Evaluation Report
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Impact Evaluation on Water Supply Project in Sri Lanka

The Export-Import Bank of Korea
(Government Agency for EDCF)

EDCF Evaluation Team
(Evaluated by Future Resources Institute and K-Water Corporation)

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Future Resources Institute and K-Water Corporation
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The opinion, findings and conclusion or recommendations
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Executive Summary

I. Introduction

This evaluation assessed the socioeconomic and environmental impact of the Greater Galle Water Supply Project. A team of external evaluators (Future Resources Instistitute and K-Water Corporation) conducted literature review, field observation, measurement and survey from July to October, 2014. The preliminary findings were shared in the joint evaluation workshop held in Sri Lanka in September, 2014. These various components of the evaluation allowed the evaluators to communicate directly with the stakeholders and to address critical issues.

With the early achievement of the Millennium Development Goals (MDGs) being the main focus of the Sri Lankan government, the government's top priorities are improving the quality of life and providing nationwide access to clean and safe water. Due to the imbalance in supply and demand, the residents of the Greater Galle area faced difficulties in accessing clean water. In order to address this need, the Sri Lankan government proposed that EDCF support a project to build water supply facilities that would support a 120 km^2area in the Greater Galle region.

II. Evaluation Results

The randomized and controlled design could not be used since the project itself did not randomly select the site or beneficiaries. However, the limitations were reasonably overcome by using secondary data and recall of the residents.

1. Socioeconomic Impact Evaluation

The project had a positive impact on improving the quality of life, especially that of females and on stimulating the local economy. The project also contributed to improving the water rate system in Sri Lanka.

The increased supply of clean water reduced the prevalence of water-borne diseases and led to better livelihoods and health of local residents. The survey results suggested that the project made access to water much easier and shortened the time spent on water fetching. Region-wide water supply has become available, closing the gap in access to clean water among all income groups. As a result, low income households expressed high levels of satisfaction with the project results.

The quality of life for females, in particular, improved as the increased access to the water supply reduced water-related female labor. The project enabled females to have more free time to perform economic activities, which would increase overall household income.

The water supply facilities positively impacted the local economy, especially service and tourism industries, which are major income sources of Sri Lanka. The facilities increased the supply of clean water to improve convenience and sanitation, allowing hotels to be constructed and attracting more tourists.

The Sri Lankan government charged water rates reasonably enough to recover initial investment and to finance the maintenance of the facilities. The new billing system was developed in order to increase the sustainability of the water supply system. It allowed more efficient billing and collecting of the rates, which appeared to be affordable for the low income group as well.

2. Environmental Impact Evaluation

As part of the impact evaluation, the environmental impact of the water supply project was examined. The project appeared to have no negative impact on the environment.

The sea dike facilities had no direct environmental impact on local flora and fauna. Except for the dry season, the dikes were normally open so that fish and animals could move around as freely as before.

In regard to the water intake facility, proper water quality was maintained at the time of evaluation because water inflows to the facility were consistent in volume, making it easier to be controlled. Moreover, there are no unnatural pollutants near the water resource. Since the facility is far from residential areas, negative impact of noise is minimal.

The water treatment plant was being well-operated with proper maintenance at the time of evaluation. Survey and experiments on water in use revealed that the quality of water was consistently high. However, the potential risk of waste water was not being fully addressed in Sri Lanka. In order to reduce possible soil and water contamination, effluent and sludge need to be treated more properly in the future.

Regarding other facilities, no negative impact on the environment has been identified. However, it would be useful to take measures to prevent accidental spills of pollutants and water-related accidents at the facilities.

III. Lessons Learned and Recommendations

[Lessons Learned]

1. Success Factors

1) The water supply project in the Greater Galle area was consistent with the national development policies of Sri Lanka. The government had clear development policies and strong commitment that led to the project's success.

2) The water supply project was expected to bring long-term positive changes to the area because of its favorable location with high potential and prospects. Clean water supply is an important factor to the industries such as tourism and service which are major income sources in the Greater Galle area. By selecting such an area, the project maximized its positive impact.

3) The partner country's government maintained the facilities over the years and retained competent technical personnel. The implementing agency oversaw facility operation and maintenance. These two factors had a tremendous impact on the overall sustainability of the project.

4) The design of the water treatment plant was developed with the consideration of the socioeconomic and environmental impacts to minimize potential adverse effects. The project was well-designed from the beginning and has been maintained properly after completion. The facilities are located far from residential areas and the sea dikes are only used during the dry seasons.

2. Limitations

1) Insufficient regulations of the partner country on water management can cause potential environmental risks. At the time of evaluation, neither law nor regulations on the general treatment and processing of effluent, sludge and water pollutants existed in Sri Lanka. In addition, there were no accident prevention standards, safety instructions, or safeguards to block the negative impact of operator-induced accidents.

2) There was a need for information management system for effective water supply management. The current water supply data management is ill-equipped and outdated to allow effective data collection and utilization.

[Recommendations]

1) EDCF should identify the project of which the partner country expresses a high level of ownership. The case of this project shows the importance of the government's willingness and ability to sustain positive impacts of the projects.

2) Without a proper sewerage system, the positive impact of the water supply project can be offset. Thus, when conducting a new water supply project, the introduction of a joint sewerage system should be considered, reflecting the project's characteristics and partner country's circumstances.

3) A systematic reform in the partner country's regulations on the environment can reduce potential harmful environmental effects. As with other developing countries, Sri Lanka has weak environmental standards that could negatively impact the facility operation and the environment. Concrete laws and institutional support are needed to develop environmental safety manuals as well as provide basic information on water management.

4) It is recommended to build and maintain the information management system of water supply in order to improve the efficiency and sustainability of the water supply management in the long term.

<Appendix>

Proposed Impact Evaluation Frame

While a universal impact evaluation framework of a water supply project does not exist, some general guidelines on necessary indicators for each aspect of evaluation will be helpful. As an output of this impact evaluation, the evaluators proposed an impact evaluation frame for water supply projects.

A. Socioeconomic Impact Evaluation Frame

Evaluation tools and methods from the WB (2006) and ADB (2009) were selected as the evaluation frame among various evaluations on water supply projects, based on the applicability to EDCF projects.

The WB divided the impact of the water supply project into four categories: public health, education, gender/social integration and income. The ADB's 'Punjab Area Water Supply Project' divided the impact factors into three categories: public health, education and income.

The proposed frame for socioeconomic impact evaluation has two levels of indicators: outcome and impact. The outcome indicators are access to water, water supply reliability and water acquisition time. The impact indicators are health, education, equality and income.

<Table 1> Socioeconomic Impact Evaluation Frame

Type	Indicators	Basis
Outcome	Access to Water	- Sufficient water supply - Secure, clean water access - Convenience of water point - Ratio of households with water supply before and after project, water consumption per household
	Water Supply Reliability	- Stable and secure water supply
	Water Acquisition Time	- Water acquisition method and time
Impact	Health	- Number of water-borne diseases (diarrhea) and respiratory issues
	Education	- Ratio of underprivileged school-aged children before and after project - School-aged children's attendance in school
	Equality	- Discrimination of socially disadvantaged population (poor/minority/women)
	Income	- Income level per household - Household employment status

B. Environmental Impact Evaluation Frame

The environmental impact evaluation assesses the comprehensive effects of changes in facility operation and maintenance on the surrounding environment. Examining the Korean (Ministry of Environment) and international (JBIC, WB and IFC) environment evaluations revealed that most water supply project evaluations had six categories, which are direct or indirect indicators.
The proposed environmental impact evaluation frame categories are air quality, water quality, noise/vibration, ecosystem, landscape and waste.

<Table 2> Environmental Impact Evaluation Frame

Type	Indicators	Basis
Air Quality	Air emission standards, Air management standards	- Assessment of air pollution caused by chlorine leaks from the chlorine disinfection process and other factors
Water Quality (Surface· Ground)	Effluent emission limits, leachate contamination	- Water pollution from effluent - Soil and groundwater contamination from sludge - Chemical leaks (coagulant) - Waste management in the laboratory - Pipeline washing standards during water supply and drain line operation - Pollution prevention methods for other intake source
Noise· Vibration	Noise and vibration standards	- Complaints about noise or vibrations due to the facility operation
Ecosystem (Animal· Plant)	Nature reserves, endangered species protection, measures to protect ecosystem from harmful effects	- Investigation of the overall impact on endangered species and their habitat
Landscape	Harmony with surrounding area	- Damage to nature, changes to the view
Natural Cycle (Waste)	Waste management standards	- Final disposal method of discharged sludge

C. Using the Proposed Impact Evaluation Frame

The proposed frame for impact evaluation is for general use; The components of the water supply project vary based on the characteristics and situation of every country. Thus, when conducting impact evaluation, more factors in addition to the frame are recommended to be considered.