

IDB-KIAT Collaboration Project Proposal

Project Overview

Project Title	Closing gaps for users with water services who discharge their wastewater into water sources		
Sector (sub-topics)	<i>Water and Sanitation</i> <i>Innovation on Water and Sanitation</i>		
Country	Colombia	Location	Medellín, Antioquia
Project Duration	46 months	Budget	USD 9 Millions
Association with Other Projects	<i>The innovations generated on this project can be used to complement and catalyze the impact on other operations such as CO-L1156: Water, Basic Sanitation and Electrification Program for the Pacific Colombia; CO-L1232: Project for the Implementation of the Mocoa Sewerage Master Plan (Stage 1); or CO-L1242: Drinking Water and Sanitation Program for the Department of La Guajira</i> <i>This project is aligned with Source of Innovation (SOI). SOI is an initiative to promote the development and integration of innovative solutions in the water, sanitation and solid waste sector that contribute to providing universal safely managed water, sanitation, and solid waste management services. SOI is a joint initiative of the IDB Group co-lead by IDB INE/WSA and IDB Lab, innovation laboratory of the Inter-American Development Bank.</i>		

Submitter's Information

IDB (country office)	
Name	(details to be provided when selected)
Position	
E-mail	
Telephone	

Partner Country's Implementing Organization(s)

Partner Country Contact 1	
Name	(details to be provided when selected)
Position	
Organization	
E-mail	Ministry of Housing, City and Territory
Partner Country Contact 2	
Name	(details to be provided when selected)
Position	
Organization	EPM - Empresas Públicas de Medellín ESP
E-mail	

1. Project Background

Current Situation

One of the biggest challenges for public utilities and municipal entities in Colombia is to provide sanitation solutions in those areas that, due to their location and configuration, have presented themselves as a challenge in terms of guaranteeing the provision of public services. Due to the irregular urban growth in the metropolitan area of the Aburrá Valley, which is made up of ten municipalities in the department of Antioquia-Colombia, there are homes located in informal settlements, areas of difficult management, access and collection. These sectors, due to their limited space and topographic restrictions, prevent the implementation of conventional sewage networks for the collection and transport of wastewater, which is why the inhabitants of these homes are forced to discharge their wastewater directly into water sources, causing environmental deterioration and a deterioration in the quality of life of the community.

Faced with this challenge, alternative and innovative solution for the sanitation of informal settlements located in areas that are difficult to manage, access and collect wastewater must be deployed. Innovation in sanitation solutions was mandatory in these sectors, seeking adaptability of the projected infrastructure to the existing conditions, through the implementation of non-conventional networks, which are exposed networks attached to channeling walls, beams, piles, etc., that allow the collection of discharges in informal settlements and eliminate the disposal of pollutant loads to water sources.

Empresas Públicas de Medellín, the leading utility in the area, contributes to the decontamination of streams tributaries to the Medellín River, with high benefits to the community, improving the quality of life and health conditions of the communities, reducing the proliferation of vectors associated with improper wastewater management and ensuring greater coverage for the collection, transport and treatment of wastewater generated.

This project has been recognized by "Ideas en Acción", the IDB Group's initiative to reward the most innovative and scalable utility initiatives in the region. This award is part of Source of Innovation (SOI), as noted above, the IDB's regional initiative for innovation in the water and sanitation sector. SOI is supported by FEMSA Foundation, SECO (Swiss Cooperation) and the Government of Israel. One of SOI's main objectives is to scale up existing innovations in the region. "Ideas in Action" is an exciting portfolio of successful and promising projects to reach scale.

Relevant National Development Plans, Policies, and Strategies

This project is consistent with the framework of the Commitment for Colombia, Water Chapter, under which 130 projects are being developed that will benefit 5.6 million people, with an investment of \$2.17 trillion, which will also generate more than 10 thousand direct jobs.

Association with Other Projects/Programs

The innovations generated on this project can be used to complement and catalyze the impact on other operations such as CO-L1156: Water, Basic Sanitation and Electrification Program for the Pacific Colombia; CO-L1232: Project for the Implementation of the Mocoa Sewerage Master Plan (Stage 1); or CO-L1242: Drinking Water and Sanitation Program for the Department of La Guajira.

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As winner of *Ideas into Action*, EPM won the opportunity to spend one week in Brazil, to know first-hand the innovation management model of SABESP, the water and sanitation utility of São Paulo, and learn about its Innovation Lab. Also, EPM will receive support from the AquaRating team, to improve their innovation strategic planning. Finally, EPM will be given visibility in several events.

The winners of Ideas into Action automatically become part of the IDB Group's Source of Innovation initiative for innovation in water, sanitation and waste management. If the proposal evolves promisingly, Source of Innovation could potentially contribute with additional studies or with some financial contributions.

2. Project Objectives

- Provide sewage service to those homes located in areas of difficult management and/or collection that already have EPM's aqueduct service and that discharge directly into bodies of water.

- Eliminate direct discharges to water sources of users contributing to the decontamination of streams tributary to the Medellín River and the sanitation of the river itself.
- Improve the quality of life and health conditions of the communities settled in the project's intervention zones by reducing the proliferation of vectors associated with inadequate wastewater management.
- Improve the environment of the houses near the sources by reducing odors associated with inadequate wastewater management and promoting better development of the sectors.
- Increase the self-recovery capacity of water sources by reducing the pollution load.

3. Project Components

The proposed project will have the following components.

Component 1: Diagnostic and feasibility study. The study will include the technical evaluations necessary to verify the discharge points of the houses located in the vicinity of the streams. According to these verifications, the technical feasibility of a solution that allows the collection of such discharges through a sewerage network is studied. According to the results of the diagnosis and considering the technical difficulties due to the limited space and topographic restrictions of the analyzed sectors that prevent the implementation of conventional sewage systems, the feasibility study for the implementation of non-conventional systems (exposed networks and attached to pipes, walls, columns, beams, etc.) was chosen based on current regulations.) based on the current Colombian regulations Resolution 0330 of 2017 issued by the Ministry of Housing, City and Territory "By which the Technical Regulations for the Drinking Water and Basic Sanitation Sector - RAS and specifications NC-AS-IL02-26 of non-conventional sewer systems of EPM are adopted. This type of solution collects the wastewater discharges from the homes that are the object of the project and discharges them directly into the water sources, connecting them to the public sewage system operated and maintained by EPM.

In addition, hydrological studies are carried out to identify safe levels of sewerage construction without being affected by the increase in the water level due to torrential floods.

Component 2: Design of non-conventional sewers. Based on the diagnoses and technical feasibility, designs will be made in sectors where there is greater effectiveness in the collection of individual discharges and where the topographic and demographic characteristics allow it without affecting the hydraulic and hydrological characteristics of the water bodies, these designs have a complete study at the level of topographic surveys, geotechnical studies, hydrological studies, hydraulic and structural studies, which have allowed obtaining the detailed input for the construction of infrastructure in compliance with current regulations.

Component 3: Construction of non-conventional sewers. This would include: (a) construction of networks attached to channels and/or supported on columns or beams; (b) construction of individual and multiple connections and connections to the constructed sewer pipe; and (c) construction of civil works necessary for the operation and functioning of the non-conventional sewer, stabilization, and protection of slopes where necessary and reconstruction of infrastructure demolished during the construction process.

4. Project Location, Period, and Estimated Cost

- Feasibility Study: January 2024 - August 2024
- Preparation of bidding documents: August 2024 - June 2025
- Procurement of diagnostic and design contractors: June 2025 - September 2025
- Commencement of diagnostic and design contract: October 2025 - October 2026
- Procurement of construction contractors: January 2026 - March 2026
- Commencement of construction contract: April 2026 - October 2027

Expected cost: US\$9 millón

Component	Amount
Component 1: Feasibility study	\$100,000
Component 2: Design of non-conventional sewage system	\$600,000
Component 3: Construction of non-conventional sewers and connections for the elimination of discharges	\$8,300,000

Location: The location of the project will be the Aburrá Valley and Rionegro, Department of Antioquia, where EPM provides its services. The exact locations would be determined based on the diagnostic and technical feasibility study that would include geospatial analysis and other technical work to select the site; recommend the project configuration based on the amount of point discharges to be collected; and prepare the technical specifications.

5. Project Implementing Organization

Contact information will be provided when the contract is awarded.

6. Required Coordination at National/Regional Level

Effective and transparent coordination will take place with the Ministry of Housing, City and Territory; the Gubernation of Antioquia and the Mayoralty of Medellin.

7. Risks and Opportunities

In terms of risks, next August there will be elections in Colombia so the change of authorities could mean delays in the implementation of the project. As a result of the pandemic and other underlying social conflicts have erupted in Colombia in 2019 and 2021. It is reasonable to think that conflicts of this type could be reproduced in the future and could affect the project.

Opportunities: The problems faced by EPM on how to achieve sanitation coverage in hard-to-reach peri-urban areas are common in Colombia and throughout the region. The innovative approach taken by EPM can be a showroom of how to address this problem through alternative forms of sewerage can be replicated in other cities in Colombia and throughout Latin America and the Caribbean.