Ex-post Evaluation Report 2011-2-6

Greater Galle Water Supply Project

Loan Contract Number : SRI-10, SRI-12, SRI-15

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Country : Sri Lanka

The Export-Import Bank of Korea

(Government Agency for the EDCF)

EDCF Evaluation Team

(Evaluated by Korea Water Resources Corporation)

Ⅰ. Introduction

This Project is the second phase of the Greater Galle Water Supply Scheme of Sri Lankan government with the purpose to solve the water shortage problem in Greater Galle Area, Sri Lanka. The Greater Galle Area is a metropolitan city on the southwestern tip of Sri Lanka, 116km from Colombo. Galle city is the capital city of Southern Province of Sri Lanka and a seaport to connect Middle East and Southeastern Asia as well as a seaside resort city.

The demand for water supply in Galle city by 2000 was 25,000m^3/day that was 13,900m^3/day lack with former water supply facility. It caused an enforcement of restrictive water rationing for 6 hours/day in some areas. Although water consumption in Galle city is consistent compared to other regions, there have been difficulties due to a lack of financial resources and water management skills.

Under these circumstances, this project aimed to contribute to improving living conditions for local people and industrial development by providing a sufficient supply of water for industrial use as well as personal consumption taking and purifying waters from the Gin River. The work scope of this project as phase I and phase II was conducted separately and the total amount of the concessional loan was USD 47,907,000. After the completion of Phase I & II of this project, the water supply pipe line of 445km was installed in order to supply water to local people in the Galle area.

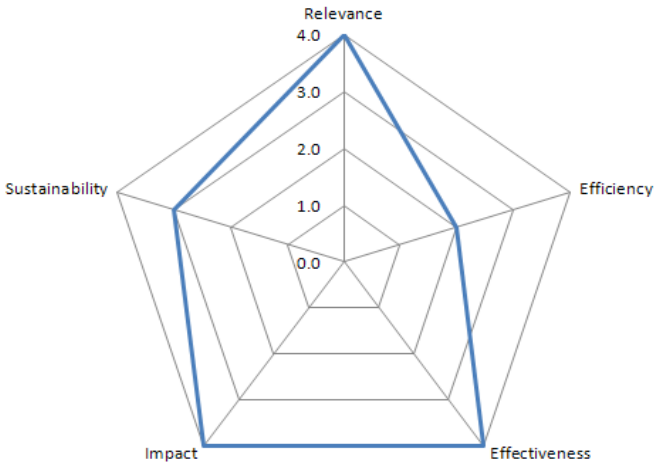
Ⅱ. Evaluation by Criteria

This project is evaluated as successful based on OECD DAC evaluation criteria such as relevance, efficiency, effectiveness, impact and sustainability.

In terms of relevance, this project is evaluated as ‘highly relevant’ because it is highly aligned with the development policy of Sri Lankan government in water supply and sewerage sector, MDGs and EDCF assistance strategy. In terms of efficiency, it is evaluated as ‘partly efficient’ due to the higher-than-expected costs and project delays. In terms of effectiveness, it is evaluated as ‘highly effective’ because the original design and the initial goal of this project were successfully achieved. In terms of sustainability, financial stability will likely be compromised due to the unrealistic water tariff though it is technically sustainable.

〔Total Evaluation Chart〕

Evaluation criteria	Weight	Classification	The value
Relevance	20%	Highly Relevant	4.0
Efficiency	20%	Partly Efficient	2.0
Effectiveness	20%	Highly Effective	4.0
Impact	20%	Highly Influential	4.0
Sustainability	20%	Sustainable	3.0
Comprehensive evaluation Score		Successful	3.40



1. Relevance

Considering the alignment among the development policy of Sri Lankan government in water supply and sewerage sector, MDGs and EDCF assistance strategy development policy, this project is evaluated as 'highly relevant'. This project aims to supply water to households through water pipes according to 'Regaining Sri Lanka Program'. Also, it contributes to accomplishing 'halving the proportion of the population without sustainable access to safe drinking water and basic sanitation': The 7th promise proposed by the MDGs which corresponds with the EDCF assistance strategy.

Sri Lankan government drives water supply and sewerage sector as development priority sector. And the project executing agency, National Water Supply and Drainage Board (NWSDB) established the 6-year development plan (2000-2005) in water supply and sewerage sector to secure 24-hour water supply system and urban wastewater treatment facility. The demand for the water supply in Galle city has been increased in accordance with the population growth and the improvement of living standard. The demand for water supply in Galle city was expected to increase up to 60,000m^3/day by 2005 and 100,000m^3/day by 2015. Therefore, it was urgent to build water supply facilities in order to solve water shortage problem.

The project corresponds with the targets of improving accessibility to clean water and sanitation facilities of MDGs No.7. Before this project, the accessibility to clean drinking water was 82% in 2000, but it has been improved to 84.7% in 2007. As a result, the proportion that the MDGs aim by 2015, 84%, has already been exceeded through this project.

Furthermore, this project corresponds with EDCF assistance strategy. EDCF designated 'social infrastructure sector' as priority assistance sector because it is very important as a prior goal of MDGs as well as it is a basis to export related services.

2. Efficiency

Considering project implementation period and costs with the main evaluation standards of efficiency, the project is evaluated as 'partly efficient'. The project implementation period of phase I was extended by 9 months due to floods, tsunami and price increases of materials. So the phase I was completed within the budget by using the contingency. The project

implementation period of phase II was also extended by 14 months due to tsunami and frequent rainfalls. The Phase II of this project diverted contingency and used supplementary loan.

3. Effectiveness

An evaluation has been made based on whether the project goal was reached and the optimized technology in accordance with the local condition was applied or not. As a result, the original project goal was achieved according to its initial design and plan and the technologies applied were optimized for future extension of the project.
Therefore, it is evaluated as 'highly effective'. The most suitable technology has been adopted by considering climate and terrain of Sri Lanka and technologies which can minimize the cost of operation and maintenance (O&M) in the future were applied as well. As a result, this project is evaluated as an example of applying optimized technology in Sri Lanka.

The purpose of phase I was to contribute to social and economic development solving the difficulties in using water by expanding water supply facilities. At the moment of project planning, expected demand for water supply was about 60,000m^3/day by the year 2005. The existing facilities and the newly constructed facilities could fulfill the demand for water. The phase I achieved its goal by building water treatment facility, water intake facility, low-pressure pump, 4 water pipe lines, 4 pressure pump units, drainage in four locations and gateway salinity barrier.

The phase II, which is a follow-up project to phase I, was the construction of water pipes in order to supply water for industrial and residential use. A large portion or people were given access to safe drinking water through phase II of this project.

In applying the optimized technology considering the climate and terrain of Sri Lanka, gateway salinity barrier was installed to prevent sea water back flowing caused by water level decline in the period of water shortage. Moreover, water intake facilities were constructed for additional water treatment plant according to expected increase of water supply in the future. Furthermore, Cascade type aerator facility was installed in the place where original water enters and gathers together to be purified in the water treatment plant in order to increase the level of dissolved oxygen and effectiveness of compound and cohesion. This aerator installation is considered as to contribute to reducing of O&M cost.

In addition, lagoon method is used for the sludge treatment process of Galle water treatment plant, which naturally dries the sludge without any mechanical dewatering equipment. Final sludge lays in landfill and will be recycled into materials such as concrete or brick in the future. Mechanical dewatering process such as the belt press or filter press is not efficient when there is a shortage of operation specialists just like in Galle water treatment plant. Therefore, current sludge treatment method, lagoon method, is the best technology considering the local situation.

4. Impact

It is evaluated as ‘highly influential’ based on the socioeconomic influence and technology transfer effect. The quality of life of Galle area residents is improved through enhancement of public health. Also, the technical skills for O&M are greatly improved by transferring technology from Korean supplier.

By supplying safe and clean water, the health, hygiene and living standards of local residents in Galle area were improved. The risk of waterborne diseases infection was decreased and the productive capacity was developed by improvement of health condition, which leads to the increase of income. Before this project, the locals spent more time to secure the water, which is non value-added activity, rather than doing productive activities to create added value. However, the completion of this project reduced the time needed to secure clean water, which accelerates the entry of women in public affairs.

The Sri Lankan government expands infrastructure facilities such as harbor and roads Galle city to invigorate secondary industries in the area, which leads to growing demand for industrial water compared to other regions. Therefore, the economy of Galle city is expected to be more vitalized by the invigoration of the secondary industry with this project.

The O&M skills of NWSDB are improved for new related projects by the technology transfer from Korean supplier. According to an evaluation report by local consultant, effective O&M in every machine in the water treatment plant has been done by technology transfer from Korean supplier to NWSDB upon close cooperation. In addition, inferring from the use of various equipments for water quality measuring and record maintaining through water quality analysis reports and daily records of testing, the test run and training for O&M personnel have been done adequately.

5. Sustainability

Considering the O&M system, financial and institutional conditions, this project turned out to be ‘sustainable’. Galle water treatment plant has been operated at 80% capacity. And O&M costs are covered by water service fees. However, the reinvestments need to be made for the purpose of improving outdated facilities besides the costs of O&M including labor and electricity cost. In this regard, to enhance sustainability of this project and secure sources of reinvestment, it is necessary to achieve realistic water tariff and improve water tariff system.

The Sri Lankan government and NWSDB set and maintain the goals to raise sustainability in the water supply sector in terms of improvement of efficiency in asset management, improvement of water quality and sewerage system, prevention of water sources pollution and reduction of non-revenue water supply.

Purification process in Galle water treatment plant aims to achieve stabilized level of drinking water quality. If O&M and reinvestment of the plant continue, it is expected to contribute to improving the quality of life of local residents through stable water supply in Galle city for 30 years or longer. Water treatment technology which is appropriate to the local condition has been applied, and as the entire facilities including water intake system, water treatment system and pressurization system are comprehensively managed through a control room within water treatment plant, facilities could be effectively operated by small number of operators.

The quality of water sources in Galle water treatment plant is generally constant without a drastic change every year thanks to the sufficient water reservoir capacity. If the water influx is constant, it becomes possible to focus efforts on managing the quality of water sources. Specialized technicians are in charge of O&M activities in the water treatment plant, so that normal operation and water quality management can be done.

It appears necessary for NWSDB to improve practical management capability in terms of improved system to determine water tariff to secure financial resources required in the reinvestment of this water treatment plant.

Ⅲ. Lessons & Recommendations

1. Lessons

A. Expansion of participation of professionals

Sri Lanka has tropical monsoon weather with high temperature and humidity, and there are differences in precipitations by season and region. It rains so much that annual precipitation rate is 2.5 times the global average. Accordingly, heavy rainfalls or floods could be expected as risks with regard to the project. Natural disasters including floods and torrential rain delayed the completion of the project even though they could be predicted and considered in advance.

When implementing feasibility study or establishing a project plan, regional experts, financial specialists and water resources specialists need to comprehensively review on political, cultural, economic and technical issues related to the project.

B. Project management system

Performance indicators were not designated at the project appraisal stage. There is neither sophisticated project management ranging from mid-review, completion evaluation to ex-post evaluation nor systematic monitoring, so it has been difficult to quickly respond to problems occurring during the project implementation stage.

2. Recommendations

A. Enhanced monitoring system

Concrete and tangible performance indicators need to be designated from the initial stage of a project to monitor attainability of project goals and reasons for delayed process so that effective plan for dealing with the project delay can be taken immediately.

Monitoring needs to be conducted regularly to deal with unexpected situations and solve problems that might cause project delay. If there is no monitoring system, problems occurring during the project implementation stage cannot be identified, and it can cause an adverse effect on ‘effectiveness’ and ‘sustainability’ of the project after the completion of the project.

B. Establishment of plans to deal with expected risk factors

Plans against various external risk factors including institutions, finance, technology, human resources and natural conditions of the partner country that might adversely affect achievement of project goals.

A concrete master plan needs to be established to raise funds, train personnel and secure human resources required in conducting and operating a project in a partner country. And a project needs to be implemented based on a thorough review jointly by regional experts, financial specialists and water resources specialists to prevent delay during the project implementation stage.

C. Review on introduction of PPP method to improve project efficiency

It is necessary to improve project efficiency and effectiveness by inducing water resources experts to take part in, acquiring technology and expertise and dividing roles based on PPP method.

EDCF can share the costs and risks with a company specialized in water resources together while using expertise owned by the company. And the company can make the most of its advantages on the back of facilitated overseas projects through reduction of initial entry costs and risks. So PPP method is strongly recommended for the purpose of expansion of project volume and improvement of project effectiveness.

Close partnership needs to be formed from the project design stage so that the specialists with sufficient field experience in water supply and sewerage system can deal with ex-post management of the project.