

DOCUMENT OF THE INTER-AMERICAN DEVELOPMENT BANK

BRAZIL

**PROGRAM TO EXPAND AND IMPROVE DRINKING WATER SERVICES IN THE
STATE OF RIO GRANDE DO SUL (PROSASUL)**

(BR-L1495)

LOAN PROPOSAL

This document was prepared by the project team consisting of: Gustavo Méndez (WSA/CBR), Project Team Leader; María Julia Bocco (INE/WSA), Alternate Project Team Leader; Alejandra Perroni, Lucio Javier García and Yolanda Galaz (INE/WSA); Milagros Aime (VPS/ESG); Alfred Grünwaldt (CSD/CCS); Guillermo Eschoyez (LEG/CBR); Ana Carolina Rodrigues (WSA/CBR); Wesley Bazilio (COF/CBR); Karina Díaz, Fabia María de Assis, and Santiago Schneider (FMP/CBR); and Arturo Alarcón (ENE/CBR).

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LINKS
REQUIRED <ol style="list-style-type: none">1. Multiyear execution plan and annual work plan2. Monitoring and evaluation plan3. Environmental and social management report4. Procurement plan
OPTIONAL <ol style="list-style-type: none">1. Technical viability2. Socioeconomic viability3. Institutional viability4. Financial viability5. Draft program Operating Regulations6. Compliance with the Bank's Public Utilities Policy7. Project monitoring report8. Environmental and social analysis9. Environmental and social management framework10. Itemized budget

ABBREVIATIONS

AVIS	Alvorada-Viamão Integrated System
CEEE	Companhia Estadual de Energia Elétrica [Rio Grande do Sul Electric Company]
CORSAN	Companhia Riograndense de Saneamento [Rio Grande Sanitation Company]
EBITDA	Earnings before interest, taxes, depreciation, and amortization
EIRR	Economic internal rate of return
GEM/ERP	Government e-Marketplace/Enterprise Resource Planning [system]
ICAS	Institutional Capacity Assessment System
ICB	International competitive bidding
kWH	Kilowatt hour
LIBOR	London Interbank Offered Rate
NCB	National competitive bidding
NRW	Nonrevenue water
PMU	Program management unit
PPP	Public-private partnership
PROASUL	Program to Expand and Improve Drinking Water Services in the State of Rio Grande do Sul
QCBS	Quality- and cost-based selection
RMPA	Região Metropolitana de Porto Alegre [Porto Alegre Metropolitan Region]
RWLS	Raw water lift station
TCE/RS	Tribunal de Contas do Estado do Rio Grande do Sul [Rio Grande do Sul Court of Auditors]
WTP	Water treatment plant

PROGRAM SUMMARY

BRAZIL

PROGRAM TO EXPAND AND IMPROVE DRINKING WATER SERVICES IN THE STATE OF RIO GRANDE DO SUL (PROSASUL) (BR-L1495)

Financial Terms and Conditions					
Borrower: Companhia Riograndense de Saneamento (CORSAN)			Flexible Financing Facility ^(a)		
Executing agency: CORSAN			Amortization period:	25 years	
Guarantors: Federative Republic of Brazil and State of Rio Grande do Sul					
Source	Amount (US\$)	%	Disbursement period:	5 years	
			Grace period:	5.5 years ^(b)	
IDB (Ordinary Capital):	200 million	67	Interest rate:	LIBOR-based	
			Credit fee:	(c)	
Local:	100 million	33	Inspection and supervision fee:	(c)	
			Weighted average life:	15.25 years	
Total:	300 million	100	Approval currency:	United States dollar (from the Ordinary Capital)	
Program at a Glance					
Program objective and description: The program's general objective is to improve water supply services in cities of Rio Grande do Sul with the aims of enhancing service efficiency and water availability, as well as reducing service interruptions, losses, and energy consumption. This objective will be achieved by: (i) improving the capacity and resilience of water services in the program's target areas; (ii) enhancing the operational management of water and sanitary sewer systems; and (iii) strengthening CORSAN's business management performance.					
Special contractual conditions precedent to first disbursement of financing: (i) approval and entry into effect of the program Operating Regulations (optional link 5), in accordance with the draft previously agreed upon with the Bank; and (ii) formation of the program management unit and appointment of its members, in accordance with the composition described in the program execution arrangements (paragraph 3.11). See also the special contractual conditions in Annex B to the environmental and social management report (required link 3) and in Annex III, Fiduciary Agreements and Requirements.					
Special contractual conditions of execution: (i) prior to commencement of execution of each work under the program, the borrower will demonstrate that it has contracted a firm for the technical and environmental supervision of the respective works; and (ii) prior to the first bidding process of works financed with loan proceeds, CORSAN will have contracted consulting services to support program management (paragraph 3.12). The period for the physical start of program works will be 42 months from signature of the loan contract. See also the special contractual conditions in Annex B to the environmental and social management report (required link 3).					
Exceptions to Bank policies: None					
Strategic Alignment					
Challenges: ^(d)	SI	<input checked="" type="checkbox"/>	PI	<input type="checkbox"/>	EI <input type="checkbox"/>
Crosscutting issues: ^(e)	GD	<input type="checkbox"/>	CC	<input checked="" type="checkbox"/>	IC <input checked="" type="checkbox"/>

^(a) Under the terms of the Flexible Financing Facility (document FN-655-1), the borrower has the option of requesting changes to the amortization schedule, as well as currency and interest rate conversions. The Bank will take operational and risk management considerations into account when reviewing such requests.

^(b) Under the flexible repayment options of the Flexible Financing Facility, changes to the grace period are permitted provided that they do not entail any extension of the original weighted average life or the last payment date as documented in the loan contract.

^(c) The credit fee and inspection and supervision fees will be established periodically by the Board of Executive Directors as part of its review of the Bank's lending charges in accordance with applicable policies.

^(d) SI (Social Inclusion and Equality); PI (Productivity and Innovation); and EI (Economic Integration).

^(e) GD (Gender Equality and Diversity); CC (Climate Change and Environmental Sustainability); and IC (Institutional Capacity and the Rule of Law).

I. DESCRIPTION AND RESULTS MONITORING

A. Background, problem addressed, and justification

- 1.1 **Background and institutional framework.** Covering an total area of 281,749 square kilometers, the state of Rio Grande do Sul is located in Brazil's southern region. Based on data from the Brazilian Institute for Geography and Statistics, the state's total population of 11.3 million is distributed across 497 municípios. The federal government, through the Secretaria Nacional de Saneamento Ambiental [Environmental Sanitation Department] (an agency of the Ministry of Cities), oversees the country's Basic Sanitation Policy. At the state level, water and sanitation policies are defined by the Rio Grande do Sul Secretaria de Obras e Habitação [State Secretariat for Works and Housing] and water and sanitation services are rendered mainly by Companhia Riograndense de Saneamento (CORSAN), a semipublic open stock company whose controlling shareholder is Rio Grande do Sul, with 99.99% of CORSAN's share capital. CORSAN currently supplies water to approximately 6 million people in 317 municípios in the state,¹ with 96.3% coverage of its service area. In terms of sanitation, the company provides services in 284 municípios, serving a population of approximately 830,000, with coverage of 13.7%. As regards regulation, 274 municípios are regulated by the Agência Estadual de Regulação dos Serviços Públicos Delegados do Rio Grande do Sul [Public Service Regulatory Agency of Rio Grande do Sul], 11 municípios by the Consórcio Público de Saneamento Básico da Bacia Hidrográfica do Rio dos Sinos [Public Consortium for Basic Sanitation in the Sinos River Basin], and the remaining municípios by their respective municipal agencies.
- 1.2 To meet the needs of the 317 municípios in its service area, CORSAN uses integrated water production systems. Of these, the Alvorada-Viamão Integrated System (AVIS), the Gravataí and Cachoeirinha Integrated System, and the Canoas, Esteio, and Sapucaia do Sul Integrated System, which cover 23% of the population served by CORSAN, are the integrated systems of the Porto Alegre Metropolitan Region (RMPA). Another group of CORSAN production systems is located in the Serra region, including notably the Serra Water Supply Systems that cover the cities of Bento Gonçalves, Farroupilha, Garibaldi, and Carlos Barbosa (4% of the population served). Lastly, in the state's other regions, there are major cities that are supplied by independent systems.
- 1.3 **Diagnostic assessment of the problem.** The problem that affects CORSAN's drinking water production systems is generating serious inefficiencies and low quality in the delivery of water service to the population in its service area. An estimated 3.1 million people in the state (approximately 1 million households) experience frequent water outages, many of which last more than 12 hours. The systems present problems derived from increasing production shortfalls in relation to demand, outdated production facilities, infrastructure and equipment obsolescence,² and lack of space for new facilities. Water quality deterioration and

¹ In areas not served by CORSAN (181 municípios), services are provided by municípios, independent operators, associations, cooperatives, and other rural service initiatives.

² With production sources that have been operating continuously for more than 50 years, a large portion of equipment and physical infrastructure has reached the end of its useful life. (Dawn of the Replacement Era: Reinvesting in Drinking Water Infrastructure: American Water Works Association, 2001).

an unstable water regime in some of the rivers used as sources are leading to increasing vulnerability in the provision of water services.

- 1.4 As regards the integrated systems of the RMPA, both cities in the AVIS suffer from a constant lack of water (in 2016 there were more than 40 service outages lasting more than 12 hours) affecting approximately 130,000 households. This is because current demand exceeds installed capacity,³ the production system from the Fiúza River is more than 76 years old, and the continuity of the supply service is seriously affected—primarily by the unstable water regime of the Fiúza⁴ and Gravataí rivers,⁵ which supply the system. This is further aggravated by water quality problems in the Gravataí River.⁶ In addition to service interruptions, this results in high raw water treatment costs.⁷ In the Serra system, 37 service interruptions occurred in 2016, each lasting more than 12 hours and affecting approximately 87,000 users. In this case, the causes also relate to a lack of installed capacity⁸ (demand currently exceeds installed capacity by 12%), infrastructure obsolescence, and unstable supply.⁹ It should be pointed out that, in general, all the RMPA integrated systems, the Serra integrated systems, and several of the independent systems present similar problems.¹⁰
- 1.5 Other crucial factors that give rise to inefficiency in the provision of water service include water losses and electricity consumption and expenditure. On the one hand, the water loss percentage (ratio of volume consumed to volume produced) is 42.6%, of which 24.7% relates to real (physical) losses and 17.9% to apparent losses (unauthorized consumption and metering errors). The high level of apparent losses highlights the need to prioritize actions to combat fraud and clandestine use and immediately reduce undermetering of installed water meters. As it stands, despite a measurement index on the order of 100%, the useful life of most of the meters installed in the network (approximately 54%) has expired. On the other hand, the high rate of real losses mainly requires the identification and repair of nonvisible leaks, the implementation of network sectorization, and the replacement of the most vulnerable parts of the distribution networks and outdated connections, which are recurrent sources of losses, given their precarious state.¹¹ Accordingly, technologically innovative solutions will need to be studied and implemented.

³ The AVIS system's annual shortfall exceeds three million cubic meters.

⁴ An estimated flow rate of 75 liters per second (corresponding to the production system from the Fiúza River) is vulnerable (expired useful life, high operating costs, poor quality of sources, and technological obsolescence) and, therefore, should be removed from the system.

⁵ Catchment from the Gravataí River during the dry season (500 liters per second) is half as much as production during the rainy season (1,000 liters per second).

⁶ Some areas in the cities of Gravataí, Alvorada, Vimão, Cachoeirinha, Porto Alegre, and Canoas discharge their untreated wastewater upstream from the Gravataí River catchment.

⁷ Operation and maintenance costs per unit produced rise as infrastructure ages. This increase is not straight-line, but rather accelerates as the end of the infrastructure's life cycle approaches.

⁸ A deficit of nearly two million cubic meters per year is estimated.

⁹ Vulnerable production capacity is estimated at 55 liters per second.

¹⁰ An evaluation of CORSAN's production systems found that there are vulnerable systems with a total capacity of approximately 2.7 cubic meters per second that must be taken out of service and that at least 6 cubic meters per second of additional production capacity needs to be generated to adequately meet the population's current and future demand.

¹¹ Generally, these are fiber cement networks have been in use for between 30 and 45 years.

- 1.6 CORSAN also has 76 energy-consuming units, mainly electric pump motors. In 2018, electricity consumption was 393,812 megawatt hours (MWh), with a consumption rate of 0.75 kilowatt hours (kWh) per cubic meter produced (kWh per cubic meter). International experience shows that consumption can be reduced by an estimated 5% to 20% by replacing motors and pumps, changing the drive system, and improving installations.¹² In 2018, CORSAN's electricity expenses exceeded R\$244 million (US\$69 million), averaging R\$0.47 per cubic meter. Data for the last four years (2015-2018) indicate that although electricity consumption increased by only 1.6% during this period, electricity spending grew by 12.7%, mainly due to rate readjustments implemented by the Agência Nacional de Energia Elétrica [National Electricity Agency]. Against this backdrop and in order to increase operational efficiency, CORSAN needs to take measures to reduce electricity consumption and the related costs. It is currently conducting a [diagnostic assessment of energy consumption and its associated cost in each consumer unit](#). Based on this assessment, energy efficiency measures slated for implementation will be prioritized, taking into account the historical operation and maintenance costs of each unit and the number of consumers served. Actions that can help reduce electricity rates have also been evaluated, which will help to reduce supply costs.¹³ Moreover, a [draft project has been developed to install a photovoltaic system](#), which would reduce the cost of electricity.
- 1.7 With respect to sewerage services, given the low coverage of wastewater networks and treatment, CORSAN is implementing a public-private partnership (PPP) initiative under a delegated management contract in nine municípios of the RMPA and the Serra region through a 35-year administrative concession, which includes both the execution of sanitation works to increase sanitary sewerage and wastewater treatment coverage and the services provided in these cities ([optional link 4](#)). This PPP contract is expected to be signed in the second half of 2019. Accordingly, CORSAN needs to be strengthened to properly manage this contract, which will involve a significant mobilization of private sector funds and a possible opportunity for IDB Invest to provide funding to the private contractor.¹⁴
- 1.8 With regard to CORSAN's key business management indicators, the company's reports indicate that its rate-based revenue covers costs, with net income on its income statement; that the collections rate is approximately 98% (which is a very high compared to similar companies); and that the productivity rate is 2.8 employees per 1,000 connections, which falls within the sector's efficiency standards. However, CORSAN's institutional¹⁵ diagnostic assessment concludes that regulatory instruments should be improved to adequately comply with regulatory requirements, that good corporate governance practices should

¹² CORSAN has implemented energy efficiency projects in the past, resulting in reductions in energy consumption of up to 50% in each targeted system.

¹³ [Measures that can be implemented to reduce energy costs](#) include: (i) demand management to avoid peak hour consumption; (ii) reactive energy management to avoid fines; (iii) the review of electricity supply contracts to validate the adequate category; and (iv) the migration of contracts to the liberalized electricity market. Additionally, CORSAN can install its own generation (mainly photovoltaic) facilities and reduce its electricity consumption.

¹⁴ The PPP's financial viability study estimates that private contractor funds amounting to nearly \$500 million will be mobilized.

¹⁵ See [optional link 4](#).

continue to be implemented, and that a water security plan should be implemented across all the company's production systems. In this context and in general, the company would be well served to base its work on an innovation and digital transformation strategic plan.

- 1.9 **Justification and proposed interventions.** The company faces a series of challenges that have negative consequences on production supply capacity vis-à-vis demand, production costs, water quality and, ultimately, on the sustainability of water services delivery to the population. Consequently, a comprehensive intervention is required with actions to meet the demand of the aforementioned systems' current and future population in an efficient, high-quality, and sustainable manner. To this end, installed production capacity will need to be increased, certain vulnerable systems will have to be retired from service, and interconnections will need to be made for reinforcements between systems that provide flexibility to the supply and decrease the systems' vulnerability to changes in the quality and available volume of water resources. In addition, potential gains in efficiency and supply costs should be leveraged by reducing physical and apparent water losses, as well as reducing electricity consumption, which helps to mitigate greenhouse gases. Adaptation actions should also be leveraged, taking into account the return times required in the design of works as well as the expected increase in seasonal rainfall and intensity of extreme weather events in Rio Grande do Sul, which will heighten the risk of flooding. Lastly, support for strengthening CORSAN's business management should continue, given the need to increase the sustainability of the interventions, including solutions based on innovation and digital transformation. In this regard, regulatory compliance by CORSAN and its development of institutional capacity take on particular importance to effectively manage the PPP sewerage initiative. The effectiveness of the proposed interventions has been demonstrated in several studies of works carried out in similar contexts.¹⁶
- 1.10 **The Bank's sector knowledge and lessons learned.** The Bank has financed a number of operations with similar characteristics in Brazil and other countries that, with slight variations, include the same type of actions: implementation of large-scale water and sewerage infrastructure, such as the three stages of the Tietê River Cleanup Program in São Paulo, and the Tietê River Decontamination Program Stage II (1212/OC-BR) and Stage III (2202/OC-BR), where a comprehensive approach proved necessary to solve the problems encountered in a sustainable manner. This approach includes interventions in the areas of infrastructure, operational modernization, institutional strengthening, and innovation. Specific lessons that have been built into the design of the operation include: (i) the need for an execution unit, responsible for coordinating the program in its entirety, serving as the sole point of contact with the Bank; (ii) given the vast scope of these works, ongoing support is required for their execution, including the

¹⁶ Evidence of the effectiveness of loss control interventions in Brazil is given in Da Silva, Nilce Regina, *Estudo Metodológico para Avaliação de Submedição de Hidrômetros Domiciliares em Sistemas de Água*, master's thesis, Universidade de Brasília, [Publication PTARH-DM-2008](#), and in Rizzo, Alex, David Pearson, Matthew Stephenson, and Neil Harper, *Apparent Loss Control: A Practical Approach*, International Water Association (IWA), Water 21 seventh article, IWA Task Force, June 2004. For energy efficiency in water utilities, see Pedraza A., R. Riquelme, and P. Méndez, [Energy Efficiency in Water Utilities: The Case of Guyana](#).

engagement of consulting services to support the management and supervision of program works; (iii) the need to optimize existing infrastructure, enhancing the capacity and increasing the resilience of systems; and (iv) the need to identify innovative technologies for technical solutions. In addition, this will be a multisector operation as it will be double-booked with the IDB's Energy Division (INE/ENE), thus making it possible to ensure the achievement of operational efficiency objectives in the delivery of water services. The Bank has also financed two loans (2700/OC-BR and 2813/OC-BR) for Companhia Estadual de Energia Elétrica [Rio Grande do Sul Electric Company (CEEE)] that are currently in execution. These provide for semiannual meetings that enable CORSAN and CEEE to share lessons learned.

- 1.11 **Strategy of the government and CORSAN.** CORSAN has a strategic plan in place for the 2016-2019 period,¹⁷ which emphasizes learning and growth, processes, customers, and financial considerations. The plan's mission is to provide excellent basic sanitation services in the segments and the area in which it operates, fulfilling its social, environmental, and economic role, generating value for stakeholders. Its vision for 2019 is to maintain the universalization of water coverage and to serve 30% of the urban population using the sanitary sewerage system in a sustainable manner and with a guarantee of customer satisfaction. The PROSASUL program is framed within the objectives of CORSAN's strategic plan for the coming years.
- 1.12 **The Bank's strategy with the country.** The program is aligned with the Bank's country strategy with Brazil 2016-2018 (document GN-2850), since it contributes to the strategic objective of "expand[ing] and improv[ing] the water supply and basic sanitation." In addition, the operation is included in the 2018 Operational Program report (document GN-2915).
- 1.13 **Strategic alignment.** The program is consistent with the Update to the Institutional Strategy 2010-2020 (document AB-3008) and aligns with the development challenge of social inclusion and equality through the provision (in terms of access and quality) of inclusive drinking water services. The program is also aligned with the crosscutting theme of climate change and environmental sustainability, since it will contribute to mitigating greenhouse gas emissions through the replacement of pumping systems and will reduce water and sewer system losses. Accordingly, 18.13% of the operation's resources are to be invested in adaptation to climate change activities, according to the [joint methodology of the multilateral development banks for tracking climate change adaptation finance](#). These resources contribute to the IDB Group target goal of increasing financing for climate-related projects to 30% of approvals by the end of 2020. The program also aligns with the crosscutting theme of institutional capacity and rule of law through actions that will improve the performance of the water and sanitation service operator. In addition, the program will contribute to the Corporate Results Framework 2016-2019 (document GN-2727-6) through the "households with new or upgraded access to drinking water" output. Lastly, it is aligned with the IDB infrastructure strategy, Sustainable Infrastructure for Competitiveness and Inclusive Growth (document GN-2710-5), particularly with the priority area for action to "support the construction and maintenance of socially and

¹⁷ See [Relatório do Planejamento Estratégico – Quadriênio 2016-2019](#).

environmentally sustainable infrastructure, thus enhancing quality of life,” and is consistent with the dimensions of success and lines of action of the Water and Sanitation Sector Framework (document GN-2781-8) relating to achieving universal access to water and sanitation while improving service quality as well as social and environmental sustainability.

- 1.14 **Compliance with Public Utilities Policy (document GN-2716-6).** The proposed program and national sector objectives are consistent with the principles of the Public Utilities Policy (document GN-2716-6) and meet conditions of financial sustainability and economic evaluation. CORSAN's solvent financial position has enabled it to cover its operation and maintenance costs and adequately meet its financial commitments; the company's financial projections indicate that this trend will continue in the future (paragraph 1.25). In addition, the works to be financed with the program are socioeconomically viable (paragraph 1.23). CORSAN applies a different reduced rate for low-income households and there is an adequate institutional framework with the required segregation of duties and responsibilities (paragraph 1.1) ([optional link 6](#)).

B. Objectives, components, and cost

- 1.15 **Objective.** The program's general objective is to improve water supply services in cities of Rio Grande do Sul with the aims of enhancing service efficiency and water availability, as well as reducing service interruptions, losses, and energy consumption. This objective will be achieved by: (i) improving the capacity and resilience of water services in the program's target areas; (ii) enhancing the operational management of water and sanitary sewer systems; and (iii) strengthening CORSAN's business management performance. In order to achieve the objective, the program will be structured into two components:
- 1.16 **Component I: Water supply (US\$218.63 million).** This component will finance works and equipment to increase drinking water production, reserves, distribution, and technical reserves. New water catchments will be built, expanded, and modernized, as will other infrastructure, including raw and treated water pipelines and lift stations, water treatment plants, and reservoirs. The component also includes services for developing studies, projects, and the supervision of works.
- 1.17 **Component II: Operational and institutional sustainability of CORSAN (US\$69.27 million).** This component will finance actions to improve and modernize existing water regimes by reducing water losses and enhancing the energy efficiency¹⁸ of CORSAN's water and sewer systems, incorporating innovative technologies as applicable. It will also finance institutional capacity building and management strengthening measures at CORSAN, including: (i) technical assistance to ensure that water and sewer system services comply with regulatory requirements; (ii) strengthening of CORSAN capacity to manage the PPP sanitation contract; and (iii) improving corporate governance practices at the company. The component will also finance the development of a water security plan and a plan to drive innovation and digital transformation.

¹⁸ The energy efficiency plan includes: (i) the replacement of pumps and motors; (ii) the installation of electronic drives in the motors; (iii) the improvement of canals and electrical installations; (iv) training; (v) installation of an energy management system; (vi) implementation of an electricity contract management plan; and (vii) installation of distributed generation.

- 1.18 **Administration, evaluation, and audits (US\$12.10 million).** In addition to the activities described in Components I and II, the program will finance the procurement of equipment, the logistical expenses of the program management unit (PMU), and consulting services to support the management of the program, including program audits and evaluations.
- 1.19 **Cost and financing.** The total cost of the program is US\$300 million, financed with a US\$200 million loan from the Bank and a local counterpart contribution of US\$100 million. The consolidated budget by component is detailed in Table I-1. The financing proceeds will cover all costs inherent to the program ([optional link 10](#)).

Table I-1. Program cost (US\$)

Categories	Bank	Local counterpart contribution	Total
Component I: Water supply	154,838,994	63,792,867	218,631,861
Component II: Operational and institutional sustainability of CORSAN	37,466,417	31,795,542	69,261,959
Administration, evaluation, and audit	7,694,589	4,411,591	12,106,180
Total	200,000,000	100,000,000	300,000,000

C. Key results indicators

- 1.20 The main outcomes of the program are linked to improvements in access to water and sanitation and in CORSAN's operational efficiency. Specifically, the program is expected to benefit approximately 640,000 households with continuous drinking water service. The key outcome indicators are presented in Table I-2 below (see Annex II).

Table I-2. Key indicators

Outcome indicator	Measurement unit	Baseline	Target
Households in the program intervention cities with access to improved drinking water	Household	0	637,000
Index of distribution losses	Percentage	Viamão: 54.5 Serra (Bento): 40.9 Serra (Farroupilha): 40	Viamão: 49.0 Serra (Bento): 36.8 Serra (Farroupilha): 36
Energy consumption per cubic meter of water produced	kWh/m ³	0.754	0.704

- 1.21 **Technical viability.** A sample comprising the proposed interventions in AVIS and Serra was evaluated, including diagnostic studies, demand projections, and a comparative study of alternative solutions. The proposed interventions are described in [optional link 1](#). The projects of Component I evaluated for these systems have been developed at the advanced-basic and basic levels, respectively, and the detailed designs are being prepared by specialized consulting firms contracted by CORSAN. The corresponding works will be executed once the detailed engineering designs have been prepared. Included in the AVIS system are sludge treatment from the existing Alvorada water treatment plant and construction of a new water treatment plant with capacity of 800 cubic liters per second (Vimão), with catchment in Lake Guaíba, raw and treated water pipelines,

pumping stations, and a treated water reservoir. In Serra, a shared production system will be built for several towns, including catchment on the Antas River, the Antas water treatment plant with capacity of 1,000 cubic liters per second, pumping stations, raw and treated water pipelines, and a treated water reservoir. The AVIS and Serra projects corresponding to the loss reduction component were evaluated at a basic level. The actions are focused on reducing physical losses (e.g. supply and installation of automation equipment for remote monitoring and control, implementation of bulk water meters, pressure reducing and shutoff valves in network metering and control sectors, expansion and replacement of networks and connections, other network-related works, and leak detection and repair) and commercial losses, which include the replacement of residential water meters.

- 1.22 The proposals are technically viable, appropriate with respect to the identified capacity and quality objectives, and the most low-cost solution. All studies and designs of infrastructure components will follow the standards of the Brazilian Association of Technical Standards, generally accepted international engineering principles, and the guidelines agreed upon in the program Operating Regulations ([optional link 5](#)). In each case, the solution to be adopted will be the most low-cost alternative that meets the viability criteria. The works to be included in this operation will be identified and designed as a whole in accordance with these criteria. CORSAN has extensive experience in contracting and preparing designs and in executing works with the specifications and requirements that are proposed in this program.
- 1.23 **Socioeconomic viability.** Because this is a multiple works program, a cost/benefit analysis was conducted on the representative sample of projects: the expansion and improvement projects for AVIS and the Serra integrated system. Both projects are economically viable with economic internal rates of return (EIRR) of 22.9% for AVIS and 18.2% for the Serra system and, using a 12% discount rate, net present values of US\$25.2 million and US\$21.5 million, respectively. A cost/benefit analysis will be carried out on the projects that were not evaluated, and only those with an EIRR above 12% will qualify for program financing. Lastly, based on information provided by CORSAN, the average household in cities of the program target area pays US\$26.7 per month for AVIS and US\$27.8 per month for Serra, accounting for 2.8% and 1.6% of the average monthly family income, respectively. A reduced rate is available for poor households. Accordingly, the monthly rate paid by these users is approximately US\$6.9, accounting for 0.8% of the average monthly family income. These rates are acceptable under international standards ([optional link 2](#)).
- 1.24 **Institutional viability.** During program preparation, an Institutional Capacity Assessment System (ICAS) analysis was conducted of CORSAN, resulting in a low and satisfactory level of risk ([optional link 3](#)). However, since CORSAN is currently executing several investment projects with other sources of financing (e.g. Banco Nacional de Desenvolvimento Econômico e Social [Brazilian Development Bank], Caixa Econômica Federal [Federal Savings Bank], and Programa de Aceleração do Crescimento [Growth Acceleration Program] of the federal government), as well as others slated to be contracted in addition to this program. This will require a series of activities outside of CORSAN's current workload. In addition, since CORSAN has no prior experience with international multilateral financing agencies, there is a risk of significant delays in program

execution. Accordingly and in order to mitigate these risks, it was agreed that a PMU would be established at the company linked to CORSAN's office of the presidency, made up of a multidisciplinary team dedicated exclusively to the program. The PMU will be supported by a project management company (paragraph 3.2). Consulting services to support program management are also important, since they would help to implement the numerous specialized and diverse activities included in the program. Since the PMU will include professionals from other technical areas at CORSAN who will receive consulting services to support them in managing projects, opportunities will arise to implement strengthening actions and skills, systems, and technology transfer. Accordingly, these will gradually strengthen CORSAN and, over time, enable it to ultimately terminate its reliance on such services. As mentioned above, certain CORSAN departments, the roles and responsibilities of which will be defined in detail in the program Operating Regulations (paragraph 3.3), will be supported in program execution.

- 1.25 **Financial viability.** A financial analysis of CORSAN has demonstrated that it has the capacity to finance the local counterpart contribution throughout the program's execution period and to cover its debt service. The financial analysis included both a historical analysis, based on the CORSAN's audited financial statements and operating information, and the development of a financial model that projects its estimated financial position for the coming years. In this regard, historical financial data indicate that the company's rate-based revenue from the provision of services has been able to adequately cover its operating costs (reflected in a 22.6% EBITDA¹⁹ margin and an 11.5% EBIT²⁰ margin on an annual average for the last three years) and its finance costs. CORSAN has also reported final net profits on its income statement and, through internal cash generation, has been able to finance a significant part of its investment plan. Rates are reviewed annually and the company's collection levels²¹ are above 95%. The baseline case for the financial projections indicate that CORSAN will be able to maintain an adequate financial position throughout the projection period ([optional link 4](#)).

II. FINANCING STRUCTURE AND MAIN RISKS

A. Financing instruments

- 2.1 **Type.** This multiple works program has been designed as an investment loan that provides financing for water projects that are physically similar but independent of each other, which must meet the eligibility criteria established on the basis of the representative sample. The loan will have a five-year disbursement period, consistent with the multiyear execution plan ([required link 1](#)). The disbursement schedule is presented in Table II-1.

¹⁹ EBITDA: Earnings before interest, tax, depreciation, and amortization.

²⁰ EBIT: Earnings before interest and tax.

²¹ Annual amount collected/annual amount invoiced.

Table II-1. Disbursement schedule (US\$ millions)

Source	Year 1	Year 2	Year 3	Year 4	Year 5	Total
IDB	6.06	43.93	69.18	47.15	33.68	200
Local counterpart contribution	15.24	23.29	24.96	19.30	17.22	100
%	7.10	22.41	31.38	22.15	16.97	100

2.2 **Representative sample.** In order to determine program viability and expedite execution once approved, a sample of projects representative of the type of works to be executed (paragraph 1.21) was analyzed for a total investment amount of US\$103.9 million, representing approximately 34.6% of the program's investment. The sample comprises the AVIS projects and the Serra system ([optional link 1](#)) and is expected to benefit approximately 217,000 households with improved drinking water service. Eligibility and prioritization criteria (paragraph 2.3) have also been established and apply to all types of program-financed projects.

2.3 **Eligibility and prioritization criteria.** For works not included in the sample, the following criteria will be included in the program Operating Regulations: (i) water supply works; works to reduce and control water losses; and energy efficiency works; (ii) projects that are viable from a technical, economic, social, and environmental, as set out in the program Operating Regulations; (iii) must be classified as a category "B" or "C" operation pursuant to the Bank's Environment and Safeguards Compliance Policy (Operational Policy OP-703); and (iv) projects that do not entail the resettlement of persons. Projects will be prioritized based on CORSAN's strategic needs.

B. Environmental and social risks

2.4 The guidelines of the Bank's Environmental and Safeguards Compliance Policy (Operational Policy OP-703) have been followed, and the program has been classified as a category "B" operation, based on all applicable policies.

2.5 Because this is a multiple works program, an environmental and social analysis was conducted, including an environmental and social management plan ([optional link 8](#)) for the two projects in the sample, which are published on the Bank's website. The following have also been prepared and published: (i) the environmental and social management plan for the proper management of the equipment replaced in the context of the energy efficiency program; and (ii) an environmental and social management framework ([optional link 9](#)) for the program.

2.6 Since there is no settled population in the project areas, no physical resettlement of the population is anticipated. However, four plots of land for the Serra project have not yet been procured. These should be managed following the CORSAN-prepared procurement plan, which has been included in the environmental and social analysis and in the environmental and social management framework.²² In the target areas there is a risk of floods and droughts. Accordingly, in compliance with the Disaster Risk Management Policy (Operational Policy OP-704), the potential impacts and conflicts associated with the water supply project in a context

²² The land will not be procured with Bank resources.

- of drought risk have been analyzed in the Serra project's environmental and social analysis. This analysis finds that the risk for this set of works is low. Future projects financed under the program should assess the existence of such risks during the design stage.
- 2.7 Five public consultations have been held for the projects of the sample. The AVIS community consultation took place on 19 October 2017 in the area where the catchment project was implemented (Lami Beach), with the participation of the Cantagalo indigenous community, whose reserve is adjacent to the existing road where a 400-meter raw water supply line will be built. During the consultation, CORSAN made a commitment to include the community as a program beneficiary. Consequently, prior to bidding, the executive project, the sociocultural analysis of the community, and the environmental and social management plan of the works will be submitted to the Bank, and a socioculturally appropriate consultation process will be followed in accordance with the guidelines of the Indigenous Peoples Policy (Operational Policy OP-765). The four consultations for the Serra project took place on 20 and 24 October 2017, and no objections were raised to the works.
- 2.8 In order to ensure that the environmental and social management plans are properly implemented, the PMU will include an environmental and social coordination team, comprised of an environmental specialist and a social specialist. In turn, the team will be supported by the existing areas at CORSAN. Works monitoring services will also be contracted, including three environmental and three social specialists, who will oversee contractors' on-site compliance with the environmental and social management plan.
- C. Fiduciary risks**
- 2.9 In the risk workshop held during program preparation, fiduciary risk relating to potential delays in the award of contracts and in the submission of financial reports was identified and classified as "medium." To mitigate this, a management system will be implemented for the program, to be financed with resources drawn from the program's administration budget, a PMU will be created within CORSAN with fiduciary staff, a special bidding commission will be created for program bidding, consulting services will be engaged to provide fiduciary personnel with program management support, and CORSAN/PMU staff will be trained in IDB fiduciary policies.
- D. Other risks**
- 2.10 In addition, other medium-level performance, public management, and governance risks were identified relating to: (i) delays in the commencement of program works and services; and (ii) lack of coordination between CORSAN and the various municipios. To mitigate those risks: (i) the execution schedules for detailed project designs and environmental licensing will be closely monitored, social management activities will be implemented, including community consultation with indigenous communities linked to the AVIS system, and an alternative design will be made for the AVIS supply line near the indigenous community; and (ii) CORSAN's various areas and the municipios will work together to disseminate and coordinate program activities.

III. IMPLEMENTATION AND MANAGEMENT PLAN

A. Summary of implementation arrangements

- 3.1 **Execution plan.** CORSAN will be the borrower and executing agency. The Federative Republic of Brazil will be the guarantor of the borrower's financial obligations under the loan contract to be signed by CORSAN and the Bank. The State of Rio Grande do Sul will be the guarantor of the borrower's performance obligations and the local counterparty contribution.
- 3.2 CORSAN will coordinate and execute the program through a PMU to be created within its structure, which will report to company's office of the presidency. The structure of the PMU will comprise an executive coordinator, an alternate executive coordinator tasked with institutional sustainability, and a subcoordinator for each of the five following areas: (i) planning; (ii) procurement and contracts; (iii) projects and works; (iv) environmental and social aspects; and (v) administrative/financial. The duties and profiles of each of the PMU's members will be documented in the program Operating Regulations, and they will work exclusively for the program. Regarding program management, the PMU will engage consulting services ([optional link 3](#)). In addition, the PMU will contract services for the technical and environmental monitoring of the works.
- 3.3 The PMU will receive technical support from the various areas at CORSAN involved in the actions to be executed. The duties of each area with respect to program execution will be identified and detailed in the program Operating Regulations ([optional link 5](#)).
- 3.4 CORSAN will establish a coordination advisory board made up of the heads of the areas involved in program execution and chaired by CORSAN's chief executive officer. This board will be a strategic advisory body. A special bidding commission will also be established to manage the program's bidding processes, in accordance with IDB policies and current national legislation, as applicable ([optional link 3](#)).
- 3.5 CORSAN will execute, operate, and maintain the program works. The relationship between CORSAN and the various municípios is established through the respective signed program contracts, through which CORSAN has been mandated to provide water and sanitation services in the different municípios, including intervention in the cities through the execution of works. Consequently, the municípios will play a role in program reporting and support.
- 3.6 **Program Operating Regulations.** Program implementation will be governed by the program Operating Regulations, containing, *inter alia*, the following considerations: (i) institutional, administrative, and financial management; (ii) procedures for planning, supervision, and monitoring ([optional link 5](#)); and (iii) procedures for project identification, evaluation (technical, economic, environmental and social (the latter, in accordance with the environmental and social management framework ([optional link 9](#)) that forms part of the program Operating Regulations), approval, supervision, and execution.
- 3.7 **Program execution plan.** Performance of program activities will follow a schedule implemented through the program execution plan and the annual review thereof, which will be reflected in the respective annual work plan ([required link 1](#)). The

program execution plan contains the details equivalent to the annual work plan for each year of execution. However, it should be modified annually based on the program's actual progress. Annual reviews of the program execution plan will be submitted to the Bank.

- 3.8 **Fiduciary arrangements and requirements.** The fiduciary arrangements and requirements (Annex III) reflect the financial management and procurement guidelines that will be applied to program execution. The fiduciary arrangements and requirements have been developed based on the analysis of the fiduciary context of the country and executing agency, the institutional analysis of the executing agency, the risk workshop with personnel from all participating entities, meetings held with executing agency personnel, and regular meetings with the project team and key staff at the participating entities.
- 3.9 **Retroactive financing and recognition of expenses.** To facilitate the start of execution the program's works, the Bank may retroactively finance up to US\$40 million (20% of the proposed loan amount) against the loan proceeds, and recognize up to US\$20 million (20% of the estimated amount of the local counterpart contribution) against the local contribution as eligible expenditures incurred by the borrower for works (retroactive financing), services, and equipment (retroactive recognition) prior to the loan approval date, provided requirements substantially similar to those stipulated in the loan contract have been met. Such expenditures will have been incurred on or after 12 October 2017 (project profile approval date), but will in no case include expenditures incurred more than 18 months prior to the loan approval date.
- 3.10 **Procurement plan.** The procurement plan ([required link 4](#)) contains details of program procurement that will be carried out under the Policies for the Procurement of Goods and Works Financed by the Inter-American Development Bank (document GN-2349-9) and the Policies for the Selection and Contracting of Consultants Financed by the Inter-American Development Bank (document GN-2350-9). These detail: (i) the contracts for goods, works and consulting services required to carry out the program; (ii) the methods proposed for the procurement of goods and selection of consultants; and (iii) the procedures applied by the Bank for procurement review. The borrower will update the procurement plan annually or in accordance with program needs. Any proposed review of the procurement plan will be submitted to the Bank for approval.
- 3.11 **Special contractual conditions precedent to the first disbursement of financing. (i) approval and entry into effect of the program Operating Regulations, in accordance with a draft previously agreed upon with the Bank; and (ii) formation of the PMU and appointment of its members, in accordance with the composition described in the program execution arrangements.** These conditions are considered essential to ensure that the borrower will be prepared to commence program execution with a properly assembled PMU and program Operating Regulations that provide detailed guidelines on operational and coordination aspects.
- 3.12 **Special contractual conditions of execution.** Prior to commencing execution of each set of works under the program, the borrower will demonstrate that it has contracted a firm for the technical and environmental monitoring of the respective works. The contracting of the firm tasked with supervision is crucial for the

borrower to be able to properly monitor progress made with respect to the works and socioenvironmental actions. In addition, and prior to the first bidding process of works financed with the loan proceeds, CORSAN will have contracted consulting services to support program management. This condition is considered essential if CORSAN is to have the necessary support to strengthen its capacity to execute the program. The period for the physical start of program works will be 42 months from signature of the loan contract.

- 3.13 **Operation and maintenance.** The borrower undertakes to: (i) ensure the works and equipment included under the program are properly maintained in accordance with generally accepted technical standards; and (ii) submit to the Bank, during the five years following the completion of the first set of the works under the program and within the first quarter of each calendar year, a report on the status of such works and equipment and the annual maintenance plan for that year, including the personnel and resources foreseen for the execution thereof. If, on the basis of the Bank's inspections or the reports it receives, it is determined that maintenance is performed below the agreed upon levels, the borrower will take the necessary steps to ensure that the deficiencies are fully remedied.
- 3.14 **Audits.** During the loan disbursement period, the program's annual audited financial statements will be submitted to the Bank within 120 days from the end of each fiscal year. The audit will be conducted by the official Auditing Office or by a firm of independent auditors acceptable to the Bank. The scope and other audit-related issues will be governed by the Financial Management Guidelines for IDB-financed Projects (document OP-273-6). Audit costs will be funded using program resources. The PMU will contract the audit firm.

B. Summary of results monitoring arrangements

- 3.15 **Monitoring.** The executing agency will prepare reports on the progress and achievement of outcomes of the activities under its responsibility. The monitoring arrangements will include the procurement plan, the program execution plan, the annual work plan, the results matrix, the progress monitoring report, and the risk management plan. The executing agency will submit semiannual reports on the progress made and outcomes achieved as well as an action plan for the following six-month period within 60 days of the end of each six-month period ([required link 2](#)).
- 3.16 **Evaluations.** The following program evaluations will be contracted by the PMU: (i) midterm evaluation, to be submitted 90 days after 50% of the program resources have been disbursed or 36 months from the signature date of the loan contract, whichever occurs first; and (ii) final evaluation, to be submitted 90 days after the closing date for disbursements of program resources. The proposed evaluation methodology will be before and after comparison, which will consist of comparing the outcome indicators after the interventions have been implemented and comparing the measurements to verify that the targets have been achieved. An ex post economic evaluation will be conducted which, following the methodology applied for ex ante evaluation, will compare the costs of the investments made, operation and maintenance costs, and program benefits, estimated as detailed in the monitoring and evaluation plan ([required link 2](#)).

Development Effectiveness Matrix		
Summary		BR-L1495
I. Corporate and Country Priorities		
1. IDB Development Objectives		Yes
Development Challenges & Cross-cutting Themes	-Social Inclusion and Equality -Climate Change and Environmental Sustainability -Institutional Capacity and the Rule of Law	
Country Development Results Indicators	-Households with new or upgraded access to drinking water (#)*	
2. Country Development Objectives		Yes
Country Strategy Results Matrix	GN-2850	Expansion and improvement of drinking water and basic sanitation conditions
Country Program Results Matrix	GN-2915	The intervention is included in the 2018 Operational Program
Relevance of this project to country development challenges (If not aligned to country strategy or country program)		
II. Development Outcomes - Evaluability		Evaluable
3. Evidence-based Assessment & Solution		9.2
3.1 Program Diagnosis		3.0
3.2 Proposed Interventions or Solutions		4.0
3.3 Results Matrix Quality		2.2
4. Ex ante Economic Analysis		10.0
4.1 Program has an ERR/NPV, or key outcomes identified for CEA		3.0
4.2 Identified and Quantified Benefits and Costs		3.0
4.3 Reasonable Assumptions		1.0
4.4 Sensitivity Analysis		2.0
4.5 Consistency with results matrix		1.0
5. Monitoring and Evaluation		7.4
5.1 Monitoring Mechanisms		1.4
5.2 Evaluation Plan		6.0
III. Risks & Mitigation Monitoring Matrix		
Overall risks rate = magnitude of risks*likelihood		Low
Identified risks have been rated for magnitude and likelihood		Yes
Mitigation measures have been identified for major risks		Yes
Mitigation measures have indicators for tracking their implementation		Yes
Environmental & social risk classification		B
IV. IDB's Role - Additionality		
The project relies on the use of country systems		
Fiduciary (VPC/FMP Criteria)	Yes	Financial Management: Budget, Treasury, External Control, Internal Audit. Procurement: Information System, Price Comparison.
Non-Fiduciary		
The IDB's involvement promotes additional improvements of the intended beneficiaries and/or public sector entity in the following dimensions:		
Additional (to project preparation) technical assistance was provided to the public sector entity prior to approval to increase the likelihood of success of the project		

Note: (*) Indicates contribution to the corresponding CRF's Country Development Results Indicator.

The general objective of the program is to improve the potable water supply service in cities of the state of Rio Grande do Sul with the purpose of increasing the efficiency of services and the availability of water, reducing service interruptions, losses and consumption of energy.

The POD presents the problems to be addressed by the program as well as the factors causing them, all of which are based on empirical evidence. The magnitudes of the problems are provided, and the proposed interventions are linked to the problems identified in the diagnosis.

The results matrix has a vertical logic. All outcome indicators are SMART and have sources to gather their information. Due to the nature of multiple works programs, it is not possible to set baseline and target values for the indicators of the program that are not included in the sample since they will only be identified during execution. The output indicators have baselines, targets and sources to gather their information. Except for two indicators all output indicators are SMART.

The program was analyzed using a cost-benefit analysis. The economic benefits were adequately quantified, and the costs reflect real resource costs to the economy. The assumptions used were presented and a sensitivity analysis was performed.

The program has a monitoring and evaluation plan. The evaluation plan follows the DEM guidelines and it has a budget. The program will be evaluated using a reflexive methodology and an ex-post cost-benefit analysis.

RESULTS MATRIX

Program objective	The program's general objective is to improve water supply services in cities of Rio Grande do Sul with the aims of enhancing service efficiency and water availability, as well as reducing service interruptions, losses, and energy consumption. This objective will be achieved by: (i) improving the capacity and resilience of water services in the program's target areas; (ii) enhancing the operational management of water and sanitary sewer systems; and (iii) strengthening CORSAN's business management performance.									
Outcomes										
Indicator	Unit of measurement	Baseline	Baseline year	Year 1	Year 2	Year 3	Year 4	Year 5	End of program	Comments/means of verification
Outcome 1: Improved drinking water services in the cities targeted by the program										
Households in cities targeted by the program with access to improved drinking water	Household	AVIS: 0	2017					130,000	130,000	Corporate Results Framework indicator. Definition of "improved": 24-hour water service. System intermittency report - CORSAN's Operational Information Management Center
		Serra: 0	2017					87,000	87,000	
		Other cities: 0	2017					420,000	420,000	
Households in cities targeted by the program affected by at least one outage per year lasting more than 12 hours	Percentage	AVIS: 100	2017					10	10	System intermittency report - CORSAN's Operational Information Management Center
		Serra: 100	2017					10	10	
		Other cities: 100	2017							
Water service interruptions lasting more than 12 hours in the cities targeted by the program	Interruptions/year	AVIS: 41	2016					6	0	System intermittency report - CORSAN's Operational Information Management Center
		Serra: 37	2016					6	0	
		Other cities ¹								
Vulnerable production capacity in program intervention cities	Percentage	AVIS: 5	2017					0	0	Definition of "vulnerable": production obtained from infrastructure with expired useful life, source that cannot be treated using installed treatment technology, and/or outdated technology to meet service standards. CORSAN's Operational Control System.
		Serra: 7.1	2017					0	0	
		Other cities ²								

¹ The baselines of the other systems will be included in the results matrix as they are added to the program.

² The baselines of the other systems will be included in the results matrix as they are added to the program.

Indicator	Unit of measurement	Baseline	Baseline year	Year 1	Year 2	Year 3	Year 4	Year 5	End of program	Comments/means of verification
Water production shortfall in cities targeted by the program ³	Percentage	AVIS: 16.5	2017					0	0	CORSAN's Operational Control System and ex ante and ex post economic evaluation of individual projects
		Serra: 14.9	2017					0	0	
		Other cities ⁴								
Outcome 2: Lower nonrevenue water (NRW) levels in drinking water systems of the cities targeted by the program										
Distribution loss rate ((volume produced + volume imported - volume of service) - volume consumed)) / (volume produced + volume imported - volume of service) x 100	Percentage	Viamão: 54.5 ⁵	2017					49.0	49.0	CORSAN's Commercial System
		Serra/Bento: 40.9	2017					36.8	36.8	
		Serra (Farroupilha): 40.0	2017					36.0	36.0	
		Other cities ⁶	2017							
Outcome 3: Improved energy efficiency in drinking water systems of the CORSAN network										
Energy consumption per cubic meter of water produced	kWh/m ³	0.7540	2018					0.7040	0.7040	Annual energy consumption, based on CORSAN's electricity bills, divided by the volume of water produced throughout the CORSAN network and CORSAN's Operational Control System
Outcome 4: CORSAN strengthened in business management										
EBITDA (earnings before interest, taxes, depreciation, and amortization) margin to operating income	%	23	2016					25	25	CORSAN's audited financial statements

³ Annual volume of water demand – annual volume of water produced (net of physical losses) / annual volume of water produced (net of physical losses) x 100.

⁴ The baselines of the other systems will be included in the results matrix as they are added to the program.

⁵ The baseline will be updated upon completion of the detailed designs.

⁶ The baselines of the other systems will be included in the results matrix as they are added to the program.

Outputs											
Component I: Water supply											
Output	Unit of measurement	Associated outcomes	Cost (US\$000)	Baseline	Year 1	Year 2	Year 3	Year 4	Year 5	End of program	Comments/means of verification
Catchment built	Works	1	6,014	0	0	1	0	0	0	1	Program management unit (PMU) management report and contractor's works progress report.
Milestone: AVIS ⁷	Works	1	6,014	0	0	1	0	0	0	1	
Water treatment plant (WTP) built	WTP	1	26,909	0	0	1	1	0	0	2	PMU management report and Contractor's works progress report
Milestone: AVIS	WTP	1	11,107	0	0	1	0	0	0	1	
Milestone: Serra	WTP	1	15,802	0	0	0	1	0	0	1	
Raw water lift station (RWLS) built	RWLS	1	7,886	0	0	2	1	0	0	3	PMU management report and contractor's works progress report.
Milestone: AVIS	RWLS	1	2,056	0	0	0	1	0	0	1	
Milestone: Serra	RWLS	1	5,830	0	0	2	0	0	0	2	
Raw water canal built	Meter	1	14,672	0	1,500	5,000	5,000	3,980	0	15,480	PMU management report and contractor's works progress report
Milestone: AVIS	Meter	1	2,976	0	1,500	2,000	0	0	0	3,500	
Milestone: Serra	Meter	1	11,696	0	0	3,000	5,000	3,980	0	11,980	
Sludge treatment system in the Alvorada WTP built	System	1	2,025	0	0	1	0	0	0	1	PMU management report and contractor's works progress report
Milestone: AVIS	System	1	2,025	0	0	1	0	0	0	1	
Treated water supply line built	Meter	1	32,482	0	0	26,000	34,500	7,470	0	67,970	PMU management report and contractor's works progress report
Milestone: AVIS	Meter	1	17,489	0	0	6,000	7,000	7,470	0	20,470	
Milestone: Serra	Meter	1	14,923	0	0	20,000	27,500	0	0	47,500	
Water distribution tanks built	Tank	1	5,998	0	0	2	2	2	0	6	PMU management report and contractor's works progress report
Milestone: AVIS	Tank	1	3,467	0	0	2	0	0	0	2	
Milestone: Serra	Tank	1	2,531	0	0	0	2	2	0	4	
Other water systems in the state of Rio Grande do Sul expanded and improved	System	1	115,779	0	0	0	0	1	2	3	PMU management report and contractor's works progress report
Component II: Operational and institutional sustainability of CORSAN											
NRW program: Detailed project designs prepared	Project design	2	108	0	2	0	0	0	0	2	PMU management report and works progress report by the company responsible
Milestone: AVIS	Project design	2	70	0	1	0	0	0	0	1	
Milestone: Serra	Project design	2	38	0	1	0	0	0	0	1	
NRW program: Networks inspected and repaired	Kilometer	2	993	0	0	0	904	1,675	0	2,579	PMU management report and works progress report by the company responsible
Milestone: AVIS	Kilometer	2	647	0	0	0	0	1,675	0	1,675	
Milestone: Serra	Kilometer	2	346	0	0	0	904	0	0	904	

⁷ AVIS: Alvorada-Viamão Integrated System.

Output	Unit of measurement	Associated outcomes	Cost (US\$000)	Baseline	Year 1	Year 2	Year 3	Year 4	Year 5	End of program	Comments/means of verification
NRW program: Bulk water metering and pressure control equipment installed	Equipment	2	1,223	0	0	0	22	45	0	67	PMU management report and works progress report by the company responsible
Milestone: AVIS	Equipment	2	823	0	0	0	0	45	0	45	
Milestone: Serra	Equipment	2	400	0	0	0	22	0	0	22	
NRW program: District measurement and control implemented.	District measurement and control	2	2,204	0	0	0	6	23	0	29	PMU management report and works progress report by the company responsible
Milestone: AVIS	District measurement and control	2	1,636	0	0	0	0	23	0	23	
Milestone: Serra	District measurement and control	2	568	0	0	0	6	0	0	6	
NRW program: Networks expanded and replaced	Meter	2	1,941	0	0	0	6,200	22,000	0	28,200	PMU management report and works progress report by the company responsible
Milestone: AVIS	Meter	2	1,419	0	0	0		22,000	0	22,000	
Milestone: Serra	Meter	2	522	0	0	0	6,200	0	0	6,200	
NRW program: Water meters installed	Unit	2	4,268		0	0	39,480	117,000	0	156,480	PMU management report and works progress report by the company responsible
Milestone: AVIS	Unit	2	3,191	0	0	0		117,000	0	117,000	
Milestone: Serra	Unit	2	1,077	0	0	0	39,480		0	39,480	
NRW reduction program in other systems in the state of Rio Grande do Sul implemented.	Program	3	25,533	0	0	0	0	1	2	3	PMU management report
Energy efficiency program: Equipment installed	Equipment	3	22,000	0	0	0	0	0	TBD	TBD	PMU management report
Energy efficiency program: Supply lines built	Meter	3	3,800	0	0	0	9000	0	0	9000	PMU management report
Energy efficiency program: Energy consumption monitoring system installed	System	3	200	0	0	0	0	0	1	1	PMU management report
Energy efficiency program: Energy management training courses conducted	Course	3	100	0	0	0	1	1	0	2	PMU management report
Energy efficiency program: Photovoltaic system installed	System	3	700	0	0	0	0	1	0	1	PMU management report

Output	Unit of measurement	Associated outcomes	Cost (US\$000)	Baseline	Year 1	Year 2	Year 3	Year 4	Year 5	End of program	Comments/means of verification
Energy efficiency program: Energy contract management plan implemented ⁸	Plan	3	2,000	0	0	0	0	0	1	1	PMU management report
Water security plan prepared	Plan	4	2,043	0	1	0	0	0	0	1	PMU management report
Plan to drive innovation and digital transformation	Plan	4	500	0	1	0	0	0	0	1	PMU management report
Management unit to comply with the strengthened services regulation ⁹	Management unit	4	977	0	0	0	0	1	0	1	PMU management report
CORSAN sewerage PPP management unit implemented.	Management unit	4	517	0	0	0	0	1	0	1	PMU management report
Corporate governance plan for CORSAN implemented ¹⁰	Plan	4	153	0	0	1	0	0	0	1	PMU management report

⁸ The plan will be considered implemented once the following actions have been completed: migration of contracts to the free market, correction of power factor, and adaptation of electricity supply contracts.

⁹ The management unit will be considered strengthened once the reporting systems and processes required by regulatory standards have been installed and implemented.

¹⁰ The plan will be considered implemented once the following actions have been carried out: structuring of the board of directors with independent members, formation of the by-laws committee, and development of the sustainability policy.

FIDUCIARY AGREEMENTS AND REQUIREMENTS

Country: Brazil

Project number: BR-L1495

Name: Program to Expand and Improve Drinking Water Services in the State of Rio Grande do Sul (PROASUL)

Executing agency: Companhia Riograndense de Saneamento (CORSAN)

Fiduciary team: Fabia Bueno and Karina Díaz (FMP/CBR)

I. EXECUTIVE SUMMARY

- 1.1 The institutional evaluation of the program's fiduciary management took into account: (i) the country's current fiduciary context; (ii) the evaluation's findings regarding the main fiduciary risks; and (iii) the Institutional Capacity Assessment System (ICAS) analysis of the executing agency. As a result of this work, the following fiduciary agreements for procurement and financial management have been prepared for program execution.
- 1.2 Brazil has robust country fiduciary systems that facilitate sound management of administrative, financial, oversight, and procurement processes, in accordance with the principles of transparency, economy, and efficiency. The executing agency's planning and organization, and execution and oversight systems are well developed. However, considering its lack of experience in multilaterally funded projects, the program's level of risk is considered medium.
- 1.3 As the executing agency, CORSAN has the necessary legal capacity to execute the program.

II. FIDUCIARY CONTEXT OF THE EXECUTING AGENCY

- 2.1 CORSAN is a semipublic company and the State of Rio Grande do Sul holds 99% of its shares. The company holds an annual general meeting of shareholders with advisory and auditing bodies such as the audit committee, administrative council, management board, internal audit committee, and ethics committee. It is supported by its administration, commercial, finance, and investor relations departments, with the expansion, operations, and technical departments as line departments. All these departments are coordinated by the Office of the Presidency.

- 2.2 For planning and organizing program actions, the entities use and follow the following national management support instruments:¹ (i) the multiyear plan, which sets out the government's guidelines, objectives, and goals; (ii) the Lei de Diretrizes Orçamentárias [Budget Preparation Guidelines Act], which establishes the budget guidelines of the government; and (iii) the Lei Orçamentária Anual [Annual Budget Act], which estimates and sets public spending for the current year. The program will be considered part of strategic planning so as to be included within the Annual Budget Act.
- 2.3 CORSAN has integrated financial management systems with four main modules: accounting, finance, procurement, and assets. In addition, it has strategic planning, works management, and collection systems. Although these systems are not integrated, work is currently under way to contract a firm to integrate them.
- 2.4 CORSAN has been executing projects under the Growth Acceleration Program (PAC) with federal government funds, administering R\$2.84 billion, for which its main financial agents are Caixa Econômica Federal do Brasil and Banco Nacional de Desenvolvimento Econômico e Social. They have no prior experience with multilateral organizations and, in addition to the IDB loan, CORSAN is analyzing possible financing with other financial institutions.
- 2.5 CORSAN follows the Lei de Licitações [Bidding Act] 8,666 and the Lei do Pregão Eletrônico [Electronic Reverse Auction System Act] 10,520. In addition, it is regulated by the Lei das Estatais [State-owned Companies Act] 13,303, in force since June 2016. With respect to implementation of the latter, CORSAN approved its Regulations Governing Works and Contracts, effective as of 1 August 2017. A specific group has been created to develop the required implementation measures, which is in the process of transitioning the bidding processes. These new regulations are based on the Regime Diferenciado de Contratações Públicas [Differentiated Public Procurement System], where works are bid on using a base project, without having to have finished detailed designs. However, this group is assessing the specificities of each case to avoid subjective criteria.

III. INSTITUTIONAL CAPACITY ASSESSMENT, FIDUCIARY RISK, AND MITIGATION ACTIONS

- 3.1 The evaluations found that although CORSAN has qualified staff and satisfactory institutional capacity to implement the program's actions, it is managing several projects at once and lacks the knowledge, experience, and tools necessary to manage projects with multilateral financing, which would entail a medium fiduciary risk associated with delays in the awarding of contracts and program accounts reporting. This is due to the lack of personnel working exclusively on the program, unfamiliarity with and a lack of experience in implementing Bank policies, CORSAN's internal procedures, weaknesses in the financial system with regard to issuing the required reports, and difficulties on the part of the construction companies contracted for the works to provide guarantees. In order to mitigate these risks, a management system will be implemented for the program, to be financed with resources from the program's administrative budget; a program management unit (PMU) will be created with CORSAN fiduciary staff who will receive consulting services to support program management; a special bidding commission will be

¹ [Instrumentos de Planejamento e Orçamento](#).

formed for program bidding processes; and staff involved in program management will be trained in IDB fiduciary policies.

IV. CONSIDERATIONS FOR THE SPECIAL PROVISIONS OF THE CONTRACT

- 4.1 **Special contractual conditions precedent to the first disbursement of financing.** In order to ensure that the executing agency is adequately prepared to commence program implementation in accordance with the established schedule, the executing agency will provide the Bank with evidence of compliance with the following fiduciary provision: Formation of a special bidding commission for the program. This condition is considered essential to ensuring that the borrower has a team trained in the implementation of Bank policies, beyond the permanent bidding channels that could cause program delays.

V. AGREEMENTS AND REQUIREMENTS FOR PROCUREMENT EXECUTION

- 5.1 The fiduciary agreements and requirements relating to procurement set out the provisions that apply to execution of all procurement operations under the program.
- 5.2 **Procurement of works, goods, and nonconsulting services.** Contracts for works, goods, and nonconsulting services generated under the program that are subject to international competitive bidding (ICB) will be procured using the standard bidding documents issued by the Bank. Bidding processes subject to national competitive bidding (NCB) will be executed using the standard bidding documents agreed upon with the Bank. The program's sector specialist is responsible for reviewing the technical specifications for procurement during preparation of the selection processes.
- 5.3 **Selection and recruitment of consultants.** The consulting service contracts arising under the program will be carried out using the standard request for proposal documents issued by the Bank. The program's sector specialist is responsible for reviewing the terms of reference for the procurement of consulting services.
- 5.4 **Use of the country procurement system.** The Bank-approved country procurement (sub)system, Pregão Eletrônico, will be used for the procurement of off-the-shelf goods up to US\$5 million. Any system or subsystem subsequently approved will be applicable to the operation. The operation's procurement plan and updates thereto will indicate the procurement operations to be executed through the approved country systems.
- 5.5 **Advance procurement/retroactive financing.** Retroactive financing against the loan proceeds may be used to execute program works for up to US\$40 million (20% of the proposed loan amount), provided that the corresponding procurement processes comply with the Bank's procurement processes. Expenditures against the proceeds of the counterpart contribution may be recognized for up to US\$20 million (20% of the estimated amount of the local counterpart contribution) for works, services, and equipment provided that they are of satisfactory quality and compatible with the program, that their prices do not affect the program's economic and financial viability, and that they have been delivered and completed in a timely manner. Such expenditures will have been incurred on or after 12 October 2017 (project profile

approval date), but will in no case include expenditures incurred more than 18 months prior to the loan approval date.

5.6 **Direct contracting.** No direct contracting is anticipated.

Table 5.1. Thresholds for international competitive bidding and shortlist comprised of international candidates (US\$ thousands)

Method	ICB works	ICB goods and nonconsulting services	International shortlist for consulting services
Threshold	US\$25 million	US\$5 million	US\$1 million

Table 5.2. Major procurement processes

Activity	Selection method	Estimated date of call for proposals/invitation	Estimated amount (US\$ millions)
Works			
Water treatment plant works (several systems)	ICB/NCB	1st half 2018	82.8
Energy efficiency works	NCB	1st half 2019	3.8
Goods			
Electromechanical equipment	ICB	1st half 2019	10.0
Motors and power generation systems	ICB/NCB/country system	1st half 2019	12.0
Consulting services			
Works supervisor	Quality- and cost-based selection (QCBS)	1st half 2018	6.5
Management support	QCBS	1st half 2018	4.4
Structuring of CORSAN to comply with the service regulation and manage the public-private partnership for sewer systems management.	QCBS	2nd half 2018	1.9

* [Procurement plan](#).

5.7 **Procurement supervision.** Procurement will be supervised on an ex post basis, except where ex ante supervision is warranted. Where procurement is executed using the country system, supervision will also be carried out using that system.

5.8 The supervision method will be determined for each selection process. Ex post reviews will be conducted every 12 months based on the project supervision plan. Ex post review reports will include at least one physical inspection visit, selected from the procurement processes subject to ex post review.

Ex post review threshold		
Works	Goods	Consulting services
NCB and shopping	NCB and shopping	Less than US\$1 million

5.9 **Records and files.** The executing agency will be responsible for process documentation, which will maintain the necessary documentation for supervision and audit purposes.

VI. FINANCIAL MANAGEMENT AGREEMENTS AND REQUIREMENTS

A. Programming and budget

- 6.1 CORSAN, acting through the PMU, will be responsible for planning the execution of activities as provided in the program execution plan and annual work plan. For the planning and organization of the program and project actions, CORSAN uses the long-term plan, the multiyear plan (integrated into the state government plan), and the annual budget approved by its management and management board.

B. Accounting and information systems

- 6.2 CORSAN uses the Government e-Marketplace/Enterprise Resource Planning (GEM/ERP) system as its main instrument for budgetary, financial, and asset recording, monitoring, and execution. The company also uses the SESUITE system, with modules parallel to the main system, that includes a range of information not supported by the GEM/ERP system, and the Integrated Commercial System (SCI) for billing and collection.
- 6.3 With respect to the program, CORSAN does not yet have an automated accounting and financial record-keeping system that is integrated with the company's general accounting system so as to identify the transactions charged to the loan by source of financing and investment category, in accordance with the IDB-approved chart of accounts and to issue semiannual reports on the program's activities and resources, in U.S. dollars, independently from the company's other activities.
- 6.4 Within no more than six months from the signature of the loan contract, the company will furnish proof that the management and financial system has been implemented, which will automatically enable the program's financial reports to be issued.

C. Disbursements and cash flow

- 6.5 The program will use the cash management system of the State of Rio Grande do Sul. Expenditures will be subject to financial and budget implementation processes and must be duly recorded in the GEM/ERP system.
- 6.6 IDB resources will be managed via an exclusive account enabling the proceeds from the loan to be independently identified and to perform bank reconciliations on them. This includes deposits and payments. The account will be opened in a commercial bank to be decided by the finance department.
- 6.7 Disbursements will be made in U.S. dollars in the form of advances. Advances will be based on a projection of up to 120 days submitted by the executing agency. For future advances, it will be necessary to account for at least 80% of the previously advanced funds.
- 6.8 The exchange rate agreed upon with the executing agency for the accounting of expenses paid for with advances of loan proceeds will be the first-in first out exchange rate. In order to determine the equivalence of the expenses incurred in the local counterpart contribution or the reimbursement of expenses charged against the loan, the agreed exchange rate will be the rate in effect on the date prior to the date the request for reimbursement or recognition of the expenditure was presented to the Bank.

- 6.9 Expenses deemed ineligible by the Bank will be repaid using local contribution resources or other resources at the Bank's discretion, depending on the nature of the ineligibility.

D. Internal control and internal auditing

- 6.10 CORSAN has an internal audit department (AUDIT) linked to its management board to plan and conduct, on an ongoing, systematic, and periodic basis, the internal audit of the actions of the company's management and organizational units, among other functions.
- 6.11 In support of the Tribunal de Contas do Estado do Rio Grande do Sul [Rio Grande do Sul Court of Auditors] (TCE/RS), the Contadoria e Auditoria-Geral do Estado [State Accounting and Auditing Office] also exercises the internal control function.

E. External control and reports

- 6.12 Financial reporting and the eligibility of program expenses will be audited annually by the TCE/RS, an entity eligible to conduct external audits of Bank loans, or by an eligible external audit firm.
- 6.13 The program's annual audited financial statements will be submitted in accordance with the terms of reference agreed upon by the Bank and the TCERS, or a Bank-eligible external audit firm, within 120 days after the end of the fiscal year.

F. Financial supervision plan²

- 6.14 The supervision plan may be modified during program implementation, in accordance with changes in risk levels or due to additional control requirements as determined by the Bank.

Supervision activity	Supervision plan			
	Nature/scope	Frequency	Responsible	
			Bank	Executing agency
Financial	Ex post review of disbursements and procurement.	Annual	Fiduciary team	PMU – external auditor
	Annual audit	Annual	Fiduciary team	PMU – external auditor
	Review of disbursement requests	Periodic	Fiduciary team	
	Supervision visit	Annual	Sector specialist and fiduciary team	

² See Financial Management Guidelines for IDB-Financed Projects (Operational Policy OP-273-6), Annex I, Application of Financial Management Principles and Requirements, Requirement 4, Financial Supervision.

DOCUMENT OF THE INTER-AMERICAN DEVELOPMENT BANK

PROPOSED RESOLUTION DE-____/19

Brazil. Loan ____/OC-BR to Companhia Riograndense de Saneamento - CORSAN
Program to Expand and Improve Drinking Water Services
in the State of Rio Grande do Sul – PROSASUL

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 Companhia Riograndense de Saneamento - CORSAN, as Borrower, and with the Federative Republic of Brazil and the State of Rio Grande do Sul, as Guarantors, for the purpose of granting the former a financing to cooperate in the execution of the Program to Expand and Improve Drinking Water Services in the State of Rio Grande do Sul – PROSASUL. Such financing will be for an amount of up to US\$200,000,000 from the Ordinary Capital resources of the Bank, and will be subject to the Financial Terms and Conditions and the Special Contractual Conditions of the Project Summary of the Loan Proposal.

(Adopted on ____ 2019)