

Ex-post Evaluation Report 2019-01

# **Ex-post Evaluation of Potable Water Supply Expansion Project for Santo Domingo**

**Final Report**

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**World Economic and Social Research Institute**

This evaluation was entrusted to the external research team led by Professor Park Myungho at World Economic and Social Research Institute for the purpose of conducting an independent assessment. The findings or statements contained herein do not necessarily reflect the official position of Korea Eximbank and EDCF.

## 1. Overview

- In 2002, the Government of the Republic of Ecuador requested EDCF's support for the Potable Water Supply Expansion Project for Santo Domingo ("Project") to improve public health and sanitation of Santo Domingo residents by expanding potable water services. The Project also aimed to respond to the increasing demand for drinking water among the growing population in Santo Domingo, the fourth largest city in Ecuador, and to support economic growth across the region.
- The Project was implemented by the Autonomous Decentralized Municipal Government of Santo Domingo and Empresa Pública Municipal Agua Potable Y Alcantarillado (EPMAPA-SD), along with HansOLEME as the designer and developer.

## 2. Evaluation Method and Results

- The purpose of this evaluation is (1) to address accountability for the Project and analyze the reasons for the success and failure of the Project and (2) to provide lessons learned and recommendations that are applicable to similar projects in the future.
- This ex-post evaluation adopts relevance, efficiency, effectiveness and sustainability for the criteria in accordance with the evaluation guidelines of the Sub-committee for Evaluation under the Committee for International Development Cooperation (CIDC) and EDCF guidelines for ex-post evaluation.
- (Overall Rating) The Project was rated as "successful."
- In terms of relevance, efficiency, effectiveness and sustainability, the Project is

evaluated to be high as all four areas scored over 3 out of 4.

<table 1> **Summary of Findings**

Criteria	Score	Rate	Results
Relevance	3.3	Relevant	<ul style="list-style-type: none"> <li>• The Project was not based on a long-term plan or goal of the Government of Ecuador.</li> <li>• The Project was in conformity with the goal of contributing to socio-economic development and residents' welfare improvement in the project area.</li> <li>• The municipal government of Santo Domingo and EPMAPA-SD appropriately designed the project plan and target related to water resources supply as part of the efforts to improve living conditions of people.</li> <li>• The municipal government of Santo Domingo and EPMAPA-SD actively participated in the Project with a sense of ownership.</li> </ul>
Efficiency	3.0	Efficient	<ul style="list-style-type: none"> <li>• Due to the modified project scope and additional work, the actual implementation period of the Project was extended to 44 months from 36 months as in the original plan, an increase of 22 percent compared to the original schedule.</li> <li>• The Project was completed efficiently within the planned budget, although there were some changes in the composition of the costs due to the modification of project scope.</li> </ul>
Effectiveness	3.4	Effective	<ul style="list-style-type: none"> <li>• Most of the outputs originally planned in the Project were completed.</li> <li>• The targets of daily supply quantity and water quality were fulfilled, while the target of non-revenue water ratio was not achieved. Most of installed facilities were observed to function relatively properly.</li> </ul>
Sustainability	3.5	Sustainable	<ul style="list-style-type: none"> <li>• As Santo Domingo is a city with the fastest-growing population in Latin America, water resources demand will increase continuously in accordance with the progress</li> </ul>

			<p>of urbanization.</p> <ul style="list-style-type: none"> <li>• In Santo Domingo, the supply of water resources was managed relatively appropriately based on an effective collaboration between the municipal government of Santo Domingo and EPMAPA-SD. However, the high non-revenue water ratio of 51%, the need to process a large amount of soil inflow into the water intake system during the wet season, the replaceability of Treatment Plant C could serve as constraints on stable water supply.</li> <li>• The water resources protection areas were designated by water law, and their staff members were stationed for management and observation every other day.</li> <li>• The human resources of EPMAPA-SD consisted of those with sufficient capabilities, but it is rather a constraint that its management reorganization could be greatly impacted by political influence.</li> <li>• The high non-revenue water ratio needed to be improved. Also, the municipal government of Santo Domingo and EPMAPA-SD should make continuous efforts to boost their income base for sustainable fiscal soundness.</li> </ul>
Cross-cutting issues	-	-	<ul style="list-style-type: none"> <li>• EPMAPA-SD was appropriately processing sludge generated from the sedimentation basin of the treatment plant area.</li> <li>• Most households replied that their time spent for collecting drinking water was reduced substantially.</li> </ul>
Overall rating	3.3	Successful	

**Relevance**

- This Project was initially agreed at the presidential summit between the Republic of Korea and the Republic of Ecuador in March 2002. In September 2002,

financial support was decided in the form of mixed credit of EDCF export financing. However, the relevant loan agreement was signed eight years later in December 2010 due to the political situation in Ecuador.

- The Project was in conformity with the Korean government's development cooperation policy and EDCF's supporting direction, which were focused on water resources management and sanitation. The Project was also meaningful in that EDCF can fully contribute to achieving the Sustainable Development Goals (SDGs) through this Project.
- The Project was appropriately planned in terms of water resources development in Santo Domingo with the fast-growing population. However, the repair work of Treatment Plant C at the request of the mayor of Santo Domingo, a project to use a contingency reserve, was carried out without a thorough verification process.
- The municipal government of Santo Domingo and EPMAPA-SD participated with a sense of ownership in the process of managing and supervising the Project. Through this, they enhanced their understanding of the water supply project and strengthened the capacity of their staff members.

#### **Efficiency**

- This Project was rated as efficient in that it was successfully completed within the planned budget although there was some delay in construction work.
- The Project was initially expected to be completed in 36 months after the execution of the procurement contract, but the implementation period was extended to 44 months, an increase of 22 percent compared to the original schedule.
- Although there were some changes in the composition of the costs due to the modification of the project scope, the overall loan amount was USD 43,623 thousand, which was within the planned budget of USD 43,630 thousand.
- The persons related to the municipal government of Santo Domingo and EPMAPA-SD assessed that the Project had been completed very efficiently but

cooperation between interested parties needed to be enhanced.

## Effectiveness

- Most of the main outputs of the Project were completed and met the effectiveness targets. The Project seems to become more effective as some output targets were replaced by more realistic ones during detailed design, accepting more residents' needs.
- Installation or modification of various water supply facilities, such as well heads, intake pipelines, treatment plants, transmission lines, reservoirs and distribution lines, were properly implemented to supply running water to more households. Moreover, about 90-km old asbestos pipelines were replaced by new DCIP and PVC pipes and 10,000 watermeters installed at households greatly contributed to collection of water bills.
- 24,000m<sup>3</sup>/day of treated water was supplied by EPMASA-SD before completion of the Project. The original goal was to supply daily water of 88,800m<sup>3</sup>/day until completion of the Project by adding a new treatment plant with capacity of 64,800m<sup>3</sup>/day. Upon completion of the Project, the maximum capacity of treatment plants in operation (Plants A, B and C) increased to 86,000m<sup>3</sup>/day, very close to the original goal of 88,800m<sup>3</sup>/day. However, the evaluation team found that their daily water supply capacity was actually 71,280m<sup>3</sup>/day only.
- On-site water quality tests in the distribution lines showed that the water quality of drinking water in Santo Domingo met the water quality standards of Ecuador and the World Health Organization (WHO). Meanwhile, while the target of daily water supply quantity was reached, that of non-revenue water (NRW) ratio was not achieved. As of 2019, the NRW ratio stood at 51.1 percent, far below the original 25 percent target. However, EPMAPA-SD has been working with a foreign consulting firm and promoting its ambitious plan to achieve a 30 percent NRW ratio by 2029.
- The goal to increase daily water supply quantity was fully achieved. The original design planned to construct a new water treatment plant, but the goal of repair work for an unused treatment plant was achieved due to design modification. In

2019, the Project achieved 73 and 88 percent in sales and the number of households receiving benefits, respectively. EPMAPA-SD is endeavoring to increase the sales and beneficiaries of water services gradually.

## **Sustainability**

- The Project was rated as sustainable in terms of water demand, water supply, and the project executing agency's human resources and financial stability.
- Water demand will continue to increase in Santo Domingo, a transportation hub of Ecuador. The city's population is growing steeply, along with rapid urbanization.
- In Santo Domingo, water supply was well managed by EPMAPA-SD based on its effective cooperation with the municipal government of Santo Domingo. However, the high NRW ratio of 51%, the need to process a large amount of soil inflow in the water intake system during the wet season, the replaceability of repaired Treatment Plant C with a sand filtration treatment plant. could be constraints on stable water supply.
- EPMAPA-SD has enough human resources and capabilities for the O&M of the facilities since it has relatively high-quality employees and provides them with adequate training programs. However, since it is a public enterprise under the local government that is highly impacted by political forces, frequent changes of management and high-ranking officers occur in EPMAPA-SD. This may possibly affect the continuity of duties.
- EPMAPA-SD has maintained financial stability as it is being operated without subsidies from the local government. However, the high NRW ratio of 51% is needed to be improved and additional efforts for reinforcing its income base should be made.

## **Cross-cutting Issues**

- The sludge generated from the sedimentation basin is being processed by an



independent company and properly buried in the landfill.

- According to the surveys and interviews of residents, the time spent for collecting water was substantially reduced in most households.

### **3. Lessons Learned and Recommendations**

#### **Success Factors**

- The municipal government of Santo Domingo and EPMAPA-SD adequately mapped out the Project and set achievable output targets in terms of water resources supply. They implemented the Project successfully and fulfilled most of these output targets by developing its own capabilities with a strong sense of ownership.

#### **Challenges and Limitations**

- The period of the Project was extended due to changes in project scope and delays during the rainy season.
- Political impact appears to have harmed the Project as the city's water resources policy has been frequently changed by its newly elected mayors.

#### **Recommendations**

- (The Central Government of Ecuador and the Municipal Government of Santo Domingo) Since the water resources development is an important agenda for the country, the central government should map out both the long-term and short-term plans for developing water resources with the help from the local government.
- (EPMAPA-SD) The efficiency of water management should be improved by

reducing the excessively high NRW ratio, and projects should be planned based on a more thorough on-site survey.

- (EDCF) The efforts to complete EDCF projects within the period should be strengthened. Also, it is recommended that a weighted value be assigned to each evaluation indicator or based on budget size.