participation by women in the community assemblies to be held and in the technical training to be provided to the sanitation boards. The relationship between women and natural resources, including water, is bound up with the use of these resources in their daily lives, and women's role as the administrators of resources in the domestic sphere is well recognized. Nevertheless, in many rural communities, women are not acknowledged as fundamental participants in community assemblies owing to cultural ideas relating to gender. As a result, very few women have the opportunity to receive technical training or hold office in community organizations. With a view to promoting equitable relationships between men and women in the communities and increasing the quality of human capital from the technical and social standpoints, the Operating Regulations include specific guidelines for encouraging the active participation of the woman in communities organizations and in the training offered under the project.

F. Operation of the systems

- 3.16 The sanitation boards will be responsible for operation and maintenance of the systems. To ensure proper operation and maintenance, the program calls for the following measures: (i) participation by the community in construction, which will foster a sense of ownership of the facilities and responsibility for the service; (ii) verification by SENASA—as a prerequisite for signing the financing agreements—that the rates to be charged will cover the operation and maintenance costs; (iii) training of the sanitation boards by the construction firms themselves, as part of the community development plan; and (iv) promotion of the formation of associations of sanitation boards for the provision of technical assistance among their members.

G. Recovery of SENASA loans to sanitation boards

- 3.17 In order to ensure recovery of the loans granted by SENASA to sanitation boards, the program provides for strengthening of SENASA's collection capabilities through the implementation of effective systems, procedures, and controls. Within this new loan recovery scheme, third parties, such as NGOs, may participate as intermediaries, both in general terms and in dealings with specific sanitation boards.

H. Status of project preparation

- 3.18 This program has been prepared on the basis of the analysis of previous projects financed through SENASA. In addition, a survey was carried out to assess the interest of communities in participating in the program, and preliminary designs were drawn up for a sample of two concentrated rural communities, two scattered rural communities, and two indigenous communities. The final designs for each project financed under the program will be prepared by the PMF after verifying the eligibility of the communities and the projects.

I. Environmental and social considerations

- 3.19 As part of the program preparation process, an analysis of environmental and social impacts was carried out. The draft version of this document was made available to the public for comment on 9 November 2000 and was sent to the Public Information Center (PIC) on 1 December 2000. The preparation of an environmental impact assessment (EIA) was not required.
- 3.20 The studies identified the direct and indirect impacts that the projects will generate in the physical, biological, socioeconomic, and anthropological environments. This information was used to determine the magnitude and intensity of the socioenvironmental impacts, which are not expected to be significant, since most will be localized and temporary. Moreover, the proposed mitigation programs will be able to revert, attenuate, or mitigate any negative environmental effects, direct or indirect, that the program might have on the natural and social environment in its areas of direct and indirect influence. The mitigation and compensation measures advocated are considered feasible economically, technically, and institutionally and, with the application of those measures, the socioenvironmental balance of the program is expected to be positive. The results of the studies also led to the formulation of measures for monitoring and control of compliance with the procedures designed to mitigate and offset the adverse effects of the projects and potentiate the positive impacts.
- 3.21 As for the program's social impacts, the sanitation boards will need to play a role as the social link for local management. Their function is to administer the resources generated through the supply of water and sanitation services, ensuring that the benefits derived from the use of the systems are controlled by the community. The

efficiency and effectiveness of the sanitation boards in this task will enhance their communities' quality of life, and as they develop they will be able to share administrative knowledge with smaller or newer boards. In the indigenous communities, the water and sanitation systems will be carefully designed, taking into account the needs and unique characteristics of these populations and the objective of reducing waterborne diseases and significantly enhancing quality of life. The needs of indigenous communities for training in appropriate and sustainable use of the systems have also been determined and incorporated into the program.

- 3.22 The recommendations made by the Technical Review Group of the Committee on Environment and Social Impact (CESI/TRG) during the review of Profile II and the environmental summary on the project were explicitly dealt with in the environmental study, and the costs involved, where relevant, were determined and included. These recommendations are related to the following matters: (i) occupational safety and health; (ii) monitoring and control of water quality; (iii) impact on low-income populations of the proposed systems for setting and collecting rates for the supply of drinking water services; (iv) use of characteristic forms of community organization to ensure the supply of water; (v) assurance of respect for traditional social and cultural norms; (vi) training and education of communities in the management of systems; (vii) monitoring and supervision during execution of the projects and ex post evaluation; (viii) mitigation of environmental and social effects associated with the resettlement of community residents; and (ix) control, monitoring, and regulation of the quality of water and effluents. The project report—with all its annexes, including the draft Operating Regulations—was reviewed by CESI/TRG at its meeting on 11 December 2000.
- 3.23 As part of the environmental analysis of the program, a plan for mitigation of environmental impacts during construction was developed, with an estimated cost of US\$10,450 per system. This amount has been included in the program costs. The guidelines for mitigation of environmental impacts are included in an annex to the Operating Regulations for the program. The specific actions arising out of these measures for each system to be financed under the program will be included by the PMF in the final designs. **The inclusion of mitigation measures in the bidding documents will be a condition precedent to opening the bidding process for the construction works.** Although guidelines for population resettlement have been included in the annex to the Operating Regulations, the execution of the program is not expected to necessitate any resettlements.
- 3.24 With respect to gender considerations, during the preparation of the program a study was conducted as part of a consultancy to ascertain the roles of men and women in the provision of the service with a view to promoting a framework for equitable participation in all activities of the program. The program will promote the active involvement of woman in program activities and a gradual increase their

participation on the sanitation boards. The guidelines for this activity are included as an annex to the Operating Regulations for the program.

J. Execution period and disbursement schedule

- 3.25 The program will be executed over a five-year period. The following table shows the expected disbursement schedule.

DISBURSEMENT SCHEDULE (in thousands of U.S. dollars)				
YEAR	IDB	LOCAL	TOTAL	%
1	1,200	600	1,800	10
2	2,400	1,000	3,400	20
3	3,600	1,500	5,100	30
4	2,400	1,000	3,400	20
5	2,400	1,000	3,400	20
TOTAL	12,000	5,100	17,100	100
%	70	30	100	

K. Revolving fund

- 3.26 After all the conditions precedent to the first disbursement have been met, the Bank may advance funds from the financing for the establish of a revolving fund of up to 5% of the total cost of the program. These resources will be held in a special bank account in the name of the program. SENASA will be required to submit to the Bank within 60 days of the end of each six-month period consolidated financial statements on the resources it has utilized from the revolving fund.

L. Modality and schedule for bidding

- 3.27 All bidding and contracting for goods, services, and works will be carried out by SENASA in accordance with the Bank's rules and procedures. International competitive bidding will be required for procurements valued at US\$250,000 in the case of goods, US\$2,000,000 in the case of construction works, and US\$200,000 in the case of consulting services. Bidding for items valued at under these amounts will be carried out in accordance with national legislation, which is compatible with the Bank's procedures. The projects for construction of the various systems will be grouped in three packages of 30, 40, and 30 systems to be bid out in the second, third, and fourth years, respectively, in accordance with the procurement schedule presented in Annex II. Bidders will have the option of bidding on all or only some of the works included in each package. Contracting for consultancies will be carried out in conformity with the Bank's rules and procedures.

M. Monitoring and supervision of the program

- 3.28 Monitoring and supervision of program execution will be carried out by the Bank's Country Office in Paraguay. For that purpose, SENASA will submit to the Bank an initial report detailing the plan of work and timetable for execution of the program. SENASA will also submit to the Bank semiannual progress reports, based on the indicators set out in the logical framework. The following section contains more detailed information on these indicators.
- 3.29 The reports to be drawn up by the Country Office on the status of the loan will include an account of any problems encountered during program execution and the solutions implemented to address them. A summary of these matters will be included in the annual report on the Bank's portfolio in Paraguay.
- 3.30 The program's results will be evaluated by the Bank within 90 days of the last disbursement of the loan as part of the project completion report to be prepared by the Country Office.
- 3.31 In order to assure appropriate monitoring of the maintenance of the works, for a period of five years from the date of program completion SENASA will submit to the Bank annually, during the first quarter of the calendar year, an annual plan for operation and maintenance of the systems financed with program resources, with specific information on each of the beneficiary communities, which should include a report on the management and maintenance activities during the previous year and the current condition of the systems.

N. Performance indicators

- 3.32 The progress of the program will be evaluated on the basis of the indicators in the logical framework (see Annex I), the most important of which are shown below along with the targets to be achieved by the end of each year of the program. During the program start-up mission, in consultation with the executing agency, a second group of indicators may be established that will relate to more specific aspects of program execution, such as monitoring of the community development efforts by the PMF and the results of the pilot component with indigenous communities.

PERFORMANCE INDICATORS (cumulative values at the end of each year)					
INDICATOR	Year 1	Year 2	Year 3	Year 4	Year 5
Drinking water supply systems and individual wastewater disposal solutions constructed	5	25	60	95	110
Beneficiaries of the construction of systems	2000	15250	41500	67750	77000
Associations of sanitation boards created	1	4	7	9	10
Percentage of delinquent payments with respect to total payments due for all loans with an outstanding balance	18	16	13	11	9

- 3.33 In order to establish an appropriate baseline for evaluation of the program's impact, the supporting documentation to be prepared to demonstrate the feasibility of projects will include the incidence of waterborne diseases and infant mortality rate in each community. The value of this indicator will be updated for each of the beneficiary communities at the end of the program.

O. Auditing

- 3.34 The annual reports that SENASA will submit to the Bank, within 120 days following the close of the financial year, will include annual financial statements for the program and for SENASA. These financial statements will have been audited by an independent auditing firm previously accepted by the Bank. The auditing costs will be financed with resources from the financing. In addition to giving their opinion on the financial statements of the program and SENASA, the auditors will issue an opinion on fulfillment of the financial clauses in the loan contract with the Bank.

P. Collection of data

- 3.35 The borrower will not carry out an ex post evaluation of the program. However, in order to facilitate the availability of data for an eventual evaluation of the efficiency and effectiveness of the program in achieving the stated objectives and to utilize the lessons learned from the experience, the executing agency will submit to the Bank, as part of the final monitoring report on the program, a brief on each of the communities that benefited from the program, including the following information: (i) number of families in the community; (ii) description of the systems constructed and date on which the systems were turned over to the sanitation board; (iii) contribution and subsidy scheme for the construction of the systems; (iv) average family income; (v) rate calculation; (vi) average amount billed to each family, with an itemized breakdown of the bill; (vii) status of the debt owed by the sanitation board; and (viii) statistics on the incidence of waterborne diseases and

infant mortality rate before construction of the systems and at program completion. This information, which will be collected by the PMF, will make it possible to compare the post-program situation with the baseline established by the PMF during the project feasibility analysis (see paragraph 3.3). In the case of indigenous communities, the lessons learned from the pilot experience will be described in these reports, including information on the sustainability of the systems and the impact of improvements in the services on the size and customs of the communities, and other details.

IV. BORROWER AND EXECUTING AGENCY

- 4.1 The borrower will be the Republic of Paraguay and the executing agency will be SENASA. The borrower will transfer the resources from Bank loan, if approved, to the executing agency through the Ministry of Finance. Responsibility for the counterpart contributions will rest mainly with the sanitation boards, as the beneficiaries of the program, with a marginal amount to be contributed by the borrower.
- A. The National Environmental Sanitation Service**
- 1. Legal and institutional characteristics**
- 4.2 SENASA, an agency of the Ministry of Health and Public Welfare (MSPBS), was created by Law 369 of 1972. It was given responsibility for planning, promoting, executing, administering, and supervising environmental sanitation activities—basically, drinking water and sanitation services for communities of up to 4,000 inhabitants—in addition to other responsibilities of an environmental nature. The regulations for the application of Law 369 of 1972 were adopted later by means of Decree 8910 of 1974. SENASA's functions have been modified recently with the entry into force of new environmental legislation (Law 1561 of 2000) and the new regulatory framework for the sector (Law 1614 of 2000). With the first law, the responsibilities of SENASA with regard to strictly environmental matters, such as evaluation, monitoring, and oversight of pollution of natural resources, was transferred to the recently created Secretaría del Ambiente [Secretariat for the Environment] (SEAM). The second law increased the size of the communities under SENASA's responsibility from 4,000 to 10,000 inhabitants and transferred all regulatory functions to the Sanitary Service Regulatory Entity (ERSSAN).
- 4.3 From a more operational point of view, SENASA carries out its allotted responsibilities through promotion of the participation of communities in the supply of services through the creation of sanitation boards, with which it signs agreements for joint construction and financing of systems. After completion of the construction, SENASA turns over the systems to the sanitation boards, which take responsibility for their operation and maintenance and for the supply of services. The case of indigenous communities is slightly different, since Law 908 of 1972 establishes that systems for these communities will be constructed exclusively with budgetary resources from SENASA, with no financial obligations for the beneficiaries other than those associated with operation and maintenance of the systems.
- 4.4 SENASA's organizational structure comprises an executive director and three divisions: Administration and Finance, Drinking Water and Sanitation Systems Works, and Environmental Protection. The executive director is appointed by the

executive branch of government on the recommendation of the MSPBS and is assisted by technical, systems, legal, and auditing support units staffed by a total of 43 employees. The Division of Administration and Finance has 329 staff, distributed among the various departments within the division: finance, accounting, administration, capital assets, human resources, bidding, sanitation boards, and general sanitation. Approximately half of the staff of this division are in the department that deals with sanitation boards, which is organized by administrative regions and is responsible for providing support and supervision to the various existing sanitation boards. The executing unit for the IBRD–SENASA program is also within this department, as the executing unit for this operation will be. The Division of Drinking Water and Sanitation Systems Works has 84 staff, distributed among the following technical departments: construction, water resources, and rural and indigenous settlements. Finally, the Division of Environmental Protection has 37 staff, distributed among the department of pollution and environmental risk control and the department of environmental quality. The latter department and its staff is being moved into the SEAM in accordance with Law 1561 of 2000.

- 4.5 SENASA has been executing programs similar to the one proposed here for the IBRD since 1977, and it therefore has experience in planning projects, contracting for works, monitoring and supervising contractors, and community development. These programs have involved a considerable amount of work for SENASA, which has not only had a direct role in activities related to the construction of systems and in the design of those systems, drilling of wells, and installation of electromechanical equipment, but also in all the work of community development before, during, and after completion of the works. To lighten this workload, SENASA has recently begun to contract out an increasing number of activities to the private sector, limiting its role to supervising implementation. For the execution of this operation, the number of subcontracted activities will be increased even further, as explained below in the section on institutional feasibility of the program.

2. Financial features

- 4.6 SENASA follows a standard system of public accounting based on budget execution. The table below summarizes SENASA's financial situation in recent years. The exchange rates used were 2,727 Paraguayan guaraníes per U.S. dollar for 1998, 3,119 guaraníes per dollar for 1999, and 3,500 guaraníes per dollar for 2000.

SENASA BUDGET EXECUTION (in thousands of U.S. dollars)			
	1998	1999	2000
Personnel expenditures	2,924	2,824	2,580
Non-personnel expenditures	754	2,658	2,033
Consumables and supplies	282	422	1,573
Other expenditures	390	140	229
Subtotal current expenditures	4,350	6,044	6,415
Investment	5,903	10,272	14,623
Total budget	10,253	16,316	21,038

- 4.7 SENASA's growing activity in the promotion of new systems is reflected in the growth of its investment budget in recent years, which rose from slightly under US\$6 million in 1998 to US\$10 million in 1999 and then to US\$15 million in 2000. New systems are financed mainly through loans from bilateral and multilateral entities (the IBRD and now also the Bank) and contributions from beneficiary communities. SENASA's operating expenses are financed basically with resources from the national budget.
- 4.8 From the standpoint of financial administration and accounting, significant deficiencies exist, as a result of which the independent auditors retained under the new project with the IBRD currently under way declined to issue an opinion on the financial statements for 1998 and 1999. Some of the resources from the new IBRD project will be used to hire a consultant in accounting organization and procedures and to enable SENASA to acquire equipment and systems suited to its needs.
- 4.9 SENASA recovers up to around 30% of the costs of system construction through long-term loans to sanitation boards. Currently, SENASA has slightly more than 100 loans totaling US\$2.3 million. Delinquent and uncollected payments on that total amount to slightly under US\$0.3 million (13%). This problem is not due so much to lack of payment capacity on the part of the sanitation boards as to lack of efficiency in collections on the part of SENASA. As part of the institutional strengthening component, this program will seek to provide support with regard to procedures and systems for monitoring and collection of the delinquent portfolio.
- 4.10 The amounts paid to SENASA by the sanitation boards for debt service are deposited into an interest-bearing account in Banco Nacional de Fomento (a semi-autonomous development bank). SENASA is authorized to reutilize these funds to finance the construction of new systems, although to date it has not done so. The balance available in this account as of October 2000 was approximately US\$775,000, which is 70% higher than the balance existing in June 1999. This reflects an improvement in recovery of the portfolio of loans, due almost exclusively to SENASA's adoption of a more proactive attitude in this regard.

B. Sanitation boards

1. Legal and institutional characteristics

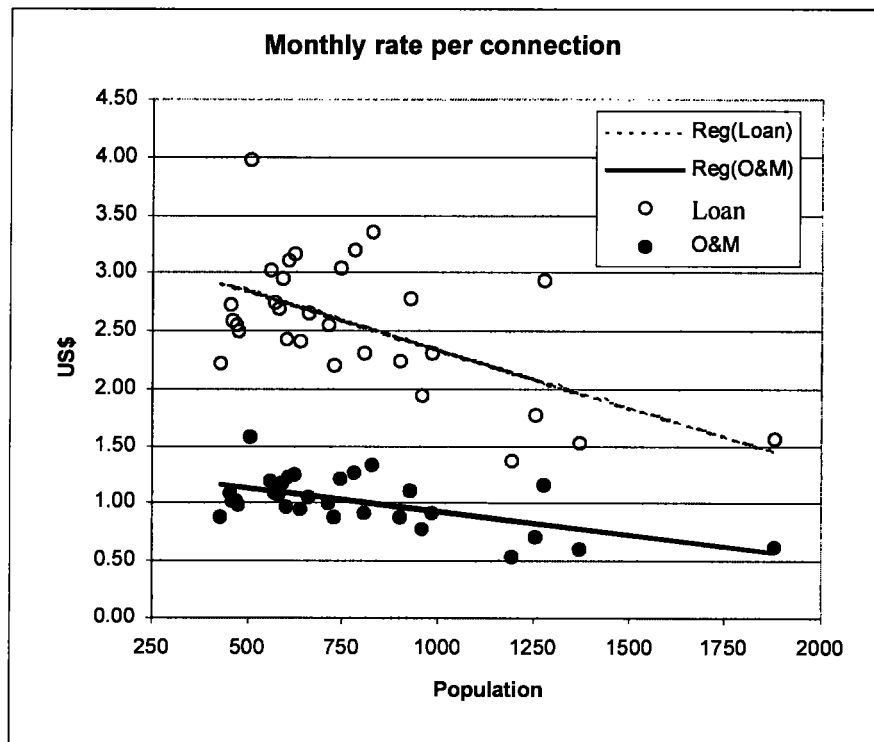
- 4.11 Law 369 of 1972 and Decree 8910 of 1974, as mentioned above, provide that SENASA is to promote in each district of the country, in collaboration with the corresponding municipal government,⁴ the organization of a sanitation board made up of residents of the community who will be users or beneficiaries of the systems. The first boards were created in 1977. Currently, there are more than 300 serving a combined population of 500,000 people. The sanitation boards are legally incorporated entities with their own bylaws. The legal arrangements for their incorporation are made by SENASA through the MSPBS.
- 4.12 Each sanitation board has an executive committee whose members are elected in a community assembly, except for one member, who is appointed directly by the municipal government. The executive committees have between 5 and 9 members, who receive no compensation of any kind.
- 4.13 The functions of the sanitation boards are: (i) to collaborate with SENASA in educating and organizing communities in relation to sanitation problems; (ii) to represent the beneficiaries and users of the services; (iii) to participate in the development and execution of local sanitation programs, contracting for construction and financing of the systems with SENASA and negotiating with community members regarding their commitments and contributions to the projects; and (iv) administering the systems and monitoring to ensure correct use and operation thereof.
- 4.14 SENASA has the obligation to provide technical and administrative assistance to the sanitation boards and supervise their activities, including possibly requiring them to submit reports and conducting inspections, for which purpose SENASA officials are to have access to the books and records of the sanitation boards, as well as to all their facilities.
- 4.15 The performance of the sanitation boards is variable and depends to a great extent on their size and age. The sanitation board of Itauguá, for example, was one of the first boards to be created; it now serves over 5,000 users and functions as a well-managed, self-sufficient public service company. At the other extreme are recently created sanitation boards that serve rural communities with 100 to 150 connections and still have very little maneuvering room, both financially and technically in case of system malfunction. These differences in size are also reflected in the resources devoted to management of the systems: the largest sanitation boards are managed by full-time professional staff, while the smallest boards have volunteer managers who often become managers by virtue of the fact that their homes are located close

⁴ The country has 220 *municipios* grouped in 17 departments.

to the facilities. Nevertheless, in general terms it can be said that the sanitation boards have performed effectively, since the systems have continued to operate and have even grown. This success should be attributed in large measure to the extensive participation of the communities in construction and operation of the systems and to the transparency of all the processes.

2. Financial features

- 4.16 To enable them to fulfill their obligations, the sanitation boards receive resources from the connection and service fees paid by community members, subsidies from national and international agencies, and grants from other sources.
- 4.17 The average amount billed by a sanitation board is around US\$13,500 per year, although this figure may vary considerably, depending on the size of the sanitation board. The rates charged vary widely, both in amount and in terms of the rate structure, since they are set by each individual sanitation board, but the average monthly charge per connection is estimated at 3 or 4 dollars. The figure below shows the relationship between size of the sanitation board and rates charged for service by amounts needed to cover the costs of system operation and maintenance and service of the debt to SENASA. The sharper upward slope of the line corresponding to loan payments as population diminishes reflects the higher relative cost of systems for smaller populations.



- 4.18 The rates for service are agreed between SENASA and each sanitation board as part of the agreement for construction and financing of the systems. This agreement specifies that the rate must be sufficient to enable the sanitation board to cover all operating costs, maintain a reserve fund for repairs and replacement of systems, and repay the loan from SENASA.
- 4.19 With regard to accounting records, again, the age and size of the sanitation board plays a decisive role in the quality and detail of its accounting. By law, each sanitation board is required to keep at least basic accounting books, which must be approved by the SENASA accountant. In the case of the largest consolidated sanitation boards, complete financial statements audited by independent accountants may be required.

V. FEASIBILITY AND RISKS

A. Technical feasibility

- 5.1 The program is considered feasible and justified from a technical standpoint because it responds to the need to address problems of public health and environmental pollution caused by non-existence or inadequacy of systems for drinking water supply and collection, treatment, and final disposal of wastewater.
- 5.2 The systems to be constructed in the beneficiary communities have been designed in accordance with both the needs of these communities and their financial and administrative capabilities. The systems will consist of a well and pump, a reservoir, house connections, and seepage pits and/or septic tanks for wastewater disposal.
- 5.3 The suitability of these systems for the communities at which the program is directed is supported by the experience of the more than 400 sanitation boards that currently exist. Moreover, as part of the program preparation process final designs were developed for a sample of communities identified as potential beneficiaries. Specifically, designs were drawn up for two concentrated rural communities, two scattered rural communities, and two indigenous communities. In all the cases, the projects were prepared in accordance with generally accepted engineering standards and principles. These designs represent alternatives that are low in cost and technically feasible and that have been extensively tested under similar conditions elsewhere in the country.
- 5.4 The operation of the systems is extremely simple. In many cases, all that is required is the operation of an electrical pump and control of reservoir level. In any case, the institutional strengthening and community development components included in the proposed program will help ensure that the works, once constructed, are properly operated and maintained.

B. Institutional feasibility

- 5.5 The basic institutional scheme that has been used up to now in Paraguay to extend services to rural areas consists of promotion of the services by SENASA, construction of systems by construction companies with community participation, and management and operation of the systems by sanitation boards. This scheme has proven successful, and today there are more than 400 sanitation boards operating systems that continue to function and in many cases are growing. However, there is a constraint which is becoming more and more apparent as the

country seeks to extend services to rural areas⁵ and the number of sanitation boards increases, namely, SENASA's physical capacity to promote services and oversee work on multiple fronts and also provide assistance to the sanitation boards once the systems are operating. It is for this reason that the program will introduce the following innovative elements in the traditional institutional scheme: (i) participation by a program management firm (PMF) in the execution of the program; (ii) increase in the responsibility of construction firms during the construction of the systems; (iii) the promotion of the formation of associations of sanitation boards; and (iv) private-sector participation. Each of these elements is explained in greater detail below.

- 5.6 SENASA will be supported by the PMF in executing the program, with the latter taking on a large proportion of the operational tasks of program execution, although final responsibility for the program and for dealings with the Bank will rest with SENASA. In particular, the PMF will serve as an intermediary in gaining access for communities to the program and will design projects, support SENASA in the bidding process for construction works, and supervise contractors. In practice, the PMF will function as an executing unit that will work for SENASA in carrying out the program and cease to exist once the program is completed. The PMF will be selected by means of international competitive bidding, which will ensure that the firm selected has the necessary technical capacity to execute the program.
- 5.7 With regard to the construction of systems, at present construction companies are being hired to carry out the works, while the in-kind contribution of the community, which mainly consists of laying the distribution lines, is provided under the direction of SENASA personnel. Since the latter activity requires an almost continuous presence in the communities and a SENASA engineer cannot assist more than two or three communities at the same time—depending on the distance between them—a bottleneck is created, which limits the number of systems that can be built at the same time. To overcome this restriction, the program proposes that responsibility for supporting the community in laying lines be shifted to the construction firm in charge of installing the rest of the system. The construction companies will also take responsibility for instructing the sanitation board in operation and maintenance of the system after construction is completed.
- 5.8 Once the systems are turned over to the sanitation boards, they take charge of their operation and maintenance, as well as the management of services, with support from SENASA, if necessary. However, again, SENASA's physical capacity to assist existing sanitation boards is limited, and the situation will become more difficult as the number of sanitation boards increases and the new sanitation boards are located at greater geographic distances from Asunción. To overcome this limitation, the program will support SENASA in the promotion of associations of

⁵ The IBRD operation currently under way already exceeds, in amount, the previous operation by 50%. The operation proposed here will extend service even further.

sanitation boards and will also provide technical training to the boards. The sanitation board associations will be private associations whose members are the sanitation boards existing in the department. Their objective is to assist their members in administrative and technical matters relating to the operation and maintenance of their systems, but in no case will they play any role in the management of individual systems.

- 5.9 Finally, the program will introduce the participation of the private sector as an option available to sanitation boards that wish to delegate the operation and maintenance of their systems and the administration of services either to the same companies that constructed the systems or to small operators. An additional advantage of this innovation is that the construction company or operator can advance to SENASA the cash contributions required from the community and then recover these contributions through the rates charged to users. The private companies would be chosen by means of shopping; in order to be considered, companies must meet minimum requirements for technical and managerial capacity.
- 5.10 These improvements in the traditional institutional scheme are expected to help surmount the limitations in capacity for execution described above. In addition, there will be an appropriate distribution of activities among the various entities involved, with a clear definition of obligations and responsibilities included in the Operating Regulations for the program and the terms of reference for the PMF, the draft versions of which have already been prepared and agreed with the borrower and SENASA.
- 5.11 The timetable for program execution has been developed bearing in mind demand from the communities for access to the program, the time required for preparation and processing of applications and projects, the time required to process bids, and the characteristics of the works. The five-year period planned for the execution of the program is considered adequate.

C. Financial feasibility

- 5.12 Seventy percent of the resources for execution of the program will come from the Bank financing; 19% will come from the borrower through the indirect taxes included in the cost of the works and services and the financial costs of the program; and 11% will come from the beneficiaries themselves through their cash contributions.
- 5.13 With regard to the flow of funds, the borrower will receive the funds from the financing through the Ministry of Finance, and will make them available to SENASA by means of the corresponding budgetary allocations. SENASA will utilize these resources to make the payments for program administration and management and, in combination with the cash contributions from the beneficiaries,

cover the cost of the construction works for the various systems. Of these construction costs, SENASA will recover 30% or 15%— depending on whether the community has more or fewer than 750 inhabitants—through loans to sanitation boards, the remainder of its contributions being written off as an investment subsidy.

- 5.14 Given this flow of funds, the analysis of the program's financial feasibility centered on the capacity of the beneficiary communities to make the required cash contributions and generate enough resources during operation of the systems to ensure the financial sustainability of the services and also service the debt to SENASA in a timely manner.
- 5.15 As regards the cash contributions from beneficiaries, in the case of drinking water services, the contribution will be 15%, which will require a special effort on the part of community members. According to the studies conducted and the information available on the systems already constructed by SENASA, the amount to be contributed is estimated at around 40% of average monthly family income. This represents a cumulative savings of approximately 6% per month over 6 months, which is considered feasible.
- 5.16 As for the sustainability of services and debt service to SENASA, at the time the financing agreement is signed between SENASA and the sanitation board, the rates applicable to the system are always calculated. These rates, which take into account both the costs of operating the systems and debt service, were analyzed in the light of the payment capacity of users, which yielded the proposed subsidy levels. The subsidy scheme is analyzed in greater detail below in the section on the socioeconomic feasibility of the program.⁶ **Verification that the rates to be charged by the sanitation boards are sufficient to cover all costs of the services and also service the debt to SENASA will be a necessary condition for project eligibility.**
- 5.17 Finally, with respect to the budgetary allocations for the external borrowing and the local counterpart contribution for which the borrower is responsible, these will be formalized at the time the loan contract is ratified by the Paraguayan Congress, and the necessary budgetary modifications will also be made at that time.

D. Economic feasibility

1. Economic evaluation of projects

- 5.18 The program will be carried out as a global multiple-works program with two components: (i) drinking water supply for small communities, and (ii) drinking

⁶ The greater the investment subsidy, the smaller the loan from SENASA to the sanitation boards and therefore the smaller the portion of the rate devoted to repayment of the loan.

water supply for indigenous communities. Since the indigenous communities component will be a pilot initiative, the economic evaluation of the program focused on a representative sample of projects for the first two components only. Based on the results of the sample analysis, the cost-efficiency parameters for evaluating other projects under the program were established.

- 5.19 For the drinking water component, the evaluation methodology used was cost-benefit analysis. The benefits were calculated on the basis of the consumer surplus and were analyzed on the basis of price elasticity of the demand for water, average water consumption per family, and operation and maintenance costs of the systems (opportunity cost of supplying water without restrictions). To that end, a demand curve was constructed using: (i) price elasticity of demand estimated by CORPOSANA, and (ii) future demand point (price/amount) obtained from the socioeconomic survey conducted by SENASA for the 200 communities participating in part III of the IBRD program. The current demand point (price/amount) was determined on the basis of surveys of a representative sample of communities identified as potential participants in the program.
- 5.20 These data, combined with the costs obtained from the projects developed by SENASA for the IBRD program and the costs estimated on the basis of the designs commissioned by the Bank, made it possible to establish economic indicators for all the projects in the sample. These estimated indicators were correlated with the cost per beneficiary family for the project in order to determine the limits (cut-off values) necessary to obtain the 12% yield required by the Bank to accept a project. The estimated values were US\$120 per person for drinking water projects and US\$150 per person for these same projects when they include wastewater disposal solutions.

2. Subsidy scheme

- 5.21 The substantial economies of scale in the provision of services in areas of low population density, as is the case in rural areas, lead to very high unit costs on small scales. With regulated prices, revenues may be insufficient to cover the total costs of supplying the service. However, the project can be socially profitable if the consumer surplus at the given price exceeds the social cost. An alternative for improving profitability in private terms might be to permit the price to rise until the private net present value (NPV) of the project turns positive. However, the price that would make the investment profitable in private terms might be much higher than the marginal cost of production. Hence, adopting this price could cause significant loss of efficiency, while also impeding access to services for the vast majority of the population. To solve this problem, another alternative is to establish a scheme of subsidies such as the one currently used by SENASA, which seems appropriate with regard to modality and form of delivery. However, it should be determined whether the amount currently being allocated is economically rational. In principle, the subsidy cannot be greater than the total investment or the amount

of negative cash flow from the private sector to operate and maintain the system, which will give the users a system that is self-sustainable in the long term.

- 5.22 With these considerations in mind, an evaluation of the SENASA subsidy scheme was undertaken based on four specific projects with the following characteristics: communities of fewer than 100 families and communities of between 100 and 200 families. For these communities, a socioeconomic survey was conducted to determine the demand curve, and the families were queried regarding their willingness to pay for drinking water services. Based on this information, it was shown that projects are socially profitable if they have internal rates of return of between 25% and 35%. The theoretical cash flow of the sanitation board was then calculated, assuming that the rates would be compatible with the population's capacity for payment, estimated at 3% of monthly family income. The financial terms for the loan in guaraníes from SENASA to the sanitation board are an interest rate six points below the rates charged by commercial banks on their loans in local currency in Paraguay, with a repayment period of 10 years. The NPV for the sanitation board was calculated under these conditions and was compared with the initial investment in order to establish the necessary subsidy amount. The calculations indicated that for communities of between 100 and 200 families the level of subsidy necessary would be 55%, while for communities with fewer than 100 families the level would be 70%.
- 5.23 The consistency of this scheme with the one currently being applied in the IBRD operation with SENASA (i.e., a subsidy of 40%–60% of the investment cost) was assessed. In this regard, the following things should be noted: (i) the IBRD–SENASA operation includes only septic tanks as solutions for wastewater disposal, as opposed to the complete solution included in this program, which will make it easier to achieve the objective of providing a complete sanitary solution for each beneficiary family, and this, in turn, raises the investment cost; and (ii) as services are extended to more communities, the size of the communities will decrease, which will also raise the investment costs per inhabitant and therefore the level of subsidy necessary. Hence, it can be concluded that the levels of subsidy with the additional works envisaged under this program are practically the same as those being provided under the IBRD program with SENASA.

E. Socioenvironmental feasibility

- 5.24 Given the type of works included in the program, the potential negative environmental impacts can generally be expected to be small in magnitude, localized, and confined mainly to the construction phase. To address these impacts, relatively simple and easily applied mitigation measures are available. These include careful planning and supervision of the works.
- 5.25 The preparatory phase included a report on the environmental feasibility of the program, which analyzed the applicable legal and institutional framework relating

to environmental matters and determined what permits and licenses would be necessary for the execution of the program. It also examined the results and recommendations of the socioenvironmental analysis of the program components. This report was prepared on the basis of the typical works for which financing is to be provided and which were actually carried out in the sample of communities that served as the basis for the design of the program. This report led to the development guidelines for environmental management of the program, which are included in an annex to the Operating Regulations.

- 5.26 In the social sphere, the program provides for participatory action by communities in order make the sanitation boards more effective and make the systems sustainable in the long run. The program's participatory approach will foster the development of local accountability, skills, and capacity. It is considered a priority to promote community participation with a gender perspective, given the importance of women's role in activities that have a direct bearing on the well-being of their families, such as proper use of drinking water supply and sanitation works. In the case of indigenous communities, the program will be implemented in a way that is consistent with the preservation of their cultural values, traditions, and community structure.
- 5.27 The program will include training for the beneficiary communities in technical and administrative matters related to the new systems, ensuring that this training benefits both men and women. Equal participation by men and women in the formation of the sanitation boards; definition, design, and construction of the systems; and administration of the services will help ensure the social feasibility of the program. Balanced participation by men and women will contribute to greater equity and greater social and human capital benefits for the communities. Moreover, the active participation of the entire community will contribute to the technical, economic, and socioenvironmental sustainability of the works, and will generate favorable conditions for the maintenance of community organization and commitment. The existence of sustainable systems of water supply and sanitation will assure greater social benefits for the poorest segments of the population, raising their quality of life, especially in the case of women, who currently suffer the most from the lack of these services. The guidelines for community development and appropriate management of indigenous and gender considerations are detailed in an annex to the Operating Regulations for the program.

F. Benefits

- 5.28 The program is aimed at extending the coverage of drinking water and basic sanitation services to rural communities that currently lack them. In the case of the water systems, the program also provides for the construction of individual wastewater disposal systems. The scope of the program is not limited to the construction of systems, however; it also includes organization of the beneficiary communities to ensure correct operation of the system and rational use of the water.

- 5.29 The program is expected to have a positive impact, since increased access to drinking water and sewerage services will improve levels of health and quality of life for the beneficiary population. In particular, the program will benefit the country's poorest populations, which are distributed across a wide geographic area. Its effects will also extend to indigenous communities in the case of the pilot component. Another group that is expected to benefit in particular from the program is women, who are generally responsible for transporting water and caring for the health of their families. The program will promote the active involvement of woman in program activities and, especially, their participation on the sanitation boards. This emphasis grew out of the studies conducted during the preparation of the operation and should be considered one of the factors that will contribute to the sustainability of the systems.

G. Risks

- 5.30 There are three main risks to the program's success: (i) SENASA's capacity to channel the program funds to the sanitation boards together with the funding already available from the IBRD without one operation interfering with the other; (ii) sustainability of the systems after they are constructed and turned over to the sanitation boards; and (iii) sustainability of the current system of service promotion used by SENASA.
- 5.31 To mitigate the first risk, the program regulations will be harmonized with those of the IBRD operation already in progress, and SENASA will receive support from the program management firm. To mitigate the second risk, it will be ensured that the rates to be applied by the sanitation boards are sufficient to cover all the costs of the services, as well as service of the debt to SENASA. In addition, the construction works will be carried out with participation from the community in order to foster a sense of ownership of the systems, and private-sector participation in management of the systems will be facilitated. Finally, to mitigate the third risk, the formation of associations of sanitation boards will be promoted in order to relieve SENASA of its technical support functions after transfer of the systems, and SENASA's capacity for recovery of the loans granted to sanitation boards will be strengthened.

PARAGUAY

DRINKING WATER SUPPLY AND SANITATION FOR SMALL COMMUNITIES (PR-0118)

LOGICAL FRAMEWORK

NARRATIVE SUMMARY	INDICATORS	MEANS OF VERIFICATION	ASSUMPTIONS
<p>Improve the health conditions in rural communities in Paraguay.</p>			
<p>Ensure access for the beneficiary communities to a safe system of drinking water supply and wastewater disposal.</p> <p>Strengthen the existing framework in order to make it possible to continue to expand services to new communities in the future.</p>	<p>Reduction of the incidence of waterborne diseases in the beneficiary communities (the baseline for each community will be established during execution at the stage when the designs for the water supply systems are finalized).</p> <p><u>Operational:</u> Reduction of requests from sanitation boards for SENASA support for the operation and maintenance of systems.</p> <p><u>Financial:</u> Improvement of the SENASA's financial capacity to recover loans made to the sanitation boards.</p>	<p>Statistics from regional health centers.</p> <p><u>Operational:</u> SENASA statistics on technical assistance provided to sanitation boards.</p> <p><u>Financial:</u> Cumulative value of the revolving fund derived from loan recovery.</p>	<p>Other factors that influence the conditions of the population (for example, lack of solid waste collection) will not worsen.</p>

NARRATIVE SUMMARY	INDICATORS	MEANS OF VERIFICATION	ASSUMPTIONS
<p>ure access for the beneficiary unities to a safe system of drinking upply and wastewater disposal.</p>			
<p>ge of drinking water supply services individual sanitation solutions has been ed to small communities that lack such s.</p> <p>ge of drinking water supply and on services has been extended to a roup of 10 indigenous communities.</p> <p>e is technically and financially able.</p>	<ul style="list-style-type: none"> • The drinking water supply and individual sanitation systems constructed in small communities are serving 75,000 beneficiaries. • The drinking water supply and sanitation services constructed in indigenous communities are serving 2,000 beneficiaries. • The systems are continuing to function normally five years after construction is completed. 	<ul style="list-style-type: none"> • Population records for the communities in question. • Population records for the communities in question. • Annual reports on operation and maintenance prepared by SENASA. 	<p>The program will arouse inter the communities at which it is directed; the interested comm will meet the criteria for parti in the program; the projects submitted will meet the estab eligibility requirements; the s will be properly operated and maintained.</p>
<p>ES</p> <p>uction of approximately 100 drinking supply and individual sanitation s in small communities.</p> <p>uction of 10 drinking water supply and ion systems in previously selected ous communities.</p>	<p>BUDGET</p> <ul style="list-style-type: none"> • Works and community development: US\$10.96 million. • Works and community development US\$0.40 million. 	<p>Semiannual progress reports and financial statements on the program.</p>	<p>Bidding processes for the wo culminate successfully and ex will be satisfactory.</p>

NARRATIVE SUMMARY	INDICATORS	MEANS OF VERIFICATION	ASSUMPTIONS
<p>Strengthen the existing framework in order to make it possible to continue to provide services to new communities in the sector in keeping with the legal framework of the sector.</p>			
<p>Sanitation boards have sources other than the SA for support in operation and maintenance of systems.</p> <p>SA has Improved capacity to collect payments on the loans made to sanitation boards.</p>	<ul style="list-style-type: none"> 10 sanitation board associations have been created. The ratio of delinquent payments to total payments due on loans with an outstanding balance has been reduced from 18% to 9%. 	<p>Approval of the final reports and documents by the Bank.</p>	
<p>Formation of associations of sanitation boards and design of schemes to foster operation and maintenance of systems by sanitation boards.</p> <p>Development and implementation of adequate procedures and controls for systematic collection of payments of loans to sanitation boards.</p>	<p>BUDGET</p> <ul style="list-style-type: none"> Studies and consultancies: US\$0.48 million. Studies and consultancies: US\$0.12 million. 	<p>Semiannual progress reports and financial statements on the program.</p>	<p>Bidding processes for the works will culminate successfully and execution will be satisfactory.</p> <p>Work on development of the legal framework for the sector will continue, strengthening the existing scheme proposed under the program.</p>

GENERAL PROCUREMENT AND BIDDING SCHEDULE						
ITEM	NUMBER OF CALLS FOR BIDS/LOTS	TOTAL COST (thousands of US\$)	FINANCING		TYPE OF BIDDING	QUARTER OF PUBLICATION
			IDB (thousands of US\$)	LOCAL (thousands of US\$)		
1 Works	4/22¹	11,359	8,289	3,070		
1.1 First group of drinking water supply and individual basic sanitation systems	1/6	3,288	2,379	909	ICB	II/2002
1.2 Second group of drinking water supply and individual basic sanitation systems	1/8	4,383	3,171	1,212	ICB	II/2003
1.3 Third group of drinking water supply and individual basic sanitation systems	1/6	3,288	2,379	909	ICB	II/2004
1.4 Drinking water supply systems in indigenous communities	1/2	400	360	40	LCB	II/2002
2 Goods	1	60	54	6		
2.1 Equipment for SENASA	1	60	54	6	LCB	I/2002
3 Services	12	3,630	3,267	363		
3.1 Program management firm	1	2,000	1,800	200	ICB	III/2001
3.2 Supervision of works—first group of drinking water systems and systems in indigenous communities	1	360	324	36	ICB	II/2002
3.3 Supervision of works—second group of drinking water systems	1	360	324	36	ICB	II/2003
3.4 Supervision of works—third group of drinking water systems	1	280	252	28	ICB	II/2004
3.5 Program auditing	1	90	81	9	LCB	III/2001
3.6 Institutional strengthening of SENASA	7	540	486	54	LCB	IV/2002
TOTAL		15,049	11,610	3,439		

LCB: Local competitive bidding
ICB: International competitive bidding

¹ i.e., Four calls for bids for a total of twenty-two lots.

PROPOSED RESOLUTION

**PARAGUAY. LOAN ____/OC-PR TO THE REPUBLIC OF PARAGUAY
(Potable Water and Sanitation for Small Communities Program)**

The Board of Executive Directors

RESOLVES:

That the President of the Bank, or such representative as he shall designate, is authorized, in the name and on behalf of the Bank, to enter into such contract or contracts as may be necessary with the Republic of Paraguay, as Borrower, for the purpose of granting it a financing to cooperate in the execution of a Potable Water and Sanitation for Small Communities Program. Such financing will be for the amount of up to twelve million dollars of the United States of America (US\$12,000,000), or its equivalent in other currencies, except that of Paraguay, which are part of the Ordinary Capital resources of the Bank, and will be subject to the "Special Contractual Conditions" and the "Financial Terms and Conditions" of the Executive Summary of the Loan Proposal as referred to in Document PR-_____.