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PANAMA

PROGRAM TO IMPROVE THE OPERATIONAL MANAGEMENT OF THE NATIONAL WATER AND SEWER SYSTEMS INSTITUTE IN THE PANAMA CITY METROPOLITAN AREA

(PN-L1148)

LOAN PROPOSAL

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ELECTRONIC LINKS

REQUIRED

1. Project Execution Plan and Annual Work Plan
2. Monitoring and Evaluation Plan
3. Environmental and Social Management Report
4. Procurement Plan

OPTIONAL

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2. Socioeconomic Analysis
3. Financial Analysis
4. Institutional Analysis
5. Analysis of Compliance with the Utilities Policy
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7. Draft Program Progress Monitoring Report
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11. Terms of Reference – IDAAN Technical Assistance and Advisory Services Contract*
12. Safeguard Policy Filter and Safeguard Screening Form for Classification of Projects

*At the request of the borrowing country, the information contained in this electronic link will not be disclosed. The non-disclosure of this information is in accordance with the country-specific information exception in paragraph 4.1 i of the Bank's Access to Information Policy, document GN-1831-28.

ABBREVIATIONS

ADERASA	Asociación de Entes Reguladores de Agua y Saneamiento de las Américas [Association of Water and Sanitation Regulatory Agencies of the Americas]
CONAGUA	National Water Council
CUT	Cuenta Única del Tesoro [Consolidated Treasury Account]
ESA	Environmental and social assessment
ESMP	Environmental and social management plan
ICB	International competitive bidding
IDAAN	Instituto de Acueductos y Alcantarillados Nacionales [National Water and Sewer Systems Institute]
LIBOR	London Interbank Offered Rate
MINSA	Ministry of Health
NCB	National competitive bidding
PCMA	Panama City metropolitan area
PCT	Program coordination team
QCBS	Quality- and cost-based selection
SAP	Systems, Applications, and Products in Data Processing
SINIP	Sistema Nacional de Inversión Pública [National Public Investment Information System]
TSA	Treasury Single Account
TUIRA-ERP	Tecnología Unificada e Innovadora de los Recursos Administrativos [Unified and Innovative Technology for Administrative Resources]-Enterprise Resource Planning
UCPSP	Panama Sanitation Program Coordinating Unit

PROJECT SUMMARY

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PROGRAM TO IMPROVE THE OPERATIONAL MANAGEMENT OF THE NATIONAL WATER AND SEWER SYSTEMS INSTITUTE IN THE PANAMA CITY METROPOLITAN AREA
(PN-L1148)

<table>
<tr><th colspan="6">Financial Terms and Conditions</th></tr>
<tr><td colspan="3" rowspan="4">Borrower: Republic of Panama
Executing agency: National Water and Sewer Systems Institute (IDAAN)</td><td colspan="2">Flexible Financing Facility [a]</td></tr>
<tr><td>Amortization period:</td><td>24 years</td></tr>
<tr><td>Disbursement period:</td><td>6 years</td></tr>
<tr><td>Grace period:</td><td>6.5 years [b]</td></tr>
<tr><td>Source</td><td>Amount (US$)</td><td>%</td><td>Interest rate:</td><td>LIBOR-based</td></tr>
<tr><td>IDB Ordinary Capital:</td><td>250,000,000</td><td>97.8</td><td>Credit fee:</td><td>[c]</td></tr>
<tr><td>Local:</td><td>5,500,000</td><td>2.2</td><td>Inspection and supervision fee:</td><td>[c]</td></tr>
<tr><td>Total:</td><td>255,500,000</td><td>100</td><td>Weighted average life:</td><td>15.24 [d]</td></tr>
<tr><td colspan="3"></td><td>Approval currency:</td><td>United States dollars from the Ordinary Capital</td></tr>
<tr><th colspan="6">Program at a Glance</th></tr>
<tr><td colspan="6">Program objective/description: The program's overall objective is to improve the quality of drinking water services for the population of the Panama City metropolitan area by helping to improve IDAAN's management capacity and optimize the drinking water production and distribution system.</td></tr>
<tr><td colspan="6">Special contractual conditions precedent to the first disbursement of the loan: (i) IDAAN and the borrower will have signed a new interagency agreement establishing the responsibilities for program execution and the transfer of its resources, under the terms and conditions previously agreed upon with the Bank; (ii) the executing agency will have appointed the key members of the program coordination team; (iii) the Office of the Comptroller General of the Republic will have endorsed the IDAAN technical assistance contract; and (iv) the program Operating Regulations will have been approved and entered into force in accordance with the terms and conditions previously agreed upon with the Bank (paragraph 3.5).

Special contractual condition for execution: the borrower will commit to promptly transfer national budget resources to IDAAN in the event its operating revenue fails to cover its administrative and operating and maintenance costs (paragraph 3.6).
See also the special contractual conditions included in Annex B of the Environmental and Social Management Report and in Annex III.</td></tr>
<tr><td colspan="6">Exceptions to Bank policy: None.</td></tr>
<tr><th colspan="6">Strategic Alignment</th></tr>
<tr><td colspan="2">Challenges:[e]</td><td colspan="4">SI ☑ PI ☐ EI ☐</td></tr>
<tr><td colspan="2">Crosscutting themes:[f]</td><td colspan="4">GD ☐ CC ☑ IC ☑</td></tr>
</table>

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

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

[c] The credit fee and the 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 relevant policies.

[d] The original weighted average life may be less, depending on the date the loan contact is signed.

[e] SI (Social Inclusion and Equality); PI (Productivity and Innovation); and EI (Economic Integration).

[f] GD (Gender Equality and Diversity); CC (Climate Change and Environmental Sustainability); and IC (Institutional Capacity and Rule of Law).

I. Description and Results Monitoring

A. Background, problem, and justification

1.1 In 2016, the population of Panama was estimated at 4.03 million, 67% of whom were living in cities and the remaining 33% in rural areas.[1,2] In 2015, water service coverage 93% nationwide and 98.2% in urban areas.[3] With respect to improved sanitation,[4] national coverage is 75%.[5] Sanitary sewer coverage is 59% and largely concentrated in the Panama City metropolitan area.[6]

1.2 **Institutional framework of the water and sanitation sector.** The Ministry of Health (MINSA), through its drinking water and sanitation division, is responsible for sector stewardship and planning, whereas the Public Utilities Authority (ASEP) is tasked with the sector's regulation, and the IDAAN is responsible for the delivery of water and sanitation services to communities of more than 1,500 inhabitants.[7] Supported by MINSA technical assistance, the Rural Water Boards (JAARs) provide these services to communities of fewer than 1,500 inhabitants. In 2016, the Panamanian government created the National Water Council (CONAGUA).[8] Presided by the Ministry of the Environment, its mission is to promote, shepherd, coordinate, and guarantee the development and implementation of the 2015-2050 National Water Security Plan "Water for All."[9] The plan's main lines of action include ensuring sustained universal access to quality water and sanitation services. MINSA's Panama Sanitation Program Coordinating Unit (UCPSP), created by Executive Decree 144 of 20 June 2001, builds and operates the infrastructure of the Panama City and Bay Sanitation Program. The Cabinet Council recently passed a draft bill creating the state-owned Panama Public Sanitation Company, responsible for sewerage and sanitation in the districts of Panamá, San Miguelito, La Chorrera, and Arraiján.

1.3 **Description of IDAAN.** IDAAN is an autonomous government agency that provides drinking water and sanitary sewer services to the country's urban population. It is structured into 11 regional offices (Arraiján, Bocas del Toro, Coclé, Colón, Chiriquí, Panamá Este/Darién, Herrera, Los Santos, Panamá Metro, Panamá Oeste, and Veraguas), which are responsible for the operational and commercial management of the infrastructure in their respective regions. Strategic planning, administrative and financial activities, budget allocation, project planning and implementation, human resource management, and the provision of materials and equipment are handled at the central level. According to 2016 data, IDAAN provides service to

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1 World Bank, Development Indicators, 2017.
2 World Bank, World Development Indicators, 2017.
3 Castalia, National Strategy for the Drinking Water and Sanitation Sector 2014-2018.
4 According to the Joint Monitoring Program, an improved sanitation facility hygienically separates human excreta from human contact. Improved sanitation includes such facilities as: (i) flush (automatic or manual) to a sewer network; septic tank; or pit latrines; (ii) ventilated improved pit latrines; (iii) pit latrines with slabs; and (iv) composting toilets.
5 Joint Monitoring Program. Progress on Sanitation and Drinking Water, 2015.
6 2015-2050 National Water Security Plan "Water for All."
7 Pursuant to Law Decree 2 of 27 January 1997.
8 Created via Cabinet Resolution 114 of 23 August 2016.
9 Approved via Cabinet Resolution 114 of 23 August 2016.

2,921,198 customers, accounting for 72.4% of the population, through 595,664 household connections.[10]

1.4 **Quality of IDAAN services.** During the dry season, one of every five Panamanians does not receive uninterrupted drinking water service 24 hours a day, seven days a week. In urban areas, 80% of the population does receive uninterrupted drinking water service each day.[11] By 2016, the percentages of the population with drinking water that met quality and pressure parameters were 91% and 59%, respectively.[12] IDAAN's principal operational management indicators indicate that it is facing significant challenges, including: (i) a rate of 5.1 employees per 1,000 water connections;[13] (ii) a customer metering rate of 68% (of which only 30% of meters are actually read), coupled with low service rates, leading to high levels of consumption by the population;[14] (iii) an nonrevenue water rate of 48%,[15] which is quite high compared to rates of efficient companies;[16] (iv) in the past three years, operating revenue has covered an average of 78% of operating costs,[17] meaning that IDAAN relies on national government transfers to cover its investment activities and operating deficit; (v) maintenance of water and sewer networks is insufficient, with capital works in very poor shape;[18] (vi) high electric energy expenses (accounting for 20% of operating costs), owing to inefficiencies in electric and mechanical and operating facilities;[19] and (viii) a lack of adequate customer care systems.[20]

1.5 In addition to these management shortcomings, IDAAN faces the significant challenge of the population's high level of water consumption. According to the IDAAN Action Plan 2016-2019,[21] the utility has the highest rate of water consumption—366 liters per person per day—of 17 drinking water and sanitation service providers in Latin America.[22] To address this challenge, the plan prioritizes activities to raise awareness among the population of the need for more sustainable consumption habits.

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10 IDAAN Statistical Bulletin 30, 2016.
11 IDB Water and Sanitation Sector Note, February 2015.
12 National Public Utilities Authority. IDAAN Service Quality Targets, 2016.
13 IDAAN Statistical Bulletin 30, 2016. According to a 2014 benchmarking report by the Association of Water and Sanitation Regulatory Agencies of the Americas (ADERASA), the regional average is 4 employees per 1,000 connections.
14 IDAAN Statistical Bulletin 30, 2016. According to ADERASA, some companies have better individual metering coverage rates, including Empresas Públicas de Medellín (97.92%) and Aguas de Cartagena (92.24%).
15 IDAAN Statistical Bulletin 30, 2016.
16 According to Emilio Lentini, in his report *El Futuro de los Servicios de Agua y Saneamiento en América Latina,* other utilities in the region have much lower nonrevenue water rates, including SABESP (29.96%), Aguas Andinas (30.50%), and Aguas de Cartagena (38.55%).
17 IDAAN 2014-2016 Financial Statements.
18 Loan proposal PN-L1093, Water and Sanitation Multiphase Investment Program – Phase II.
19 According to the results of the energy audit performed in connection with regional technical-cooperation operation ATN/SF-10909-RG, Energy Efficiency in Water Utilities in Central America, the electric energy expenditure of Costa Rica's public water and sewage utility (AyA) accounts for 12% of all operating costs.
20 IDB Water and Sanitation Sector Note, February 2015.
21 IDAAN Action Plan 2016-2019.
22 According to a 2014 benchmarking report by ADERASA, utilities such as Aguas de Cartagena and Empresas Públicas de Medellín report consumption of 144 and 139.9 liters per person per day, respectively, much lower than IDAAN.

1.6 The management indicators described above have deteriorated even further due to the extreme water-related weather events—such as drought and floods—of climate change.[23] The most recent of these was the 2015-2016 drought,[24] which had a severe impact on agricultural activities, hydroelectric power generation, and the system of locks for move ships through the Panama Canal. It also resulted in water rationing and deterioration in the quality of water for human consumption. The event overwhelmed IDAAN's operational management capacity, resulting in poor service for the population. Consequently, institutional strengthening and the construction of infrastructure that is resilient to these events is needed.

1.7 **The Panama City metropolitan area.** To manage infrastructure in the PCMA, IDAAN has three regional management offices: (i) Panamá Metro, which serves the districts of Panama City and San Miguelito; (ii) Arraiján, which serves the district of the same name; and (iii) Panamá Oeste, which serves the district of La Chorrera and the other cities located in the province of Panamá Oeste. IDAAN currently provides water service to 406,781 customer households in the PCMA, representing 2,044,040 individuals (or 50.7% of the country's total population). These households also account for roughly 70% of IDAAN's total water service customers. According to data from the Ministry of Economy and Finance, 11.6% of residents in the PCMA were living in poverty in 2015,[25] and it was this population that is most affected by poor-quality water service, which is even more pronounced in periurban areas. The significance of the PCMA in terms of population, the GDP per capita it generates (70% of the national total in 2014), and the considerable public and private investments made there in recent years, led the Panamanian government to prioritize the delivery of water and sanitary sewer services in this area of the country.

1.8 The IDAAN faces the same problems and challenges in the PCMA as it does in the rest of the country, including: (i) one of every five households does not receive uninterrupted drinking water service 24 hours a day;[26] (ii) high rates of nonrevenue water (51%);[27] (iii) low rates of customer metering (74%) and meter reading (58%);[28,29] (iv) in Arraiján and La Chorrera, IDAAN purchases 90% of its water from other operators, at costs three times higher than the average IDAAN service rate; (v) high rates of water loss;[30] and (vi) high electric energy expenses (20% of the annual cost structure)[31] due to inefficiencies in electric and mechanical facilities. All

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23 2015-2050 National Water Security Plan "Water for All."

24 Zegarra, E., Gestión del agua, valoración y desempeño económico del Canal de Panamá, 2016.

25 Calculations prepared by the authors based on the report Pobreza y Desigualdad en Panamá: Mapas a nivel de Distritos y Corregimientos: Año 2015.

26 Authors' estimates based on the Eleventh National Population Census and Seventh National Housing Census, National Institute of Statistics and Census (INEC), 2010.

27 IDAAN Statistical Bulletin 30, 2016.

28 IDAAN Statistical Bulletin 30, 2016.

29 IDAAN has prioritized ongoing efforts to increase individual metering coverage and improve individual meter reading rates, while replacing approximately 86,000 meters that have reached the end of their useful service life.

30 The Metropolitan Office reported 13,111 water leaks in 2014. Considering the 2,835.8 kilometers of networks, this represents 5.5 bursts per kilometer per year—a very high rate when compared to other companies in the region (e.g. according to ADERASA, the average burst frequency in the drinking water networks of Latin American water companies is 1.68 bursts per km per year).

31 According to results of the energy audit performed in regional technical-cooperation operation ATN/SF-10909-RG, Energy Efficiency in Water Utilities in Central America.

of the foregoing underscore the need to prioritize efficiency gains in water treatment plants and distribution networks, as well as to reduce water loss, high levels of consumption, and production and distribution costs.

1.9 Many of these operational challenges are attributable to institutional shortcomings, including a lack of planning capacity and information for decision-making, deficient processes, and a loss of human resources due to voluntary retirement programs and the lack of staff incentives. An effective organizational structure is therefore in order.[32]

1.10 With regard to sanitation services in the PCMA, estimates indicate that 66% of the population in the districts of Panamá and San Miguelito is connected to the sewer network, while the corresponding percentage in Arraiján and La Chorrera is only 37%. The UCPSP operates most of that infrastructure, and with Bank support (operations 3506/OC-PN and 3799/OC-PN) it is making investments to increase wastewater treatment and sewerage coverage. However, IDAAN is still in charge of approximately 40 sewer systems that drain to an equal number of small wastewater treatment plants that serve some 24,000 dwellings (6% of all dwellings in the PCMA). These plants were built to treat wastewater from residential developments that were not connected to the public sewer system and were discharging it into watercourses in violation of environmental and health regulations. Despite IDAAN's limited capacity to properly operate and maintain these plants, residential developers are nevertheless transferring them to the utility for operation and maintenance, in accordance with MINSA Executive Decree 268 of 6 June 2008, which regulates the transfer of such systems. Although the UCPSP is expected to take over these systems in the near future, their current conditions need to be assessed, their rehabilitation needs identified, and the terms of their transfer and eventual connection to the public sewer network defined.

1.11 **Bank support in the sector.** The Bank is currently executing three loan operations and a technical-cooperation project in the program's area of influence, namely: (i) Water and Sanitation Multiphase Investment Program, Phase II (operation 3002/OC-PN); (ii) Panama City and Bay Sanitation Program II (operation numbers 3506-OC/PN and 3506/CH-PN); and (iii) Sanitation Program for the Districts of Arraiján and La Chorrera – Stage I (operation 3799/OC-PN). The UCPSP is executing the latter two operations. Operation 3002/OC-PN is providing support to improve IDAAN processes and procedures, with the aim of enhancing its administrative, financial, and performance management. The two sanitation operations that the UCPSP is executing are exclusively focused on the PCMA; they seek to expand wastewater treatment and sewer coverage by strengthening the UCPSP's operational capacity. Overall, the Bank's operations in the water and sanitation sector are helping improve the quality of service delivery to 616,810 individuals in urban areas and 43,125 persons in rural and indigenous areas; clean up 113 kilometers of streams and rivers in the PCMA, and treat wastewater generated by 455,273 persons.

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[32] The second objective of the IDAAN Action Plan 2016-2019 proposes the need to "improve IDAAN's institutional capacity." Among the plan's five specific objectives is "having an effective and deconcentrated organizational structure," which is the reason it proposes creating a central office with six regional units.

1.12 With specific regard to IDAAN, an enterprise resource planning system is being implemented with Bank support to streamline the utility's management and timely decision-making. In 2016, IDAAN approved its Action Plan 2016-2019, establishing objectives and actions aimed at making the company's service delivery efficient and effective. Lastly, and also with Bank support, the implementation of its energy efficiency plan for electric and mechanical equipment was completed in 2015, the aim of which was to reduce costs and improve the operation of such equipment. This new operation will help consolidate the reform of the IDAAN as well as the operational improvements set forth in both its action plan and energy efficiency plan. At the sector level, the Bank approved the Public Utilities Sustainable Development Support Program (operation 4234/OC-PN) in 2017, which focuses on the development of water and energy policies and establishes as targets several reforms under the proposed operation, such as the approval of the 2015-2050 National Water Security Plan, the creation of CONAGUA, and the presentation to the Cabinet Council of a draft bill to create the Empresa Pública de Saneamiento de Panamá.

1.13 **Lessons learned.** This design of this operation draws on the lessons learned from the operations described above, namely: (i) weak planning capacities and the need to improve administrative, commercial, and operational processes; (ii) customer service system that does not respond to needs; (iii) need to strengthen the information base for decision-making; (iv) inadequate preventive maintenance programs; (v) need to review the organizational structure, staff training, and new incentive programs; and (vi) lack of the requisite political, administrative, and financial autonomy to properly operate infrastructure (see optional electronic link 6). Accordingly, the design of this program includes: (i) strategies for improving planning and indicator-management capacities; (ii) the reengineering of administrative, commercial, and operational processes; (iii) staff training programs in the areas of operations and maintenance, customer service, and change management; and (iv) decentralization of the PCMA to simplify administrative processes.

1.14 **Intervention strategy.** The work performed over the past decade to strengthen IDAAN technical capacities, and the objectives established in the IDAAN Action Plan 2016-2019, highlight the need for providing IDAAN staff with technical and operational knowledge necessary to strengthen procedures and processes that will help enhance service quality, thereby improving its main management indicators. Accordingly, the Panamanian government has requested Bank support to engage a water and sewer services operator with proven international experience to provide the IDAAN with technical advisory and assistance services under a five-year operational and commercial management contract,[33] focusing on the PCMA. It has also requested support in managing and executing high-impact activities designed to facilitate expedited actions that improve the quality of service delivery in the short term. To that end, the bidding process was recently initiated. To ensure that the

[33] Evidence of experiences in which the private sector has participated to support public water companies can be found in several developing countries. Of 25 water projects with private-sector participation, 60% were considered successful, with improvements in coverage, labor productivity, and the quality of services. Philippe, Marin (2009), *Public-Private Partnerships for Urban Water Utilities in Developing Countries, The World Bank*: https://openknowledge.worldbank.org/handle/10986/2703.

companies included on the shortlist were the most qualified, the expressions of interest require the candidate companies to be operators of water and sanitation services. The selected operator is expected to be under contract in early 2018[34] (optional electronic link 11). Simultaneously, and in keeping with the IDAAN Action Plan 2016-2019, the process of decentralizing the PCMA regional management office will commence, which requires a resolution from the utility's board of directors. This will give the PCMA its own structure, thus improving administrative, commercial, and operational processes and facilitating measurement of the intervention's outcomes. Once the PCMA regional management office has been decentralized and strengthened, it is anticipated that this same process can be applied to the other regional management offices, with a view to strengthening the institution throughout the country.

1.15 The IDAAN Action Plan 2016-2019 establishes the need to optimize water mains and distribution networks to reduce water loss, control pressure, and increase continuity, with the aim of improving service quality for the population.[35] Accordingly, the project proposes investments aimed at optimizing water treatment plants, enhancing the energy efficiency of pumping stations, and creating and optimizing sectors by installing master meters, repairing or building small storage tanks, refurbishing networks and controlling flow and pressure, and installing residential connections to mains and individual meters, which will improve flow management, reduce water loss, increase continuity, and enhance water service quality. This will reduce the demand for water and expenditures for water purchases from other operators (which is currently the case in Arraiján and La Chorrera).

1.16 **Government strategy in the water and sanitation sector.** The 2015-2050 National Water Security Plan was approved via Cabinet Resolution 114 of 23 August 2016. The plan proposes interventions based on five thematic focus areas of action: (i) sustained universal access to quality water and sanitation services; (ii) availability of water for inclusive economic growth; (iii) preventive management of water-related risks; (iv) healthy watersheds; and (v) water sustainability. The 2015-2050 National Water Security Plan incorporates and provides a medium- and long-term vision to the action plans included in the 100/0 Basic Sanitation Plan to ensure sustained universal access to quality water and sanitation services, under thematic focus area 1. The Government Strategic Plan 2015-2019 accords priority to addressing specific challenges in the provision of water and sanitary sewer systems, and in this context the IDAAN has designed its Action Plan 2016-2019,[36] which serves as a strategy for building institutional capacity, improving performance, and enhancing service delivery. The plan's strategic objectives include: (i) improving service quality; (ii) building institutional

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34 For this selection process, the Panamanian government has formed a high-level evaluation committee comprised of private- and public-sector professionals with extensive knowledge of the sector and government procurement, which will ensure the quality, integrity, and transparency of the process.

35 Similar experiences in implementing nonrevenue water programs with private-sector participation have been carried out in countries like Malaysia, Thailand, Brazil, and Ireland. With private-sector support and performance-based service contracts, the physical efficiency of the drinking water systems improved notably in most of the cases reviewed. Kingdom, B. et al., The Challenge of Reducing Non-revenue Water in Developing Countries. How the Private Sector can Help. A look of Performance-Based Service Contracts, The World Bank, 2006.

36 Link.

capacity; (iii) boosting efficiency; and (iv) increasing IDAAN financial sustainability. This program is aligned with the aforementioned plans.

1.17 **Strategic Alignment.** This program is consistent with the Bank's Country Strategy with Panama 2015-2019 (document GN-2838), in that it contributes to the strategic objective of "improving the delivery of basic services to the population living in poverty" by increasing drinking water coverage in urban and periurban areas. It is also consistent with the Institutional Strategy Update 2010-2020 (document AB-3008), and is aligned with the development challenges of social inclusion and equality by improving service delivery to the population with higher levels of poverty that is currently receiving poorer-quality water service. The program is also in alignment with the crosscutting themes of: (i) institutional capacity and the rule of law, through actions that will improve IDAAN's water and sanitation services performance; and (ii) climate change and environmental sustainability, since it will help curb water loss by reducing the utility's intake from water sources and optimizing use of electrical power in its water production and distribution. Approximately 75.31% of the operation's proceeds are to be invested in climate change mitigation and adaptation activities, in accordance with the multilateral development banks' joint methodology for tracking climate finance. These resources contribute to the IDB Group's target of increasing financing of climate change-related projects to 30% of approvals by the year-end 2020. The program will also contribute to the Corporate Results Framework 2016-2019 (document GN-2727-6) through the indicator "Households with new or improved access to drinking water." Furthermore, it is aligned with the Sustainable Infrastructure Strategy for Competitiveness and Inclusive Growth (document GN-2710-5), in particular with the priority area of supporting "the construction and maintenance of an environmentally and socially sustainable infrastructure, thus enhancing quality of life." Lastly, it is consistent with the dimensions of success and lines of action of the Water and Sanitation Sector Framework Document (document GN-2781-3), namely, universal access, better quality services, and social and environmental sustainability.

1.18 **Compliance with the Public Utilities Policy (document GN-2716-6).** The program aligns with the principles of Policy GN-2716-6 and complies with its financial sustainability and economic evaluation conditions. IDAAN currently covers its operating and maintenance costs with a combination of its rate revenue and timely and transparent transfers from the Panamanian government, the latter of which amounts to a supply subsidy. A plan has been developed to improve IDAAN's operational and financial sustainability for the coming fiscal years (paragraph 1.30). The Bank has been supporting this plan (paragraph 1.12) and will continue to do so through this program. The works to be financed under this program are also socioeconomically viable (paragraph 1.28) (optional electronic link 5).

B. Objectives, components, and cost

1.19 **Objective.** The program's overall objective is to improve the quality of drinking water services for the population of the Panama City metropolitan area by helping to improve IDAAN's management capacity and optimize the drinking water production and distribution system.

1.20 **Component I: Technical Assistance for IDAAN (US$60.6 million).** This component will finance the engagement of a water and sewer system services operator for five years. This operator will provide IDAAN with technical assistance

related to technical, commercial, administrative, and planning aspects by appointing full-time experts to key management areas and executing high-impact activities in the PCMA. The operator will carry out the following activities: (i) draft a business plan; (ii) develop a master water supply plan for the PCMA; (iii) formulate a plan to reengineer IDAAN's processes and restructure its main office; (iv) perform staff training; (v) conduct prefeasibility studies and prepare the final designs of water distribution network works and equipment; and (vi) evaluate the wastewater treatment plants of residential developments and update the property registry of dwellings and users. The technical assistance operator will also carry out high-impact activities in the PCMA, including but not limited to: media and awareness-raising programs on the need to reduce water consumption targeting the entire population served by IDAAN; and upgrading/construction of offices and workrooms for the staff of regional and PCMA offices; as well as the customer service program and offices in the PCMA. The technical assistance operator will submit these actions to IDAAN's board of directors for consideration and approval. In addition, the local contribution will finance the hiring of staff that will comprise PCMA management for a period of four years.[37]

1.21 The expected outcome of this component is a decentralized PCMA regional office of the IDAAN that will oversee procurement, cash management, and staff capable of appropriately managing services, to be reflected in the established performance indicators. The capabilities of IDAAN's main office will also be strengthened, particularly its coordination with the PCMA.

1.22 **Component II: Optimizing the drinking water production and distribution system in the PCMA (US$188.3 million).** This component will finance the optimization activities in the PCMA based on the feasibility studies described in the technical annex, including: (i) refurbishment of water treatment plants; (ii) upgrading or construction of mains; (iii) creation of sectors, to include the procurement and installation of master meters, the construction or refurbishment of small storage tanks, and the procurement and installation of flow and pressure control valves; (iv) optimization of the water system in the sectors created, to include the refurbishing of distribution networks and installing residential connections and individual meters; and (v) refurbishment of pumping stations, as well as other actions to improve the operational efficiency of drinking water networks.

1.23 This component is expected to reduce nonrevenue water in the PCMA by improving the water service reliability rate and water pressure control, resulting in improved access for the 406,781 customers in the PCMA.

1.24 **Administration, evaluation, and external audit (US$6.6 million).** Includes the costs of program management, tracking and monitoring (technical and fiduciary staff and equipment), the external audit, and the midterm and final evaluations.

1.25 **Cost.** The total estimated program cost is US$255.5 million, of which the Bank will finance up to US$250 million from its Ordinary Capital through the Flexible Financing Facility. The local contribution to the program is expected to be US$5.5 million (optional electronic link 8).

[37] These may be current IDAAN staff who meet the established profiles.

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

Components	IDB	Local contribution	Total	%
Component I: Technical Assistance for IDAAN	57.6	3.0	60.6	23.7
Component II: Optimizing the drinking water production and distribution system in the PCMA	188.3	0.0	188.3	73.7
Administration, evaluation, and external audit	4.1	2.5	6.6	2.6
Total	**250**	**5.5**	**255.5**	**100**

C. Key Outcome Indicators

1.26 The following table presents the program's key indicators.

Table I-2 – Key indicators (Annex II)

Outcome indicators	Units	Baseline	End of program
Operating costs per 1,000 gallons invoiced in the PCMA	Rate	1.14	0.97
Current revenue per volume invoiced in the PCMA	Rate	1.02	1.19
% nonrevenue water in the PCMA (1- water billed/water produced)	%	50	30
PCMA households with improved service attributable to the program[38]	Households	0	406,781

1.27 **Technical viability.** The technical viability analysis conducted as part of the preinvestment studies to optimize the PCMA water mains and distribution network showed that the proposed actions are technically viable and will help reduce nonrevenue water rates in the sectors targeted by the program (optional electronic link 1). It was agreed upon with the counterparts that certain adjustments and updates would be implemented prior to putting the works out for bids.

1.28 **Socioeconomic viability.** A cost/benefit analysis of the investment project was conducted. The project benefits are attributable to the value system users place on ending rationing and the cost savings attributable to reducing nonrevenue water. The project is economically viable with an economic internal rate of return of 14.37% and net present value of US$16 million. A sensitivity analysis was performed on the main assumptions of the economic evaluation, which demonstrated the robustness of the outcomes (optional electronic link 2).

1.29 **Institutional viability.** The evaluation of the executing agency's institutional capacity established the need for a program coordination team (PCT) to execute and administer this program. The members of the unit will work on the program full-time (paragraph 3.1). Execution support for the PCT will be provided by the various divisions of the IDAAN (optional electronic link 4).

[38] This refers to households with continuous service 24 hours a day, with pressure that meets parameters.

1.30 **Financial viability.** The financial analysis of IDAAN included a historical analysis based on the utility's financial statements and operational data, as well as a financial model that projects its financial position for the coming fiscal years. The results show that IDAAN currently faces challenges in its main operational and financial indicators (paragraph 1.4). The IDAAN Action Plan 2016-2019 was established with a view to reforming the sector and making IDAAN an efficient and sustainable utility. This plan aims to progressively improve IDAAN's financial performance over the coming fiscal years (optional electronic link 3). To that end, it establishes technical, operational, administrative, commercial, and financial actions to boost revenue (e.g. installing and reading individual meters and updating user registries) and reduce expenses (e.g. reducing the volume of nonrevenue water, optimizing system operations, and developing an energy efficiency plan), with a view to gradually improving the company's main operational and financial performance indicators. These indicators will be monitored annually. The program's financial viability stems from the fact that the works are designed to optimize the water production and distribution system by improving service quality and efficiency, and optimizing operating and maintenance costs. Moreover, the technical assistance contract for IDAAN will improve, *inter alia*, revenue and decrease the average operating cost per gallon invoiced in the PCMA, which will help improve IDAAN's financial sustainability. Contractual conditions were included to ensure the sustainability of the investments (paragraphs 3.6 and 3.8). Further, IDAAN will be contractually obligated to furnish its audited financial statements and main management indicators within 180 days after the close of each fiscal year.

II. Financing Structure and Main Risks

A. Financing Instruments

2.1 The loan is being structured as a specific investment operation, since the cost of all projects, preliminary designs, and technical, environmental, financial, and socioeconomic feasibility studies have been calculated.

2.2 **Disbursement schedule.** Disbursements from the Ordinary Capital will be made using the advance of funds modality in accordance with the program's actual liquidity needs for a period of up to 180 days, and reimbursements of payments made or of direct payments to suppliers. A new advance may be requested when 80% of the cumulative resources pending justification have been accounted for. Program execution is anticipated to last six years. The table below presents the annual schedule of disbursements.

Table II-1 – Disbursement schedule (US$ million)

Source	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6	Total	%
IDB	22.4	41.4	**49**	66.1	51.9	19.2	250	97.85
Local Contribution	0.4	0.9	1.2	1.2	1.2	0.6	5.5	2.15
Total	**22.8**	**42.3**	**50.2**	**67.3**	**53.1**	**19.8**	**255.5**	**100**
%	8.92	16.56	19.65	26.34	20.78	7.75	100	

B. Environmental and social risks

2.3 In compliance with the Environment and Safeguards Compliance Policy (Operational Policy OP-703), this project was classified as a category "B" operation, and the borrower prepared an environmental and social assessment (ESA) associated with the program's environmental and social management plan (ESMP) for the project. The ESA includes a description of the physical and social environments in the area of influence. In general, the program is not expected to have any significant environmental and social impacts. The main impacts of the operations will primarily be associated with temporary and limited construction activities in the urban environment, especially with regard to traffic, excavation, and the removal of conduits (some of which may contain asbestos). Other potential impacts on the population are associated with the installation of individual meters. Regarding mitigation and impact management measures, the ESMP provides a preliminary structure for all of the mitigation measures and plans that must be put into practice prior to the construction and operation stages. The ESA analyzes in detail all of the potential environmental and social impacts of the installation of individual meters. Nonetheless, IDAAN has agreed to perform a socioeconomic study of users and implement the appropriate mitigation measures (e.g. communication plans and training plan) prior to installing the individual meters. This operation's disaster risk is considered medium, which is specifically associated with intense rains and possible flooding. It is manageable through an emergency management plan to be developed by IDAAN.

2.4 The borrower delivered a report on the consultation activities held in the project's area of influence between 8 and 15 September 2017. The report was published on the IDB's and borrower's websites. For purposes of the consultations, the PCMA was divided into five sectors based on geographic area, population, the degree to which they would be affected, and type of intervention. Prior consultation activities were held with community leaders in these sectors to ensure that all the affected parties would be adequately involved in the citizen consultations. The consultations were representative and complied with IDB requirements (optional electronic link 10).

C. Fiduciary risks

2.5 A high level of risk has been identified due to IDAAN's limited fiduciary (e.g. procurement, financial, and accounting) management capacity for program execution. To mitigate this risk, the program plans to: (i) ensure that the IDAAN divisions are involved in and support program execution; (ii) include specific procurement, financial, and planning specialists who work full time for the program on the PCT; (iii) include training activities on the Bank's fiduciary policies; (iv) establish quality controls that ensure the rapid processing of documents sent to the Office of the Comptroller General of the Republic; and (v) ensure that a information technology system in place to issue the program's financial statements.

D. Other risks

2.6 The risk analysis identified a high development risk associated with delays in IDAAN's institutional restructuring. To mitigate this risk: (i) a program executive committee will be formed; (ii) institutional counterparts for the technical-assistance contract will be appointed promptly by IDAAN; (iii) a firm will be hired to oversee the

technical assistance contract; and (iv) a change-management plan emphasizing internal and external communications and activities will be designed and implemented. A medium public-management and governance risk was also identified in connection with the weak program execution arrangement. To mitigate this risk: (i) the divisions of the IDAAN will be involved in the program-execution arrangement from the outset; (ii) the PCT will be established with the structure of the IDAAN; and (iii) the technical assistance contractor will be a first level operator and a firm will be engaged to supervise this contractor. Further, a medium development risk was identified due to potential delays in establishing the PCT within IDAAN's structure. To mitigate this risk: (i) a PCT will be established under IDAAN's top management; (ii) the PCT will have fewer members, but include key staff for program execution, including technical and fiduciary staff; (iii) the program execution arrangements were agreed upon with IDAAN representatives; (iv) the makeup of the PCT will be closely monitored; (v) the PCT staff profiles and duties will be included in the program's Operating Regulations; and (vi) the PCT's human resources were budgeted in the program.

III. Implementation and Management Plan

A. Summary of implementation arrangements

3.1 **Execution arrangements.** The Republic of Panama will be the borrower and IDAAN will be the executing agency.[39] For this program, IDAAN will form a PCT that will be responsible for program management, execution, coordination, planning, and monitoring. While the PCT will have administrative autonomy for procurement and financial management processes, it will coordinate them with the other IDAAN divisions. This PCT will answer to IDAAN's Executive Management and will be comprised of the following key staff: (i) a coordinator; (ii) a procurement specialist; and (iii) a financial specialist. The program Operating Regulations will define the remaining specialists of the PCT, together with their corresponding profiles and duties. All PCT specialists will work exclusively for the program and their hiring will be subject to the Bank's no objection (optional electronic link 9). The appointment of the key PCT staff members will be a condition precedent to the first disbursement. The technical assistance operator will execute the high-impact works described in Component I and will prepare the final designs and support IDAAN and the PCT in the tendering processes for the program's Component II works.

3.2 The PCT will receive execution support from the various IDAAN divisions, including the management and administrative services, commercial, operations, and engineering divisions. The roles and responsibilities of the IDAAN divisions involved in program execution will be defined in the program's Operating Regulations. Under the technical assistance contract with IDAAN, to be financed by the program's Component I, an executive committee[40] will be created to ensure and monitor that

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[39] IDAAN is an autonomous government agency, with legal personality, its own assets, and funds that are separate and independent from the central government. It has autonomy in its finances and internal governance, as set forth in Law 77 of 28 December 2001.

[40] To be comprised of a member of the IDAAN board of directors, the IDAAN executive director, a representative of the PCMA regional management offices, the PCT coordinator, the contractor's advisory team coordinator, and IDAAN's contract technical supervisor.

the contract's objectives and the works to be financed by the program are fulfilled. The executive committee will be established at the strategic management level of IDAAN's organizational structure, and will come under the authority of its board of directors (optional electronic link 4).

3.3 The executing agency, through the PCT, will be responsible for: (i) preparing and periodically updating the program's multiyear execution plan, annual work plan (required electronic link 2), and procurement plan (required electronic link 5); (ii) conducting processes to select works, goods, and consulting services; (iii) supervising works as well as monitoring and evaluation of execution; (iv) performing financial management and submitting the required financial reports to the Bank; and (v) preparing and updating semiannual program reports and risk matrices.

3.4 **Program Operating Regulations.** Program execution will be governed by the provisions of the Operating Regulations, which contain, *inter alia*, the following main elements: (i) detailed execution arrangements; (ii) institutional powers and duties of the various actors, including the specialists of the PCT and the program's executive committee; (iii) financial and administrative management regulations and procedures; (iv) tracking and monitoring procedures; and (v) the environmental and social management plan (optional electronic link 9).

3.5 **Special contractual conditions precedent to the first disbursement of the loan: (i) IDAAN and the borrower will have signed a new interagency agreement establishing the responsibilities for program execution and the transfer of its resources, under the terms and conditions previously agreed upon with the Bank; (ii) the executing agency will have appointed the key members of the PCT; (iii) the Office of the Comptroller General of the Republic will have endorsed the IDAAN technical assistance contract; and (iv) the program Operating Regulations will have been approved and entered into force in accordance with the terms and conditions previously agreed upon with the Bank.** These conditions are considered essential in terms of ensuring that the executing agency is prepared to begin executing the program, with allocated resources, an appropriately formed executing team, Operating Regulations that provide detailed guidelines on operational and coordination aspects, and the technical assistance operator, which is already under contract.

3.6 **Special contractual condition for execution.** The borrower will commit to promptly transfer national budget resources to IDAAN in the event its operating revenue fails to cover its administrative and operating and maintenance costs. This condition is required to guarantee IDAAN's operational sustainability; IDAAN will run the program works.

3.7 **Procurement plan.** The procurement plan (required electronic link 5) details the program procurement processes to be carried out under the Policies for the Procurement of Works and Goods Financed by the IDB (document GN-2349-9) and the Policies for the Selection and Contracting of Consultants Financed by the IDB (document GN-2350-9), listing: (i) the contracts for works, goods and consulting services required to carry out the program; (ii) the methods proposed for the procurement of goods and selecting consultants; and (iii) the procedures applied by the Bank in reviewing procurement. The executing agency will update the

procurement plan annually, or as program needs dictate. Any proposal to revise the procurement plan must be submitted to the Bank for approval.

3.8 **Operations and maintenance.** The borrower, through the executing agency, agrees to: (i) ensure that the project works and equipment are appropriately maintained, in accordance with generally accepted technical standards; and (ii) submit the following to the Bank: (a) an annual preventive operations and maintenance plan for program works and equipment that includes a description of the main activities to be carried out during the period, an estimate of financing required for operations and maintenance, and proof that sufficient funds have been budgeted for the following fiscal year; and (b) an annual maintenance report on the status of program works and equipment, to be issued during the first quarter of each calendar year, up through the fifth year after the disbursement period has ended.

3.9 **Advance contracting.** With respect to the contracting of technical assistance under Component I, the executing agency has made headway in the bidding and award process, in accordance with Policy GN-2349-9. The bidding process was initiated in February 2017 and the call for bids will open through 4 December 2017.

3.10 **Retroactive financing and recognition of expenditures.** The Bank may finance, retroactively as a charge against the loan proceeds, up to US$50,000,000 (20% of the proposed loan amount), and recognize against the local contribution up to US$1,100,000 (20% of the estimated local contribution amount) in eligible expenditures made by the borrower prior to the loan approval date to cover expenses incurred in contracting technical assistance for IDAAN and the works to refurbish and/or build water treatment plants; in procuring pumps and filters, among other items; and in procuring services such as the repair or maintenance of networks or consulting services, provided that requirements substantially similar to those established in the loan contract have been satisfied. These expenditures must have been made on or before 9 May 2017 (project profile approval date), and under no circumstances may they include expenditures made more than 18 months prior to the loan approval date.

3.11 **Audit.** During the loan disbursement period, within the 120 days following the close of the fiscal year, the executing agency will submit the program's annual audited financial statements to the Bank. The audit will be performed by independent auditors satisfactory to the Bank. The determination of the scope and other related aspects will be governed by the Financial Management Guidelines for IDB-financed Projects (document OP-273-6). The audit will be financed with program funds. The executing agency will be in charge of contracting the audit firm.

B. Summary of results monitoring arrangements

3.12 **Monitoring.** The executing agency will present the following instruments as part of its monitoring system: (i) the procurement plan, annual work plan, and the multiyear execution plan (required electronic link 2), which include the agreed upon actions necessary to mitigate the identified risks; (ii) financial plans; (iii) audited financial statements; (iv) environmental audits; and (v) semiannual progress reports, which include the progress made on the annual work plan, the outcomes obtained from executing the activities, and an action plan for the following six-month period on aspects that require corrective actions to improve program performance (required electronic link 3).

3.13 **Evaluation.** The proposed evaluation system will include: (i) verification that the agreed upon targets of the results matrix have been met; and (ii) a performance monitoring report and supervision plan designed to achieve outcomes and evaluate program performance. In addition, a midterm evaluation is planned for 36 months following disbursement eligibility or when 50% of the proceeds from the Bank loan have been disbursed, whichever occurs first, and a final evaluation within the 90 days following the final program disbursement. The midterm and final evaluations will include but not be limited to: (i) financial execution outcomes; (ii) fulfillment of output and outcome targets and progress on expected impacts; (iii) the degree of compliance with the environmental requirements and specifications for works, in accordance with the project's ESMP guidelines; (iv) the degree of fulfilment of operations and maintenance tasks for the completed works; (v) the degree of fulfilment of the works plans; and (vi) the degree of fulfilment of the contractual commitments. The final evaluation will also include an ex post cost/benefit analysis and a before-and-after assessment of the changes brought about with the interventions (required electronic link 3).