

DOCUMENT OF THE INTER-AMERICAN DEVELOPMENT BANK

ECUADOR

QUITO DRINKING WATER AND SEWER SYSTEM PROGRAM

(EC-L1242)

LOAN PROPOSAL

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ABBREVIATIONS

AECID	Agencia Española de Cooperación Internacional para el Desarrollo [Spanish Agency for International Development Cooperation]
UFW	Unaccounted-for water
CGE	Contraloría General del Estado [Office of the Comptroller General]
CO	Ordinary Capital
CP	Open call for proposals
DMQ	Metropolitan District of Quito
EPMAPS	Empresa Pública Metropolitana de Agua Potable y Saneamiento de Quito [Metropolitan Quito Public Water and Sanitation Utility]
FONAG	Fondo para la Protección del Agua [Water Protection Fund]
FONPRODE	Fondo para la Promoción del Desarrollo [Development Promotion Fund]
GTI	Technical Department for Infrastructure
ICAS	Institutional Capacity Assessment System
INEC	Instituto Nacional de Estadística y Censos [National Institute of Statistics and Censuses]
EBITDA	Earnings before interest, tax, depreciation, and amortization
ICB	International competitive bidding
MW	Megawatt
PEP	Project execution plan
PMIAPA	Plan Maestro Integral de Agua Potable y Saneamiento [Comprehensive Master Plan for Water and Sanitation]
POD	Proposal for Operations Development
PCU	Program coordination unit
QCBS	Quality- and cost-based selection
QCS	Selection based on consultants' qualifications
SCADA	Supervisory Control and Data Acquisition [system]
SCNP	Sistema Nacional de Contratación Pública [National Public Procurement System of Ecuador]
SSS	Single source selection
UAWR	Unaccounted-for water rate

PROGRAM SUMMARY

ECUADOR QUITO DRINKING WATER AND SEWER SYSTEM PROGRAM (EC-L1242)

Financial Terms and Conditions				
Borrower:			Flexible Financing Facility^(a)	
Metropolitan Quito Public Water and Sanitation Utility (EPMAPS)			Amortization period:	24 years
Executing agency: EPMAPS			Disbursement period:	6 years
Guarantor: Republic of Ecuador			Grace period:	6.5 years ^(b)
Source:	Amount (US\$)	%	Interest rate:	LIBOR-based
IDB (Ordinary Capital)	87,100,000	39.40	Credit fee:	^(c)
FONPRODE:^(f)	40,000,000	18.10	Inspection and supervision fee:	^(c)
Local counterpart:	93,900,000	42.50	Weighted average life:	15.25 years
Total:	221,000,000	100	Approval currency:	U.S. dollar
Program at a Glance				
Objective/description: The program's objective is to support EPMAPS in improving the continuity, operational management, and reliability of drinking water service, and increase the wastewater treatment capacity of the Metropolitan District of Quito, thus contributing to the objectives of the government's National Development Plan and improving public health and environmental conditions in the Metropolitan District of Quito.				
Special conditions precedent to the first disbursement of the financing: (i) the program coordination unit will have been established and be operational, with key personnel hired or appointed in accordance with the terms of reference and profiles contained in the program's Operating Regulations ; and (ii) the program's Operating Regulations will have been approved and entered into force, in accordance with the terms and conditions previously approved by the Bank (paragraph 3.8).				
Special contractual conditions of execution: See special contractual conditions in Section V of the environmental and social management report .				
Exceptions to Bank policies: A partial waiver is requested to the Guarantees Required from the Borrower (Operational Policy OP-303) in relation to the provision from the Municipality of Quito to guarantee the performance obligations and local counterpart contributions. The Republic of Ecuador will guarantee the financial obligations under the loan contract (paragraph 3.2).				
Strategic Alignment				
Challenges:^(d)	SI	<input checked="" type="checkbox"/>	PI	<input checked="" type="checkbox"/>
			EI	<input type="checkbox"/>
Crosscutting themes:^(e)	GD	<input checked="" type="checkbox"/>	CC	<input checked="" type="checkbox"/>
			IC	<input checked="" type="checkbox"/>

- ^(a) Under 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. When considering such requests, the Bank will take operational and risk management considerations into account.
- ^(b) Under the Flexible Financing Facility, changes in the grace period are possible provided that the original weighted average life and last payment date of the loan, as documented in the loan contract, are not exceeded.
- ^(c) The credit fee and inspection and supervision fee will be established periodically by the Board of Executive Directors as part of its review of the Bank's lending charges, in accordance with the 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 Rule of Law).
- ^(f) Fondo para la Promoción del Desarrollo [Development Promotion Fund], a financial cooperation instrument created by the Government of Spain. FONPRODE is governed by Law 36/2010 and Royal Decree 597/2015 of Spain, which approve the Fund's implementing regulations. The cofinancing framework agreement between the Inter-American Development Bank and the Kingdom of Spain was signed on 1 April 2017. Under the agreement, the Bank collects a service fee for the costs of preparing a project, which is distributed among the Bank departments that assisted in the preparation, execution, and monitoring of the project.

I. DESCRIPTION AND RESULTS MONITORING

A. Background,¹ problems addressed, and rationale

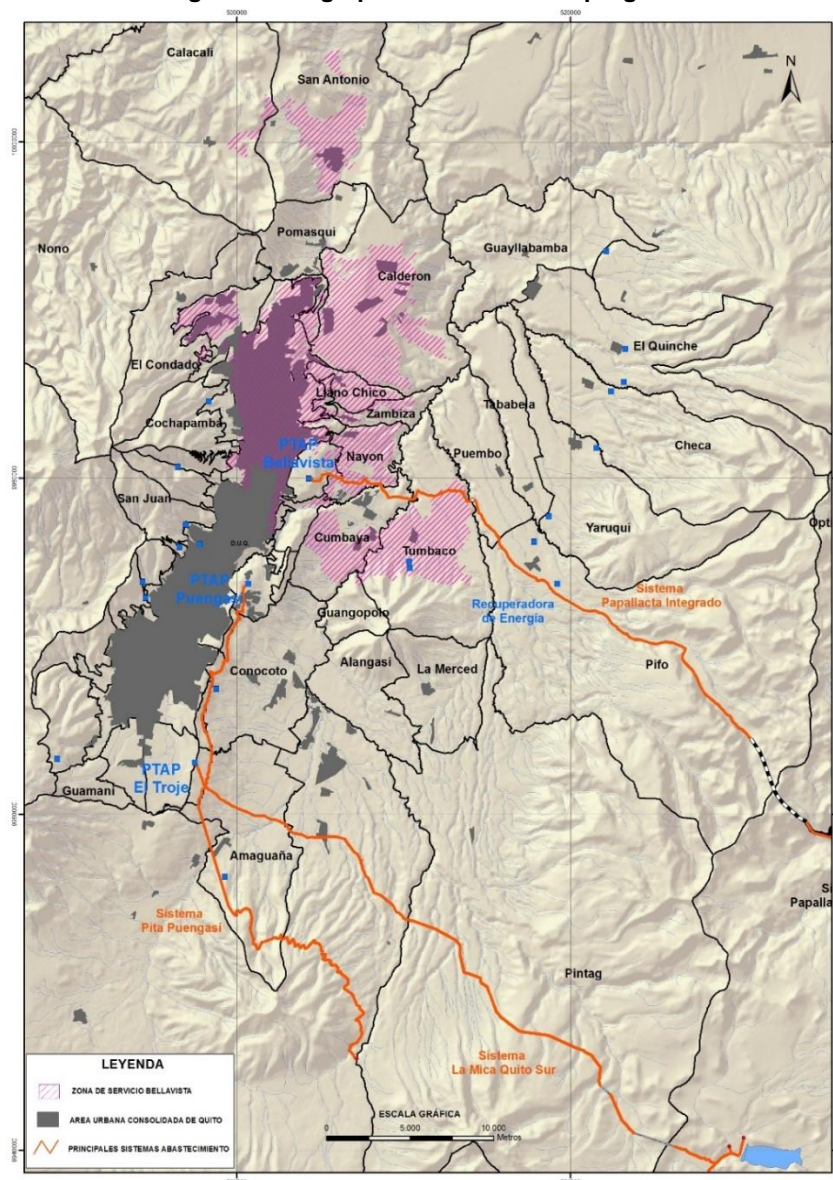
- 1.1 **Macroeconomic context.** Ecuador has not yet recovered from the macroeconomic instability caused by the end of the commodities supercycle in 2015. After falling into recession in 2016 (contraction of 1.3%), the economy staged a recovery in 2017 (GDP growth of 2.4%) that proved fragile, slowing again in 2018 (1.1% growth). As a result of the fiscal consolidation process under way in the country, which looks set to last several years, the medium-term growth forecasts are modest: an average of 1.3% over the next three years, according to the International Monetary Fund. This weak economic growth has led to a deterioration of conditions in the labor market and caused the rapidly falling poverty rates that Ecuador had been experiencing until the oil shock to stall. In this context, the government has reprioritized its macroeconomic policies toward fiscal stability and promotion of the private sector as a driver of growth.
- 1.2 **The water and sanitation sector in the Metropolitan District of Quito (DMQ).** The DMQ, which includes the city of Quito and 33 rural parishes has a population of approximately 2.6 million and covers an area of 4,228 square kilometers.
- 1.3 Established in 1960, the Metropolitan Quito Public Water and Sanitation Utility (EPMAPS) is an independently managed entity governed by public law that is attached to the Decentralized Autonomous Government of the DMQ, which has legal status; its own assets; budgetary, financial, economic, and administrative and managerial autonomy; and belongs to the strategic water and sanitation sector. Its purpose is to provide water and sanitation services to the DMQ ([optional link 10](#)).
- 1.4 **Current status and problems affecting water and sanitation services in the DMQ.** EPMAPS coverage levels are 99.37% in terms of drinking water and 93.92% with respect to the sewer network; however, its wastewater treatment coverage is low (2.76%).²
- 1.5 **Drinking water supply system.** The drinking water system in the DMQ includes 20 water treatment plants and 43 wells that supply a distribution network of more than 6,700 kilometers. It comprises integrated systems that serve the city and suburban districts, supplemented by independent systems in parishes.
- 1.6 The system's output capacity is 8.5 cubic meters per second. Mean output in 2016 was 8.1 cubic meters per second, denoting a supply shortfall on peak consumption days. Three systems supply three quarters of output: Mica, which provides 16% of the flow, supplying the area with the El Troje Water Treatment Plant; Pita, which serves the center (25%) through the Puengasí Water Treatment Plant; and Papallacta, which supplies north (35%) with the Bellavista Water Treatment Plant. The supply-demand analysis contained in the Comprehensive Master Plan for Water and Sanitation (PMIAPA)³ indicates that the existing water sources and facilities are insufficient to meet the daily peak demand values projected for 2020.

¹ See Bibliography ([optional link 13](#)).

² Values as of November 2018. EPMAPS.

³ PMIAPA 2011 ([optional link 12](#)).

Figure 1. Geographic location of the program



- 1.7 In the Quito Norte area, which is supplied by the Bellavista plant, there is rationing and an intermittent service affecting the parishes of Calderón, Calacalí, and San Antonio de Pichincha,⁴ which have a combined population of 300,000. The high population growth and urban expansion northward are outstripping the capacity of water mains and storage tanks, creating unequal pressure distribution and operational problems in the networks. The Bellavista system serves an overall population of 1.1 million, with an average demand of 3 cubic meters per second (2018). The Bellavista Water Treatment Plant is already operating at capacity.

⁴ EPMAPS found that in the program's area of influence in 2018, 1,500 customers in the parish of Calacalí and 2,000 customers in Calderón had drinking water service for six hours per day on average; in other words, 18 hours of water rationing.

- 1.8 If the population growth trend continues, by 2025 the supply shortfall will have increased and unless immediate steps are taken in the form of projects such as the construction of a new water treatment plant in Calderón and an expansion of the Bellavista plant, 42% of the population served by the system will be adversely affected.
- 1.9 At the same time, the infrastructure of some water treatment plants (Bellavista and El Troje) needs rehabilitation. Given that they are already operating at full capacity, any activity that involves a partial shutdown (one module) or one of the water treatment plants would lead to large-scale rationing. The water supply to the DMQ is also vulnerable to potential eruptions of the Cotopaxi Volcano. Following the guidelines contained in the Comprehensive Master Plan for Water and Sanitation and subsequent studies, the utility is increasing source capacity by building intakes along the eastern rivers as far as their transfer west of the Central Highlands, at Paluguillo. This means that the protection measures that the utility applies to its catchment areas, which are implemented with the support of the Water Protection Fund (FONAG), need to be extended to its watersheds. In addition, in the short term pipelines need to be extended and water treatment plants expanded. Although the utility has supervisory control and data acquisition (SCADA) systems in place at critical components of its systems, it needs to extend their range as new infrastructure is added and in order to incorporate new components and operational functionalities.
- 1.10 **Sanitation system.** The DMQ has a combined sewer network measuring 5,622 kilometers in length and collects rainwater and wastewater which it discharges into the four rivers that flow through the city and into the Esmeraldas River, which empties into the Pacific Ocean 200 kilometers downstream. EPMAPS has designed a system of interceptors, pipelines, and treatment facilities with a capacity of 7,500 liters per second (Vindobona system) and is currently evaluating financing solutions for its implementation that would include private-sector participation. It currently operates a wastewater treatment plant (Quitumbe) with a capacity of 108 liters per second that serves a small area, for which the sewer system is not yet complete. For the eastern parishes of the DMQ (population of 900,000 by 2040) the sewer system needs to be extended (in execution with self-generated funds), interceptors built, and the relevant treatment facilities constructed, to which end nine wastewater treatment plants have been designed with capacities ranging from 5 to 1,000 liters per second.
- 1.11 The shortfalls in terms of coverage and quality have an impact on the provision of water and sanitation services and are an indicator of health risk exposure,⁵ which is exacerbated where it coincides with the areas of greatest poverty in the DMQ's zones of rapid peri-urban growth.⁶ This is significant since there is a positive

⁵ Intermittent service can adversely impact water quality. IDB Technical Note. [Intermittent Supply in the Context of Efforts to Improve Piped Drinking Water Supply in Latin America and the Caribbean: Lessons from a Case Study in Arraiján, Panama](#), Nelson, Kara and John Erickson.

⁶ According to the 2017 and 2018 Employment and Unemployment Survey, income poverty was 10.3% in Quito. The corresponding rate in Checa was 14.2% (gleaned from a program-sponsored survey), and in Calderón it was 37.1% (based on EPMAPS user records), both of which are higher than in Quito. The program would help people at greater risk of falling into poverty based on their place of residence ([optional link 2](#)).

correlation⁷ between environmental quality,⁸ health,⁹ and access to water and sanitation.

- 1.12 Climate change is also adversely affecting water balances, with tangible shifts in the availability of water originating from tropical glaciers (Kaser, 1999; Kaser et al., 2003; Rivera et al., 2005; Vuille et al., 2008). Despite the fact that the precipitation change projected by regional climate change models is not very robust, particularly for mountainous areas (González-Zeas, et al., 2018), scientific evidence suggests that these areas will warm faster than others at lower elevations (Rangwala et al., 2012), resulting in high variability in the availability of water. To respond to that challenge, the DMQ's water supply should be able to cope with a certain degree of uncertainty in terms of water availability and have the necessary flexibility and redundancies to ensure an optimal level of reliability in order to supply a growing population with continuous service in accordance with its needs (Buytaert et al., 2012; Jacobsen et al., 2017) ([optional link 1](#)).
- 1.13 **EPMAPS management.** EPMAPS has adequate operating and financial indicators (Table I). However, there is room for improvement in its water metering index. At the same time, 1% of its metering equipment (big consumers) account for 14% of total billing. It is considered good practice for monitoring of such consumption to be more narrowly targeted, which requires having smart meters. In 2016, EPMAPS was the world's first utility to become certified in the use of AquaRating (a management tool),¹⁰ and was recertified in February 2019. It is also rated as energy self-sufficient ([optional link 4](#)).

Table I. EPMAPS indicators (2017)*

Management indicators	Value
% Micrometering	99.6%
% unaccounted-for water	28.9%
% Collection	91.9%
% EBITDA** over income	40.6%
Financial debt-to-EBITDA ratio	1.54
Employees per 1,000 connections	2.9

* EPMAPS's management indicators are at efficient levels and above average for utilities in the region. For a representative sample of utilities in Latin America, the benchmarking study of the Association of Water and Sanitation Regulators of the Americas (ADERASA) estimated the average number of employees per connection at 2.9, micrometering levels of 70%, and an unaccounted-for water rate of 42%. The upper threshold of the financial debt-to-EBITDA ratio required by EPMAPS financiers is 4 x.

** Earnings before interest, tax, depreciation, and amortization.

⁷ Documented in numerous studies, such as those summarized by Brenneman, et al. (2002).

⁸ Rodríguez-Jeangros et al. (2018) model the effects of wastewater treatment on water quality in the Bogotá River ([link](#)).

⁹ Formal studies by [Wagstaff and Claeson](#) (2004) and [Schady](#) (2015) found that access to clean water and sanitation infrastructure help to reduce child mortality. [Conte Grand, M. and G. Coloma](#) (2009) found a significant correlation between increased water and sanitation services coverage and lower mortality.

¹⁰ Based on an external audit, [AquaRating certification](#) promotes the reliability of data. Using the AquaRating tool to identify areas for improvement, EPMAS has improved its management performance, based on, inter alia, a short- and a medium-term management plan linked to the findings implemented by the utility.

- 1.14 **Sector institutional framework.** The Secretariat for Water, as the lead agency, is in charge of strategic planning and policy in the water and sanitation, water resources, and irrigation sectors. The Agency for Water Regulation and Control (ARCA) regulates services. According to the 2014 Water Act (Ley Orgánica de Recursos Hídricos, Usos y Aprovechamiento del Agua), the provision of water and sanitation services is under the purview of the Decentralized Autonomous Government. In that context, the DMQ has delegated water and sanitation services provision to EPMAPS ([optional link 4](#)).
- 1.15 **Gender.** EPMAPS has held gender violence prevention workshops and events with the support of Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ). A gender working group has been formed—although informally and has not yet recognized by the utility—to promote gender issues in the areas of communication, human resources, and environmental management. Nevertheless, gaps exist that will be addressed in this operation. According to 2018 data, only 22% of the utility's 1,791 employees are women, with two women on the executive board and five in senior management positions; the rest perform technical, advisory, and administrative roles.¹¹ A variety of institutions have documented the benefits of adopting a gender perspective in water and sanitation interventions. A number of IDB operations include a strategic gender component for projects that promote the strengthening of utility companies, broadening employment opportunities for women internally and for female users externally. The Spanish Agency for International Development Cooperation (AECID) has been implementing the Water and Sanitation Program for Small Towns and Rural Communities in Bolivia since 2011, which included a component to train women plumbers. The program enabled women to strengthen nontraditional knowledge and skills, connect homes to sanitation systems, strengthen their leadership capacity, install their own plumbing and/or repair residential connections, and provided them with opportunities to offer plumbing services and earn an income ([optional link 9](#)).
- 1.16 **Innovation.** EPMAPS has a Department and a Committee devoted to research, development and innovation. It produces an annual research, development, and innovation plan, which includes a portfolio of defined projects that is aligned with the corporate strategy. In recent years, it has trained 20% of its staff in innovation and research management, which it complements with research activities to improve demand management and energy efficiency at water treatment plants, wastewater treatment plants, and pumping systems. EPMAPS relies on support from strategic partners for research and innovation (e.g. academia, nongovernmental organizations, and governmental agencies). In the context of this program, innovation projects have been identified that will be financed with the utility's own resources ([optional link 11](#)).
- 1.17 **Proposed interventions.** The supply system requires a comprehensive intervention, with measures to enable current and future public demand to be met in the DMQ with an efficient, good-quality, and sustainable service. Meeting that objective will require boosting installed capacity in terms of production, pipelines, and storage, as well as interconnecting systems in order to make supply flexible and lower their vulnerability to variations in water quality and volume during extreme events. Based on the conclusions of the Comprehensive Master Plan for Water and

¹¹ Staff report provided by the EPMAPS human resources department, 2019.

Sanitation, the supply to Quito Norte will need a new water treatment plant at Calderón to be supplied from Paluguillo, requiring a reconfiguration of the distribution system.

- 1.18 The potential efficiency gains and supply cost reductions from cutting physical and apparent water losses should also be leveraged. It will be necessary to update and expand the online supervision, monitoring, and control systems by means of an integrated platform, in order to incorporate new infrastructure, more modern technology, and more efficient applications in line with recommended best practices for utility management. Those measures, together with hydraulic optimization (pressure control and network replacement) and incorporation of digital meters for big consumers,¹² will help to reduce the unaccounted-for water rate (28.9%).¹³
- 1.19 Regarding sanitation, sewer system coverage in Quitumbe needs to be completed and investments are needed in sewer networks, interceptors, and wastewater treatment in rural parishes. Financing will be provided for two sanitation systems prioritized by the utility, based on parish population growth.
- 1.20 As part of efficiency enhancement and resource optimization, the benefits have been identified of investing in hydroelectric production to supply the utility's own energy needs, which would also contribute to climate change adaptation and mitigation.
- 1.21 Lastly, efforts to strengthen EPMAPS's business management should continue, in line with the need to enhance the resilience and reliability of the water supply system. In that regard, updating the 2011 Comprehensive Master Plan for Water and Sanitation, including aspects of climate change and water security is particularly important, as is the development of innovative projects to ensure effective services management.¹⁴ Various studies of works carried out in similar contexts demonstrate the effectiveness of the proposed interventions.¹⁵
- 1.22 **The Bank's experience in the sector.** Recent years have seen the execution of the Metropolitan Quito Environmental Sanitation Program Phase I (operation 1424/OC-EC; 2002-2007) and Phase II (operation 1802/OC-EC; 2008-2014), aimed at enhancing the coverage and quality of those services, which concluded with successful results. In addition to these operations, technical-cooperation operations (ATN/MA-14923-EC and ATN/MA-17101-EC) have been launched to strengthen the utility's management of wastewater treatment, particularly in the Vindobona project (ATN/MA-15653-RG and ATN/AA-15654-RG), which have enabled the utility to enhance the framework of integrity and transparency in which it operates. This program complements actions from previous operations, updating the Master Plan, expanding and integrating production of drinking water and of measurement and supervision systems. Other Bank-supported programs include a water supply and sanitation program for the city of Cuenca (operation 1753/OC-EC), with the aim of meeting demand for water and sanitation services in a sustainable and efficient way;

¹² E. Arniella. [Evaluation of Smart Water Infrastructure Technologies \(SWIT\)](#), IDB, 2017.

¹³ EPMAPS. [Memoria de Sostenibilidad 2017](#).

¹⁴ P. Mastranlego, [FINTECH: Innovations You May Not Know were from Latin America and the Caribbean](#), IDB, 2018.

¹⁵ Evidence of the effectiveness of loss control interventions can be found in [Da Silva, N.](#), 2008 and in [Rizzo, A., et al.](#), 2004. For energy efficiency in water utilities, see Pedraza A., et al., [IDB Technical Note IDB-TN-1081](#).

and PROSANEAMIENTO (operations 3232/OC-EC and 3233/CH-EC), executed by Banco del Estado and the Water Secretariat with the objective of expanding and improving access to water and sanitation and solid waste treatment services with an emphasis on medium-sized municipios.

- 1.23 **Lessons learned.** In preparing this program, the lessons learned from the evaluations of similar operations in Ecuador and the region, particularly the most recent project executed by EPMAPS (operation 1802/OC-EC) were taken into account. These include: (i) the need for greater participation of EPMAPS managerial departments in program execution, coordinated by a program coordination unit (PCU) (paragraph 3.3) which reports directly to the Office of the General Manager and has highly trained staff to ensure technical quality, cost optimization, and execution time; (ii) the need to directly inspect works with the Technical Department for Infrastructure (GTI) in order to leverage its experience and highly qualified staff (paragraph 3.3); and (iii) the need to continue to anticipate future investments based on medium- and long-term planning. The program will finance the update of the Comprehensive Master Plan for Water and Sanitation (paragraph 1.33).
- 1.24 **EPMAPS's strategy.** EPMAPS operates according to a management model based on the Constitution, the DMQ land-use plan, and the utility's strategic, technical, and financial plans over the long-term (Comprehensive Master Plan for Water and Sanitation and the Quito Rivers Decontamination Plan), medium-term (strategic plan), and short-term (annual operating, procurement, and work plans). The Comprehensive Master Plan for Water and Sanitation established targets for service coverage and quality as well as an investment program with a planning horizon through 2040. Notable among the targets are the following: (i) maintain coverage levels at 99% for water service and above 98% for sewer service; (ii) gradually reduce levels of unaccounted-for water to 20% in the Quito urban area and 25% in rural parishes; and (iii) ensure the economic, financial, institutional, and environmental viability of EPMAPS management.
- 1.25 In view of the amount needed to accomplish the targets (US\$500 million, not counting wastewater treatment), the Comprehensive Master Plan for Water and Sanitation envisages two stages for the intervention (2011-2019 and 2020-2040). The utility has followed that plan (with 84% of the stage I investments either executed or in execution), adjusting for differences in the geographic distribution of population growth, as a result of which the execution of some of the works planned for stage II will need to be brought forward. The program will finance a portion of those works as well as the remaining stage-I works.
- 1.26 **Government's strategy.** The program is aligned with, and will help to achieve, the objectives of the government's 2017-2021 National Development Plan,¹⁶ which aims "to ensure a life of dignity with equal opportunities for all." Accordingly, it proposes to expand and improve water and sanitation services. It is also aligned with the pillars of the National Water and Sanitation Strategy,¹⁷ which seeks to bring about "universal access to those services, while ensuring their quality and sustainability."
- 1.27 **Strategic alignment.** The operation is consistent with the IDB's Country Strategy with Ecuador 2018-2021 (document GN-2924) and is aligned with the strategic

¹⁶ [Plan Nacional de Desarrollo 2017-2021.](#)

¹⁷ [Estrategia Nacional de Agua Potable y Saneamiento.](#)

- objective “strengthen and support water and sanitation investment projects.” It is also consistent with the Update to the Institutional Strategy 2010-2020 (document AB-3008) and the challenges: (i) social inclusion and equality, inasmuch as it will increase basic services coverage in areas of highest relative poverty in the DMQ (paragraph 1.1); and (ii) productivity and innovation, by financing a number of projects in the EPMAPS innovation portfolio (paragraph 1.16). The operation is also aligned with the following crosscutting themes: (i) gender and diversity, since it includes gender equity strengthening for EPMAPS, a gender-inclusive pilot training project for plumbers of both sexes, women’s leadership on water boards, and a program of nonviolence, support for productive startups, and promotion of gender equity in the PCU (paragraph 1.31); (ii) strengthening institutional capacity and the rule of law, insofar as it will help to improve EPMAPS’s management capacity and, therefore, the quality of the service it provides; and (iii) climate change and environmental sustainability, since it includes measures that contribute to mitigation and adaptation, such as: (i) investments in a hydroelectric cogeneration system and expansion of wastewater treatment systems with the attendant methane reduction (mitigation); (ii) infrastructure for raw water conveyance and treatment and clean water distribution, enabling redundancy to be created in the system, making it more resilient to external impacts, including those associated with hydrometeorological events (adaptation); (iii) updating the Master Plan that will include climate change scenarios using the Robust Design method (adaptation); and (iv) tools and capacity building for protection and conservation of watersheds that supply the DMQ, enhancing water security (adaptation).
- 1.28 With regard to the operation’s resources, 94.84% are invested in activities that contribute to climate change adaptation, according to the multilateral development banks’ joint methodology for tracking climate finance.¹⁸ These resources contribute to the IDB Group’s target of increasing financing for climate change projects to 30% of all operations approved by the end of 2020. The program will contribute to the Corporate Results Framework 2016-2019 (document GN-2727-6) through the indicators *households with new or upgraded access to drinking water*, *households with new or upgraded access to sanitation*, and *households with wastewater treatment*.
- 1.29 The program is also consistent with the Sustainable Infrastructure for Competitiveness and Inclusive Growth Strategy (document GN-2710-5), specifically with the priority area to “support the construction and maintenance of socially and environmentally sustainable infrastructure, thus enhancing quality of life.” The infrastructure to be financed is considered sustainable, in line with the attributes targeted under the Sustainable Infrastructure Framework.¹⁹ Specifically, its economic (paragraph 1.39), financial (paragraph 1.43), environmental and social (paragraph 2.6), and institutional attributes (paragraph 1.42) are fulfilled, demonstrating adequate economic and social returns for the project cycle, operational profitability, use of renewable energy sources, and implementation of measures that contribute to the climate resilience of the DMQ’s drinking water system and help to reduce greenhouse gas emissions from wastewater treatment

¹⁸ [2017 Joint Report on Multilateral Development Banks’ Climate Finance](#) (2018).

¹⁹ [What is Sustainable Infrastructure? A Framework to Guide Sustainability Across the Project Cycle](#), IDB, 2018.

processes, complementing activities in the areas of gender inclusion and integration of technological advances and innovation. Lastly, the operation is consistent with the dimensions of success and lines of action of the Water and Sanitation Sector Framework Document (document GN-2781-8), seeking to achieve universal access while improving service quality and to ensure social and environmental sustainability.

- 1.30 **Compliance with the Bank's Public Utilities Policy.** The program and the national objectives for the sector fulfill the financial sustainability and economic evaluation conditions of the Public Utilities Policy (document GN-2716-6) and are consistent with the principles of that policy, inasmuch as EPMAPS's financial position is sound, enabling it to cover all its costs with operating revenues and meet its financial obligations; its financial projections suggest that trend will continue going forward (paragraph 1.43). The cost/benefit analysis of the sample works indicates that they are viable from a socioeconomic standpoint (paragraph 1.39). EPMAPS offers a reduced rate for low-income households (paragraph 1.40), and the sector has an adequate institutional framework, with an appropriate separation of functions and responsibilities (paragraph 1.14) ([optional link 7](#)).
- 1.31 **Gender actions.** The following actions will be implemented in line with the utility's progress in this area: (i) support for the development and execution of the EPMAPS gender action plan; (ii) calls for candidates for the PCU and program inspection unit, using inclusive language and other mechanisms to ensure gender equity in their composition; (iii) design and execution of a pilot technical certificate training project for women plumbers; (iv) promote women's participation on water boards through gender awareness raising in communities, with the support of FONAG and municipios; (v) continue the utility's program against gender violence; (vi) implement selected gender- and climate change-related productive enterprises for generating economic opportunities;²⁰ and (vii) develop and implement an internal and external communication plan to support all these activities ([optional link 9](#)).

B. Objectives, components, and cost

- 1.32 The program's objective is to support EPMAPS in improving the continuity, operational management, and reliability of drinking water service, and increase the wastewater treatment capacity of the DMQ, thus contributing to the objectives of the government's National Development Plan and improving public health and environmental conditions in the DMQ.²¹ To achieve its objectives, the program will include the following components:
- 1.33 **Component I: Expansion and improvement of Quito's drinking water systems (US\$206.01 million).** This component will finance water pipeline, treatment, and distribution works, as well as interventions to improve EPMAPS management (update of the Master Plan, including climate change considerations in relation to water supply and demand, optimized metering for big consumers, update and

²⁰ They have already been selected and will contribute to productive restructuring and restoration of areas of importance as productive alternatives to those that put pressure on ecosystems. The utility was already doing this, but without an explicit gender emphasis. See annex.

²¹ With the objective of "ensuring a life of dignity with equal opportunities for all" under Pillar 1, "Lifetime rights for all," which aims to increase by 2021: the percentage of properly treated wastewater; the number of municipalities that treat wastewater before discharging it into the environment; and the percentage of households with a safe supply of drinking water.

expansion of online measurement and monitoring systems, and innovative solutions²²), actions targeting conservation and protection of water sources with emphasis on climate change, and gender and diversity actions (paragraph 1.31). The component will also finance the development of designs that include aspects of climate change and works inspection. As a result of the interventions, some 3,500 households are expected to benefit directly with improved access to drinking water in the Quito Norte area of the DMQ, as well as approximately 57,500 households that will have secured water service by the end of the program.

- 1.34 **Component II: Expansion and improvement of sewer and sanitation service in the parishes of Quitumbe, Checa, and La Merced (US\$11.84 million).** This component will finance wastewater collection, transport, and treatment projects; development of designs, and works inspection. As a result of the interventions, some 2,700 households are expected to benefit directly from access to sewerage and wastewater treatment. The component will also provide financing for administrative and operational needs, the utility's external and performance audits, and for the program's evaluation costs.
- 1.35 **Coordination with other funding sources.** The Bank, AECID, the Spanish government, and EPMAPS have been working together throughout the program preparation phase, forging consensus on objectives, components, and financing structure. Accordingly, approval of the joint financing is expected to occur more or less at the same time the Bank's financing is approved. Under the cofinancing framework agreement between the Bank and the Kingdom of Spain,²³ a specific joint financing arrangement may be concluded to agree upon the mechanisms for collaboration, supervision, information sharing, and assistance in coordinating implementation of their respective loans, and distribution of the project preparation services fee, in accordance with the Bank's applicable policies and procedures. The borrower and the Spanish government will sign their respective loan contract; the Bank will continually monitor this process. IDB and FONPRODE disbursements will be made on a *pari passu* basis. In accordance with planning, any lag in FONPRODE funding may be covered with resources of the Bank or the local counterpart contribution.

C. Key results indicators

- 1.36 The program results have to do with improved access to water and sanitation through comprehensive interventions. The key indicators are set out in Table I-2.
- 1.37 **Beneficiaries.** The direct beneficiaries will be 61,000 households (198,000 individuals): 57,500 households projected (184,000 individuals) in Quito Norte and 3,500 households (14,000 individuals) in the parishes of Calderón, Calacalí, and San Antonio de Pichincha, which will enjoy an improvement in quality (continuity) of water services; and 2,700 households (9,000 individuals) in the parishes of Checa and La Merced, whose wastewater will be treated; and

²² The research studies selected for development are: (i) implementation of an information technology platform and physical adaptation for guided tours of drinking water plants; (ii) implementation of a pilot photovoltaic system on EPMAPS infrastructure; (iii) reuse of filter backwash water from the Bellavista water treatment plant for irrigation of Guanguiltagua Metropolitan Park; and (iv) use of computer platforms for reporting on EPMAPS interventions and works to improve population mobility ([optional link 11](#)).

²³ Signed on 1 April 2017.

85 households (325 individuals) in Quitumbe, which will have access to sewerage and wastewater treatment services, with the attendant improvement in environmental quality and health. The indirect beneficiaries will be 339,000 households (1,100,000 individuals) in Quito Norte, Cumbayá, Nayón, Zámbez, Llano Chico, Calderón, San Antonio de Pichincha, and Calacalí served by the Bellavista system, which, once the additional water treatment plant is built, will have improved drinking water service access, reliability, security, and efficiency.

Table I-2. Key indicators

Outcome indicator	Unit of measure	Baseline	Target
Households with access to water services supplied by the Bellavista and Calderón systems	Household	339,270	396,883
Households with improved mains water services in the program's interventions zones	Household	0	3,500
New households with mains sewerage services built by the program	Household	0	309
Households with discharged wastewater treatment in the parishes of La Merced, Checa and Quitumbe under the program	Household	24,687	27,367
Number of hours per year of water rationing in the program's area of influence	Hours/year	6,570	0
Enterprises with a gender and climate change perspective implemented in the program's area of influence	Number	8	18

1.38 Technical viability. The drinking water program evaluated encompasses several projects with an estimated cost of US\$166,400,000, which, together, will deliver a water supply in accordance with the statutory conditions in terms of quality, quantity, and continuity to the residents of Calderón, San Antonio de Pichincha, and Calacalí in North Quito. In addition, hydroelectric generation capacity will be increased to optimize resources and reduce energy costs. The utility has profile, prefeasibility, feasibility, and/or final design studies for these projects, in keeping with the guidelines established in the Comprehensive Master Plan for Water and Sanitation and subsequent update studies. The evaluation also examined the Checa sewerage expansion and wastewater treatment plant project, with an estimated cost of US\$6,600,000. The project follows the guidelines set out in a global study of alternative solutions and designs within the framework of the Quito rivers cleanup plan, with the necessary adjustments for the area's urban expansion. In all cases, the final designs are produced by specialized consulting firms in accordance with applicable domestic and international standards, and the works will be executed once the detailed designs are completed. EPMAPS has ample experience with the execution of infrastructure projects similar to those evaluated ([optional link 1](#)).

1.39 Economic viability. A cost/benefit analysis was prepared for the projects of the program sample (paragraph 2.4). It compared benefits and costs in scenarios with and without the intervention. The economic benefits of the sewer system projects were quantified using environmental "willingness to pay" for wastewater treatment, calculated by means of the contingent valuation method; and by using property valuation to quantify the benefits of the expanded coverage of drinking water and sewer system services. The benefits of the drinking water project were quantified using the Public Works Simulator. The costs considered for the valuation were incremental investment as well as operation and maintenance costs, valued at social prices. The findings show that the operation is socioeconomically viable, with internal

rates of return above 12% and benefit/cost ratios greater than 1. The analysis was supplemented with the corresponding sensitivity analysis ([optional link 2](#)). The projects not included in the sample will be analyzed using Bank-approved evaluation methods and only socioeconomically viable projects will be financed.

- 1.40 **Payment capacity.** The monthly cost of water and sanitation service was verified to be less than 5% of the target population's family income population, by income quintile, the rates charged by EPMAPS, and a median household bill.³ In addition, the EPMAPS rate system includes a subsidized rate for vulnerable groups.²⁴
- 1.41 **Institutional viability.** The Institutional Capacity Assessment System (ICAS) analysis of the executing agency indicates a satisfactory level of development and low level of risk for program execution. This is consistent with the EPMAPS's experience and knowledge of Bank procurement and financial policies in the programs it has executed (paragraph 1.22). EPMAPS has previous experience executing programs financed by other multilateral and bilateral agencies.²⁵ The utility's corporate planning, organization, and operational structure have facilitated adequate coordination between managerial departments and intermediate and operational levels, which is necessary for executing projects and meeting business targets. After forecasting the utility's capacities for the program, it was agreed that EPMAPS's structure would be strengthened with personnel to assume the responsibilities of the program's coordination, fiduciary management, and technical management (paragraph 3.3) ([optional link 4](#)).
- 1.42 EPMAPS has been implementing good corporate governance practices based on the following pillars: accountability, equity, transparency, responsibility, and governance structure; and clearly defined roles and powers of each governance organ: municipio, board of directors, and office of the general manager. Good practices with respect to the disclosure and publication of relevant information include the production and publication of different annual reports, on both corporate governance²⁶ and sustainability²⁷ ([optional link 10](#)).
- 1.43 **Sustainability of investments.** The EPMAPS financial analysis shows that the utility has the capacity to finance the local contribution during program execution, service its debts, and adequately operate and maintain the program's works. The financial analysis included both a historical review based on the entity's audited financial statements and operating data, as well as financial modeling that projected the estimated financial position for the coming fiscal years. EPMAPS's historical financial data indicate that it has been able adequately to cover all operating expenses with its rate revenue (reflected in an EBITDA margin on operating revenue of 39.2% and an EBIT²⁸ margin on operating revenue of 28.2% on average annually for the last three fiscal years), including its financial costs. EPMAPS has been meeting its financial obligations and servicing its debt,²⁹ both with and without a

²⁴ [EPMAPS customer billing regulations](#).

²⁵ Development Bank of Latin America (CAF), Agence Française de Développement, and Banco de Desarrollo del Ecuador.

²⁶ See [EPMAPS - Informe de Buen Gobierno Corporativo](#).

²⁷ See [EPMAPS - Memoria de Sostenibilidad 2017](#).

²⁸ Earnings before interest and tax.

²⁹ It shows, inter alia, a net financial debt-to-EBITDA ratio of 1.54 (2017), which is below the thresholds required by its creditors.

sovereign guarantee. Likewise, it is showing a net profit on its income statement and has managed to finance a significant portion of its investment plan with internal cash flow generation. Its collection levels are above 90%. The financial projections indicate that the utility will be able to maintain an adequate financial position for the projection period, including an average EBITDA margin of around 45% for the next 10 years and positive net profits, while maintaining its debt levels within the thresholds required by its creditors ([optional link 3](#)).

- 1.44 Each year, the borrower will demonstrate to the Bank that it has sufficient operating revenue to cover operating costs, depreciation, and finance charges, and that its net operating cash flow is sufficient to finance at least 45% of its investment program (net cash flow generation). If these conditions are not met, the borrower must adopt measures acceptable to the Bank to enable it to fulfill those commitments. In accordance with the EPMAPS 2019-2022 strategic plan, the borrower will achieve the following management indicator values: EBITDA margin greater than 30%; collection efficiency index greater than 88%, and maximum number of employees per 1,000 connections of 2.84. If any indicator is not met, the company will draw up a plan in agreement with the Bank that will enable it to meet the target set for the next year.

II. FINANCING STRUCTURE AND MAIN RISKS

A. Financing instruments

- 2.1 **Modality.** This will be an investment loan under the multiple-works modality, since it involves financing for water projects that, though physically similar, are independent and meet eligibility criteria, and it includes a representative sample for evaluation and execution. The program will address the priority needs set by EPMAPS and will be governed by the program Operating Regulations ([optional link 6](#)).
- 2.2 **Cost and financing.** The total cost of the program is US\$221 million, of which US\$87.1 million will be financed by the Bank with Ordinary Capital resources and US\$40 million will be financed by the Spanish government through FONPRODE. This will be a joint financing operation with a US\$93.9 million local contribution from EPMAPS. A breakdown of the consolidated budget is provided in Table II-1. The resources will be used to finance all inherent program costs ([optional link 14](#)).

Table II-1. Estimated program costs (US\$)

Component	Bank	FONPRODE	EPMAPS local contribution	Total	%
Component I: Expansion and improvement of Quito's drinking water systems	81,204,629	36,103,522	88,704,403	206,012,554	93.21
Component II: Expansion and improvement of sewer and sanitation service in the parishes of Quitumbe, Checa, and La Merced	5,075,370	3,896,478	2,876,413	11,848,261	5.36
Administration, evaluation, and audits	820,000		2,319,184	3,139,184	1.43
Total	87,100,000	40,000,000	93,900,000	221,000,000	100

- 2.3 Table II-2 presents the disbursement schedule. The execution and disbursement period will be six years, due to the procurement periods and execution of final designs, works procurement and construction, and assisted operation of systems, as detailed in the multiyear execution plan ([required link 1](#)).

Table II-2. Disbursement schedule (US\$)

Source:	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Total
IDB	10,924,993	22,634,834	17,678,415	15,090,689	14,659,127	6,111,942	87,100,000
FONPRODE	3,363,261	8,606,739	8,590,625	10,124,198	7,912,009	1,403,168	40,000,000
EPMAPS	12,436,984	23,731,335	18,386,331	16,506,640	16,622,169	6,216,542	93,900,000
Total	26,725,238	54,972,908	44,655,371	41,721,528	39,193,304	13,731,651	221,000,000
Cumulative %	12%	37%	57%	76%	94%	100%	

- 2.4 **Representative sample.** With a view to determining the program's viability and expediting its execution, a representative sample of the type of works to be executed was analyzed that together represent 75% of the program's total cost. The projects are:³⁰ (i) drinking water supply to Calderón (works included: Calderón water treatment plant (650 liters per second); Paluguillo-Bellavista raw water supply lines (section 1 Paluguillo-Puembo); and Puembo-Calderón, transmission lines, tanks, and distribution networks for Calderón; expansion of the Papallacta energy recovery plant); and (ii) sewer system, interception, and wastewater treatment for the parish of Checa. The sample meets the eligibility criteria established for the operation.
- 2.5 **Eligibility and prioritization criteria.** Projects (studies and/or works) are eligible provided that: (i) they are designed to expand coverage or improve the continuity and/or quality of water and sanitation services, and improve efficiency in service management (The technical options and levels of service will be constrained by the socioeconomic evaluation parameters of the alternative selected. In each case, the solution adopted will be the lowest-cost technically viable alternative); (ii) their characteristics preclude a category "A" classification under the Bank's environmental and social safeguard policies; (iii) they meet the requirements included in the program's social and environmental management framework; and (iv) they are economically, technically, socioenvironmentally, financially, and institutionally viable. Works prioritization will be in accordance with the guidelines contained in the utility's Master Plan and strategic plan.

B. Environmental and social risks

- 2.6 The operation has been classified as a category "B" operation in accordance with the Bank's Environment and Safeguards Compliance Policy (Operational Policy OP-703). The projects evaluated will have adverse social and environmental impacts mainly during the construction phase. They will be low to moderate, of short duration, localized, and easily managed with standard mitigation measures for this kind of infrastructure. Potential adverse impacts include increased traffic congestion, obstruction of access roads, erosion, waste generation, dust, noise, and inconvenience to residents and pedestrians; it will also be necessary to purchase a number of privately owned properties and obtain easements. The program will not

³⁰ The Calderón project was selected for the project sample because it is most representative of the different types of works involved; its price tag represents 72% of the program budget ([optional link 1](#)).

result in the physical displacement of anyone, nor does it have the potential to significantly alter or degrade critical natural habitats.

- 2.7 The socioenvironmental risks classified as medium are: (i) delays in the execution of works caused by extreme natural events, which will be mitigated through the inclusion of safety parameters in the works design in accordance with applicable standards, as well as contingency planning; and (ii) delays in execution of works at gully crossings due to possible work/occupational accidents, which will be prevented with the enforcement of an occupational health and safety plan and an emergency plan,³¹ as well as the inclusion of protection and safety gear for workers. Details about the socioenvironmental impacts and risks are presented in the environmental and social management report ([required link 3](#)).
- 2.8 The following instruments were prepared in accordance with document OP-703, Directive B.5, on environmental assessment requirements: an environmental and social management framework, and an environmental and social assessment and associated environmental and social management plans (environmental and social assessment/environmental and social management plan) for the projects in the sample.
- 2.9 During program preparation, EPMAPS organized three significant public consultations in Calderón, Checa and Pifo-Puembo, in accordance with Directive B.6. The consultations were attended by a total of 232 participants from different interested sectors, including other decentralized autonomous governments, healthcare facilities, sports leagues, women's associations, industry figures, religious institutions, and community leaders. The results of the consultations showed that public perception of the projects is generally positive, that the public are open to participating in watchdog mechanisms during the projects' execution, and that there is great desire for the projects to get underway. The most significant recommendations and requests from participants were: (i) expansion and improvement of the drinking water service in the parishes of Puembo and Pifo, as they will not benefit directly from the works to be financed under this program; (ii) give priority to hiring local labor and contribute to the economy by contracting locally available services in areas where the necessary competency exists; (iii) maintain and strengthen the public feedback mechanism during the projects' execution, so that the communities affected by them are represented; (iv) Strengthen the private land expropriation process in order to reduce the complexities posed by such factors as complicated legal procedures, informal land ownership, and project cost increases, among other aspects; (v) consider the possibility of harvest and production seasons in works planning, particularly in the parish of Checa where farming and ranching are prevalent; and (vi) quickly replace any public goods that may be adversely affected by the works, particularly sidewalks and paths used by pedestrians.

C. Other risks

- 2.10 The following medium-level public management and governance risks were identified: (i) delays in the program's execution due to the transition of new municipal government officials, which can be mitigated with: (a) an executive report on the program's objective, scope, and progress; (b) a projects presentation workshop

³¹ EPMAPS has occupational health and safety plans and an emergency plan which will be updated as necessary.

during the transition for new officials; and (c) projects presentation workshops for new officials; and (ii) procurement and contracting process delays due to turnover in EPMAPS officers, which can be mitigated with: holding fiduciary workshops for new company officers and staff, in accordance with IDB rules.

III. IMPLEMENTATION AND MANAGEMENT PLAN

A. Summary of implementation arrangements

- 3.1 **Borrower, executing agency, and guarantor.** EPMAPS will be the borrower and executing agency of the program. The Republic of Ecuador will be the guarantor of the financial obligations under the loan.
- 3.2 **Exceptions to Bank policies.** The program team is requesting a partial waiver of the Guarantees Required from the Borrower (Operational Policy OP-303) in relation to the provision whereby the Municipio of Quito guarantees the performance obligations and local counterpart contribution. The partial waiver, relating to guaranteeing the timely payment of the local counterpart contribution is justified and supported by the financial strength of EPMAPS, as demonstrated in its audited financial statements of recent fiscal years, and the robustness of its projected financial position (paragraph 1.43 and [optional link 3](#)). As regards the performance obligations guarantee, EPMAPS enjoys legal stability that guarantees long-term legal certainty in the company's operations and sustains its administrative, financial, economic, and management autonomy. In addition, its link to the DMQ municipal government is for the purpose of coordinating activities with the Secretariat for Land, Habitat, and Housing in accordance with the Constitution of Ecuador and the Public Utilities Act. Thus, its attachment has to do exclusively with programming and coordination reasons. Moreover, it has satisfactorily executed five programs with the Bank since 1984, meeting the agreed-upon objectives within the established time frames. It is also satisfactorily executing a project financed with Agence Française de Développement without a sovereign guarantee, under similar conditions to the proposed operation. The foregoing is supported by the business sustainability report ([optional link 10](#)) and the findings of the ICAS analysis (paragraph 1.41 and [optional link 4](#)).
- 3.3 **Execution mechanism.** The program will be executed through EPMAPS's line departments. For coordination purposes, a PCU will be set up that reports to the Office of the General Manager and will be in charge of the program's planning and administration. At a minimum, it will have the following key personnel: a coordinator, a financial specialist, a procurement specialist, and a programming and monitoring specialist. The PCU specialists will be dedicated exclusively to the program, their hiring or appointment will require the Bank's prior no objection, and their profiles and functions will be defined in the program Operating Regulations. The PCU will coordinate technical aspects of the program with line departments, in accordance with their competencies. The financial and procurement aspects will be managed by the appropriate EPMAPS departments in coordination with the PCU specialists. The GTI's inspection unit will be strengthened for program execution. The PCU will include an environmental specialist and a social specialist ([optional link 6](#)).
- 3.4 **Procurement plan.** The procurement plan ([required link 4](#)) contains: (i) the procurement list; (ii) goods procurement methods; (iii) amounts, source of financing,

and estimated time frames; and (iv) Bank supervision method. Procurement will be done in accordance with the policies set forth in documents GN-2349-9 and GN-2350-9. Any proposed revision of the procurement plan must be presented to the Bank annually or as required for its approval.

- 3.5 **Disbursement and advance of funds.** Disbursements will be made in the form of an advance of funds to a specific bank account at the Central Bank of Ecuador, based on the program's liquidity needs. Advances will cover the liquidity needs for up to six months of execution.
- 3.6 **Retroactive financing and recognition of expenses.** The Bank may retroactively finance up to US\$17,420,000 (20% of the proposed loan amount) against the loan proceeds, and recognize up to US\$18,780,000 (20% of the estimated amount of the local contribution) against the local contribution as eligible expenditures incurred by the borrower 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 25 October 2018 (project profile approval date), but will in no case include expenditures incurred more than 18 months prior to the loan approval date.
- 3.7 **Audits.** External audits of the program, including all its financing sources, will be performed by a firm of external auditors acceptable to the IDB, expensed to the loan, and in accordance with the terms of reference agreed upon by the IDB and the executing agency.
- 3.8 **Special conditions precedent to the first disbursement of financing:** (i) the program coordination unit will have been established and be operational, with key personnel hired or appointed in accordance with the terms of reference and profiles contained in the program's Operating Regulations; and (ii) the program's Operating Regulations will have been approved and entered into force, in accordance with the terms and conditions previously approved by the Bank. These conditions are considered essential to ensure the start of the program's execution, with an appropriately composed coordination team, as well as program Operating Regulations that contain detailed operational and coordination guidelines.

B. Summary of results monitoring arrangements

- 3.9 **Monitoring.** The executing agency will prepare reports for the activities under its responsibility, indicating the progress made and outcomes achieved. Monitoring arrangements will include the procurement plan, the program execution plan, the annual work plan, the results matrix, the progress monitoring report, and risk management. The executing agency will submit semiannual reports on progress and results achieved, including an action plan for the following six-month period, within 60 days after the end of each six-month period ([required link 2](#)).
- 3.10 **Evaluation.** A midterm and a final evaluation will be included. The proposed evaluation methodology will be a "before and after" analysis, which will measure the results indicators before and after program implementation to verify that the targets were achieved. There will also be an ex post economic evaluation, taking into account the ex ante evaluation methodology but with potential adjustments, and EPMAPS annual management evaluations, as described in the monitoring and evaluation plan agreed upon with the executing agency ([required link 2](#)). The final evaluation will be included in the project completion report.

Development Effectiveness Matrix		
Summary		EC-L1242
I. Corporate and Country Priorities		
1. IDB Development Objectives	Yes	
Development Challenges & Cross-cutting Themes	-Social Inclusion and Equality -Productivity and Innovation -Gender Equality and Diversity -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 (#)* -Households with new or upgraded access to sanitation (#)* -Installed power generation from renewable energy sources (%)* -Households with wastewater treatment (#)*	
2. Country Development Objectives	Yes	
Country Strategy Results Matrix	GN-2924	Fortalecer e impulsar proyectos de inversión en agua y saneamiento.
Country Program Results Matrix		The intervention is not included in the 2018 Operational Program.
Relevance of this project to country development challenges (If not aligned to country strategy or country program)		¶1.25 del POD
II. Development Outcomes - Evaluability		Evaluable
3. Evidence-based Assessment & Solution	10.0	
3.1 Program Diagnosis	3.0	
3.2 Proposed Interventions or Solutions	4.0	
3.3 Results Matrix Quality	3.0	
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	8.5	
5.1 Monitoring Mechanisms	2.5	
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, Accounting and Reporting. Procurement: Information System, Price Comparison, National Public Bidding.
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 objective of the Program is to support the Metropolitan Public Water and Sanitation Company of Quito (EPMAPS) in improving the continuity, management and reliability of the potable water service (PW) and increase the capacity of wastewater treatment (WT) of the Metropolitan District of Quito (MDQ), contributing in this way to the objectives of the National Development Plan of the National Government and to improving the health of the population and the environmental conditions of the MDQ.

The documentation presents a solid diagnosis, which describes the Water and Sanitation (W&S) sector, and the conditions and needs of their respective systems. It is indicated that the potable water supply system (PW) is exceeding its production capacity and that its expansion is necessary to cover the growing demand. Low levels of coverage for wastewater treatment (WT) are identified, as well as the need to extend the sewerage network in the eastern areas of MDQ.

To mitigate the problems identified, the Program will implement two components: Expansion and improvement of PW systems; and Expansion and improvement of sewerage and sanitation. The proposed solution is clearly linked to the problems and needs identified. Evidence is presented about the effectiveness of this type of programs. The results matrix (RM) reflects the objectives of the program and shows a clear vertical logic for the two components. The top-level indicators are consistent with the values and targets of the economic analysis; these aim to measure improvements in coverage and quality of the services for W&S. The lower level indicators reflect the design of the two components. The RM includes SMART indicators at the level of products, outcomes, and impacts, with their respective baseline values, targets, and means to collect the information.

This operation is conceived as an investment loan under the multiple works modality. A Cost-Benefit analysis is performed for a sample that represents 75% of the total amount of the Program. The costs and benefits are identified and quantified in an appropriate manner. The assumptions made are reasonable and supported with historical administrative data or relevant literature. The analysis yields an internal economic rate of return (IERR) of 13.21% -14.3%, and a net economic present value (NEPV) of US\$2.2-US\$22.23 million. A sensitivity analysis is performed under alternative scenarios modifying 5 key variables that can affect costs and benefits; these modifications do not present significant alterations to the NEPV or IERR.

The monitoring and evaluation plan proposes an evaluation using an ex-post cost-benefit analysis and a reflexive evaluation.

The risks identified in the risk matrix seem reasonable and are classified as Low risk (8) and Medium risk (4). Medium risks include mitigation actions and compliance indicators.

RESULTS MATRIX

Program objective	The program's objective is to support EPMAPS in improving the continuity, operational management, and reliability of drinking water service, and increase the wastewater treatment capacity of the Metropolitan District of Quito (DMQ), thus contributing to the objectives of the government's National Development Plan and improving public health and environmental conditions in the DMQ. ¹										
Impacts											
Indicator	Unit of measure	Baseline	Baseline year	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	End of program	Comments/means of verification (MV)
Impact 1: Percentage of population using safely managed drinking water services in the DMQ	%	98.79	2018						99.37	99.37	Comments: According to Sustainable Development Goal 6, measured as the number of households that use safely managed drinking water services / total number of households in the DMQ MV: EPMAPS Operations Department and Planning Department records Responsible: EPMAPS
Impact 2: Percentage of the population using safely managed sanitation services in the DMQ	%	4.11	2018						4.20	4.20	Comments: Measured as the number of households that use safely managed sanitation services / total number of households in the DMQ MV: Same as above Responsible: EPMAPS
Outcomes ²											
Outcome 1: Improved quality of drinking water services											
1.1 Households with access to drinking water service supplied by the Bellavista and Calderón systems	Household	339,270	2018						396,883	396,883	Comments: Number of households served at the end of the program, calculated on: (i) projections for the city of Quito (2010-2025) based on census data (National Instituto of Statistics and Censuses (INEC), 2010), with the total fertility rate and census omission rate (INEC, 2013) included for the projections; (ii) 3.2 persons per household. MV: Semiannual progress reports based on Operations Department reports Responsible: EPMAPS

¹ With the objective of “ensuring a life of dignity with equal opportunities for all” under Pillar 1, “Lifetime rights for all,” which aims to increase by 2021: the percentage of properly treated wastewater; the number of municipalities that treat wastewater before discharging it into the environment; and the percentage of households with a safe supply of drinking water.

² The baseline and targets were set on the basis of the projects in the sample: supply drinking water to Calderón, expansion of sewerage and treatment services in Checa, and Papallacta recovery plant. The targets may be revised at the launch workshop before execution begins and as other eligible projects are added to the program.

Indicator	Unit of measure	Baseline	Baseline year	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	End of program	Comments/means of verification (MV)
1.2 Households with improved mains water services in the program target area	Household	0	2018						3,500	3,500	<p>Comments: Improved means that the system conforms to the regulatory framework in terms of continuity, pressure, and quality of delivered water (parishes of Calderón, San Antonio, and Calacalí).</p> <p>MV: Semiannual progress reports based on Operations Department reports</p> <p>Responsible: EPMAPS</p>
1.3 Drinking water production capacity	Cubic meters per second	8.61	2018					10.86	10.86	10.86	<p>Comments: Average flow. The baseline is the capacity of the system currently in operation. The target includes Calderón water treatment plant and the expanded modules at the Bellavista and El Troje plants.</p> <p>MV: Progress monitoring report, based on EPMAPS Technical Department reports</p> <p>Responsible: EPMAPS</p>
1.4 % of water samples in the DMQ that comply with current national water quality standards	%	99.9	2018						99.96	99.96	<p>Comments: According to procedures established in Ecuadorian Institute of Standardization rules 1108:2011, in force in 2019. The target of 99.96% is expected to be surpassed.</p> <p>MV: Annual average of monthly values published by EPMAPS</p> <p>Responsible: EPMAPS</p>
1.5 EPMAPS hydroelectric power generation capacity	Megawatt	23.36	2018					28.46	28.46	28.46	<p>Comments: The increase corresponds to the 5.1 MW expansion of the generator in the Papallacta system.</p> <p>The baseline considers: El Carmen (8.3 MW), Recuperadora (14.7 MW), Noroccidente (0.3 MW), and Carcelén (0.06 MW).</p> <p>MV: Semiannual progress reports based on Operations Department reports</p> <p>Responsible: EPMAPS.</p>
1.6 Unaccounted-for water rate (UAWR) in the DMQ.	%	28.4	2018					27.4	27.4	27.4	<p>Comments: The baseline corresponds to May 2018 data. UAFWR rate target of 1%: IANC = ratio of annual volumes of: (physical losses + commercial losses + unbilled authorized consumption) to annual volume produced</p> <p>MV: Operations Department project implementation reports</p> <p>Responsible: EPMAPS</p>

Indicator	Unit of measure	Baseline	Baseline year	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	End of program	Comments/means of verification (MV)
Outcome 2: Sanitation services coverage expanded and improved											
2.1 New households with sewer system service built by the program	Household	0	2018						309	309	Comments: Households with sewerage service registered in the utility's commercial system. MV: Semiannual progress reports based on Commercial Department reports Responsible: EPMAPS.
2.2 Households whose wastewater is treated in the program target area	Household	24,687	2018						27,367	27,367	Comments: Baseline corresponds to the Quitumbe sector MV: Semiannual progress reports based on the company's Technical Department and Operations Department reports Responsible: EPMAPS
2.3 Flow of treated water according to design conditions	Liters per second	69.50							90	90	Design condition: DBO ₅ ≤ 25 mg/l. MV: Supervisory Control and Data Acquisition (SCADA) system Responsible: EPMAPS
Outcome 3: Improved operational resilience and management of the drinking water supply system											
3.1 Resilience indicator: index of water availability in catastrophic events	%	83	2018						89	89	Comments: ratio of available capacity to total production capacity of drinking water in a hydrometeorological event MV: Semiannual progress reports based on Operations Department reports Responsible: EPMAPS Operations Department
3.2 Reliability indicator: number of hours of water rationing in Calderón, San Antonio de Pichincha, and Calacalí.	Hour	6,570	2018						0	0	Comments: The baseline was calculated using 1,500 customers in Calacalí and 2,000 customers in Calderón who in 2018 had 18 hours of rationing per day, equivalent to 6,570 hours per year without service. MV: Semiannual progress reports and progress monitoring reports based on Operations Department reports Responsible: EPMAPS
Outcome 4: Gender perspective incorporated in EPMAPS practices											
4.1 % women and men trained as plumbers	% men and women who graduate the program	0 0	2018						80 80	80 80	Comments: At least 80% of men and women MV: List of women and men who graduate the program and receive certificates awarded by the EPMAPS Environmental Department Responsible: EPMAPS Environmental Department

Indicator	Unit of measure	Baseline	Baseline year	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	End of program	Comments/means of verification (MV)	
4.2 Startups with a gender and climate change perspective implemented in the program's area of influence	Number	8	2018				2	4	4	18	Comments: Startups are considered implemented when they are in operation/production and promoting gender equity. MV: Semiannual progress reports based on EPMAPS Environmental Department–FONAG reports Responsible: EPMAPS Environmental Department	
4.3 Number of hectares preserved under agreements concluded by EPMAPS-FONAG-community that include gender and diversity aspects	Hectare	6,300	2018				7,200	8,500	10,000	10,000	Comments: Areas are considered preserved when the threats identified in the diagnostic assessment have been neutralized. MV: Semiannual progress reports based on EPMAPS Environmental Department–FONAG reports Responsible: EPMAPS-FONAG	
Output indicators												
Component I: Expansion and improvement of Quito's drinking water systems												
Output	Unit of measure	Associated outcome	Cost (US\$)	Baseline	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	End of program	Comments/means of verification
Primary and drinking water distribution networks built	Kilometer	1.3	14,306,355	0		2	4	4	6		16	Includes Calderón project (transmission lines 6 km, new networks 10 km). MV: Provisional acceptance certificates and EPMAPS onsite supervision reports Responsible: EPMAPS
Raw water supply lines built	Kilometer	1.3	138,506,330	0		2.6	7.8	15	12	2	39.4	Includes Paluguillo-Puambo (14.6 km) and Puambo-Calderón (24.8Km) supply lines MV and Responsible: Same as above
Water treatment plants built	Plant	1.3	30,708,508	0				1		2	3	Includes water treatment plants at: Bellavista, Calderón, and El Troje. MV and responsible: same as above
Electric power recovery plant built	Plant	1.3	5,336,502	0				1			1	Papallacta system MV and responsible: same as above

Output	Unit of measure	Associated outcome	Cost (US\$)	Baseline	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	End of program	Comments/means of verification
Hydraulic sectors optimized	Sector	1.3	8,433,808	0	1	4	5	5	7	8	30	Includes the Bellavista (12 sectors), Puengasí (10 sectors), and El Troje (8 sectors) systems MV and responsible: same as above
Detailed design studies for drinking water supply works prepared with climate change considerations	Study	1	3,477,051	0		2	3				5	Comments: Climate change considerations implies that the preparation process includes climate change impacts on and available water sources as a critical factor of analysis. MV: Final reports approved and the relevant certificate of acceptance for each study is signed Responsible: EPMAPS
EPMAPS Master Plan with climate change considerations prepared and approved	Plan	1.2.3	1,500,000	0						1	1	Comments: Climate change considerations implies that climate change impacts on and available water sources are included as a critical factor of analysis. MV: Final report approved and certificate of acceptance signed Responsible: EPMAPS
Smart water meters for big consumers functioning	Unit	1	644,000	0			178	266			444	Comments: Meters are considered to be functioning once readings are recorded in the EPMAPS commercial system. MV: Commercial Department reports Responsible: EPMAPS
SCADA integrated multiservice system (IMS) phase, implemented	System	1	2,000,000	0					1		1	Comments: Considered implemented once the Operations Department can generate automated station operation reports. MV: Operations Department reports Responsible: EPMAPS
EPMAPS fixed assets appraisal updated	Study	1	500,000	0			1				1	MV: Final study report approved by Finance Department Responsible: EPMAPS
Innovation projects implemented	Project	1	300,000	0			1	1	1	1	4	MV: Final report on projects implementation Responsible: EPMAPS

Output	Unit of measure	Associated outcome	Cost (US\$)	Baseline	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	End of program	Comments/means of verification
Conservation agreements concluded for preservation of EPMAPS-FONAG water sources through productive startups with gender perspective	Agreement	3	200,000	4			1	2	3		10	Comments: Concluded conservation agreement means having done a diagnostic assessment of the area and negotiation of hectares to be protected. MV: Conservation agreements concluded between EPMAPS-FONAG and communities Responsible: EPMAPS-FONAG
Technical training program for certified plumbers with competent entities implemented	Program	3	50,000	0						1	1	MV: Considered implemented once the program's training courses have been imparted Responsible: EPMAPS
EPMAPS gender strategy	Strategy	3	50,000	0			1				1	MV: Strategy validated and approved with memorandum of agreement or approval document from the EPMAPS board of directors Responsible: EPMAPS
Component II: Expansion and improvement of the sewer and sanitation service in the parishes of Quitumbe, Checa, and La Merced												
Sewer networks built in Quitumbe	Kilometer	2	311,830	0		1.5					1.5	MV: Provisional acceptance of works certificates and EPMAPS onsite supervision reports Responsible: EPMAPS
Interceptors built	Kilometer	2	7,105,302	0		6	10	10			24	Checa (15 km) and La Merced (11 km) MV and responsible: same as above
Wastewater treatment plants built	Plant	2	4,120,583	0					1	1	2	Checa and La Merced. MV and responsible: same as above
Sewer construction studies conducted	Study	2	310,546	0		2	2				4	MV: Study progress reports generated by EPMAPS Planning Department and Technical Department Responsible: EPMAPS

FIDUCIARY AGREEMENTS AND REQUIREMENTS

Country: Ecuador
Project number: EC-L1242
Name: Quito Drinking Water and Sewer System Program
Executing agency: Metropolitan Quito Public Water and Sanitation Utility (EPMAPS)
Prepared by: Marcela Hidrovo and Carolina Escudero (VPC/FMP)

I. INTRODUCTION

- 1.1 The program's fiduciary agreements on procurement and financial management take into account: (i) the fiduciary context of country; (ii) an evaluation of fiduciary risks; (iii) an analysis of EPMAPS's institutional capacity as at December 2018 pursuant to the Institutional Capacity Assessment System (ICAS) methodology; and (iv) EPMAPS's prior satisfactory experience as executing agency for programs 1424/OC-EC, 1802/OC-EC, 745/SF-EC, 823/OC-EC, and 935/OC-EC.
- 1.2 The program will be cofinanced under a joint financing mechanism by the Spanish Agency for International Development Cooperation (AECID) through Development Promotion Fund (FONPRODE).

II. FIDUCIARY CONTEXT OF THE COUNTRY

- 2.1 Under Ecuador's Constitution and the Law on Territorial Organization, Autonomy, and Decentralization, the Decentralized Autonomous Government of the Metropolitan District of Quito (DMQ) has exclusive competence to provide public drinking water, sewer, and wastewater purification services, as well as environmental sanitation activities. EPMAPS is responsible for providing drinking water and sanitation services to the DMQ.
- 2.2 The fiduciary context of the country has advanced significantly since 2008, as evinced by the recent assessments both of the government procurement system (updated MAPS-2018¹) and the public financial management system.
- 2.3 **Procurement system.** On 13 May 2014, the agreement for the use of the Republic of Ecuador's public procurement system in projects financed by the Inter-American Development Bank was signed by the Ministry of Economy and Finance, the National Public Procurement Service (SERCOP, lead agency), and the IDB. Paragraph 3.2 of the agreement provides for the use of the National Public Procurement System (SNCP) in seven projects and its gradual expansion. That

¹ [Evaluación del Sistema Nacional de Compras Públicas de Ecuador 2018](#).

agreement was based on document GN-2680-2, which was approved by the Bank's Board of Executive Directors.

- 2.4 **Financial management system.** EPMAPS uses ERP-SAP as its accounting and financial administration system, which integrates budgeting, accounting, and cash management and interoperates with the "PPP Matrix" [annual work plan, budget, and annual procurement plan] planning module which, in the future, will be directly incorporated into the SAP system. The utility has developed a "project reporting" module in SAP that it would use for the program. As a State-owned company, it is subject to the control and oversight of the Office of the Comptroller General (CGE), the entity responsible for external audits of the utility's financial statements. EPMAPS uses its SmartSuite system to follow up on internal control recommendations. In general, the company's financial management systems are adequately developed and for the purposes of executing IDB-financed projects, but need to be strengthened to allow the program's external auditing by auditing firms acceptable to the IDB.

III. FIDUCIARY CONTEXT OF THE EXECUTING AGENCY

- 3.1 EPMAPS will be the borrower and program executing agency.
- 3.2 **Execution mechanism.** The program will be executed through EPMAPS's line departments. For coordination purposes, a program coordination unit (PCU) will be set up that reports to the Office of the General Manager and will be in charge of the program's planning and administration. At a minimum, it will have the following key personnel: a coordinator, a financial specialist, a procurement specialist, and a programming and monitoring specialist. The PCU specialists will be dedicated exclusively to the program and will be hired following the Bank's approval of the profiles and terms of reference as part of the program Operating Regulations. The PCU will coordinate the technical and fiduciary aspects of the program with appropriate line departments, in accordance with their areas of competency. The inspection unit of the utility's Technical Department for Infrastructure will be strengthened by adding an environmental specialist and a social specialist for the execution of this program.
- 3.3 In terms of financial management support systems, the executing agency will rely on the tools mentioned in paragraph 2.4. Procurement operations will be registered in the public procurement portal when the country's systems are used.

IV. FIDUCIARY RISK EVALUATION AND MITIGATION MEASURES

- 4.1 No fiduciary risks are foreseen.

V. CONSIDERATIONS FOR THE SPECIAL CONDITIONS OF THE CONTRACT

- 5.1 No special considerations or exceptions to fiduciary policies are required.

VI. AGREEMENTS AND REQUIREMENTS FOR PROCUREMENT EXECUTION

- 6.1 **Procurement execution.** The procurement plan will be updated at least annually using the Procurement Plan Execution System (SEPA). The program's main procurement items are set out in Table VI-2. These agreements and requirements will also apply to procurement using joint financing proceeds from FONPRODE.
- a. **Procurement of goods, works, and nonconsulting services.**² Works, goods, and nonconsulting services arising under the program will be subject to international competitive bidding³ (ICB), as per Table VI-1, and will be procured using the standard bidding documents issued by the Bank.
 - b. **Selection and contracting of consulting firms.** Contracts for consulting services arising under the program will be executed using the standard request for proposals issued by the Bank. Any of the selection methods described in the Policies for the Selection and Contracting of Consultants Financed by the Inter-American Development Bank may be used. The threshold amount at which a short list of international consultants is drawn up is shown in Table VI-1.⁴
 - c. **Selection of individual consultants.** Contracting of individual consultants will be done in accordance with the Policies for the Selection and Contracting of Consultants Financed by the IDB, Section V, paragraphs 5.1. to 5.4.
 - d. **Use of the country procurement system.** Use of Ecuador's Public Procurement System⁵ will be in accordance with the agreement mentioned in paragraph 2.3.
 - e. **Advance procurement and retroactive financing.** The Bank may retroactively finance up to US\$17,420,000 (20% of the proposed loan amount) against the loan proceeds and recognize up to US\$18,780,000 (20% of the estimated amount of the local contribution) against the local contribution as eligible expenditures incurred by the borrower 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 25 October 2018 (project profile approval date), but will in no case include expenditures incurred more than 18 months prior to the loan approval date.
 - f. **Domestic preference.** Goods that originate in the borrower's country will be granted a price preference of 15% in contracts subject to ICB.⁶

² Policies for the Procurement of Goods and Works Financed by the Inter-American Development Bank (document [GN-2349-9](#)), paragraph 1.1: Nonconsulting services are treated as goods.

³ The ICB threshold for works is greater than or equal to US\$3,000,000, and for goods, greater than or equal to US\$250,000.

⁴ The threshold for contracting consulting firms is greater than or equal to US\$200,000; for amounts lower than the one indicated, the short list may be composed entirely of domestic consulting firms.

⁵ In the event that the Bank validates another system or subsystem, its use in the operation will be in accordance with the provisions of the loan contract and the agreement on use of the country procurement system.

⁶ Policies for the Procurement of Goods and Works Financed by the Inter-American Development Bank (document [GN-2349-9](#)), Appendix II and loan contract.

Table VI-1. Threshold amounts (US\$)

Works	Goods	Consulting services
ICB	ICB	International advertising and shortlist with no more than two candidates of the same nationality
≥ 3,000,000	≥ 250,000	≥ 200,000

Table VI-2. Main procurement items fully or partially financed by the IDB or FONPRODE (US\$ thousands)

Activity	Type of process	Estimated date	Estimated amount (US\$ thousands)
Goods			
Procurement of meters and implementation of reading optimization – big consumers (Phase 1).	ICB	Q3 2020	484
Nonconsulting services			
Implementation of SCADA integrated multiservice system	ICB	Q2 2024	2,000
Works			
Paluguillo-Bellavista Pipeline (Section 1, Paluguillo-Puembo)	ICB	Q2 2019	56,970
Puembo-Calderón Pipeline	ICB	Q2 2020	74,973
Calderón Treatment Plant (Module 1)	ICB	Q2 2020	14,857
Transmission lines, reserves, and distribution networks	ICB	Q2 2020	14,306
Expansion of Papallacta System Energy Recovery Plant	ICB	Q3 2020	5,337
Hydraulic Optimization of Quito Drinking Water Distribution Networks (Bellavista, Puengasí, and El Troje systems)	ICB (lots)	Q4 2019	8,114
Expansion of Bellavista Water Treatment Plant, Module 1	ICB	Q1 2020	9,000
Construction of El Troje Water Treatment Plant, Module 2 (750 liters/sec)	ICB	Q2 2021	6,250
Expansion of Quitumbe Sewerage System	CP	Q2 2019	300
Construction of Checa Interceptors System	ICB	Q4 2019	4,000
Construction of Checa Wastewater Treatment Plant	CP	Q1 2021	2,000
Construction of La Merced Interceptors System	CP	Q3 2020	2,800
Construction of La Merced Wastewater Treatment Plant	CP	Q2 2021	2,000
Consulting services, firms			
Master Plan Update Studies	QCBS	Q2 2023	1,500
Studies for Meter Reading Optimization – Big Consumers (Phase 1)	QCBS	Q3 2019	160
SCADA Integrated Multiservice System Studies	QCBS	Q3 2019	600
Ancillary water and strengthening studies	QCBS	Q1 2019	1,920
Papallacta System Energy Recovery Plant Study	QCBS	Q4 2018	281
Study for El Troje Water Treatment Plant, Module 2	QCBS	Q3 2019	460
Fixed Asset Appraisal Update, Phase 1	CQS/SSS	Q2 2019	100
Fixed Asset Appraisal Update, Phases 2 and 3	QCBS	Q1 2020	400
Update Studies for Checa Wastewater Treatment Plant, La Merced Wastewater Treatment Plant, and Merced Interceptors System (3 contracts, US\$75,000 each)	CQS	Q3 2019	225
Audit of financial statements	QCBS	Q3 2019	300
Company management audit	QCBS	Q3 2019	350
Midterm program evaluation	CQS/SSS	Q1 2021	60
Final program evaluation	QCBS	Q3 2023	210
EPMAPS innovation development	QCBS	Q3 2019	300
Social, environmental, and gender themes	QCBS	Q3 2019	300

- 6.2 **Procurement supervision.** The procurement plan will establish the IDB's supervision method. Ex post reviews will be conducted annually, as established in Appendix 1 of the policies, and will include physical inspections if the Bank considers it appropriate.

Table VI-2. Thresholds for ex post review (US\$)

Works	Goods	Consulting firms	Individual consultants
Greater than or equal to 10,000,000	Greater than or equal to 250,000	Greater than or equal to 200,000	Greater than or equal to 50,000

- 6.3 **Other special procedures.** None anticipated.
- 6.4 **Records and files.** The executing agency will maintain properly organized files, arranging them separately by process and source of financing.

VII. FINANCIAL MANAGEMENT AGREEMENTS AND REQUIREMENTS

- 7.1 **Programming and budget.** The Law on Territorial Organization, Autonomy, and Decentralization, the Public Finance and Planning Code (COPLAFIP), the Budgetary Classifiers issued by the Ministry of Economy and Finance, and the legal and regulatory provisions on closure and opening of the budget issued by the Municipal Government of Quito set out the rules governing programming, formulation, approval, execution, control, evaluation, and liquidation of the EPMAPS budget. The EPMAPS board of directors approves the budget for the fiscal year together with all its sources of financing (internal and external) at the end of the preceding year. The financial management system (SAP) used by EPMAPS, as well as the add-on modules, instrumentalize and standardize the application of those rules in the utility.
- 7.2 **Accounting and information systems.** EPMAPS will keep its accounts in accordance with International Financial Reporting Standards (IFRS). The program's accounts will be kept in the company's SAP system, which will record all program obligations and payments, as well as generate the program's financial reports by financing source (IDB-Ordinary Capital, FONPRODE, and local contribution), once the system's reliability has been verified in the reporting module.
- 7.3 **Disbursements and cash flow.** EPMAPS will use the Central Bank of Ecuador's system of special or specific-purpose bank accounts to receive financing from multilateral lenders. Thus, to receive the loan proceeds EPMAPS will open two special accounts with the Central Bank for the program from which it may autonomously and independently pay suppliers. One of the accounts will be for IDB Ordinary Capital financing and the other for FONPRODE proceeds, with the effort made to ensure that said disbursements observe the agreed upon *pari passu* between the funds, without that placing a high transactional burden on the executing agency. All program payments will be executed through the SAP system.
- 7.4 The Bank will make loan disbursements using the advance of funds modality based on the actual liquidity needs of the program according to the detailed financial plan and commitments adopted or in the process of being adopted, for up to six months. At the borrower's request, the Bank may also make direct payments to suppliers or reimbursements of expenditures.

- 7.5 Accountability in relation to advances is done in accordance with document OP-273-6. A new disbursement may proceed once at least 80% of the balance of the previous advances has been justified.
- 7.6 Following the disbursement of proceeds, the Bank and/or external auditors will review the supporting documentation for the payments made.
- 7.7 **Internal control and internal audit.** The Constitution of the Republic of Ecuador establishes that the CGE is in charge of directing the control system for the public sector. Pursuant to the National Control System Act, EPMAPS is subject to the control and oversight of the CGE. As a State-owned enterprise, the executing agency has its own internal audit area that reports directly to the CGE.
- 7.8 **External control and reports.** The CGE has the power to audit public sector entities; however, the projects are not necessarily included in its annual audit plan. The program will be audited by a firm of independent auditors acceptable to the Bank, in accordance with IDB requirements (document OP-273-6). The firm will be hired by the executing agency in accordance with the terms of reference previously agreed upon with the IDB with the cost expensed to the financing proceeds. Each year during execution, EPMAPS will submit the program's audited financial reports (including all financing sources and the local contribution), within 120 days of the end of each fiscal year or the date of the last disbursement. Each year, EPMAPS undergoes an external audit performed by firms of auditors hired by the CGE. That report is approved by the CGE and published on the institution's website.⁷ The IDB will not request an audited report of the agency's financial statements for the purposes of program execution; however, it may request the executing agency to provide unaudited financial reports on the project or the agency.
- 7.9 There is no national policy of public disclosure of auditors' reports; nonetheless, in keeping with the Bank's policy on access and disclosure of current information, the program's audited reports should be published in the Bank's systems.

VIII. SUPERVISION PLAN AND EXECUTION MECHANISM

- 8.1 **Execution mechanism.** As indicated in paragraph 3.2, the executing agency will have a PCU.

⁷ The audited report on the agency's financial statements for the 2017 fiscal year received an unqualified opinion from the external auditors and was published at www.contraloria.gob.ec (report DNA5-0038-2018).

DOCUMENT OF THE INTER-AMERICAN DEVELOPMENT BANK

PROPOSED RESOLUTION DE-___/19

Ecuador. Loan ____/OC-EC to Empresa Pública Metropolitana de Agua Potable y Saneamiento de Quito. Quito Drinking Water and Sewer System 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 Empresa Pública Metropolitana de Agua Potable y Saneamiento de Quito, as Borrower, and with the Republic of Ecuador, as Guarantor, for the purpose of granting the former a financing to cooperate in the execution of the Quito Drinking Water and Sewer System Program. Such financing will be for the amount of up to US\$87,100,000 from the resources of the Bank's Ordinary Capital, 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)