Ex-post Evaluation Report 2011-1-2

Hospital Waste Water Treatment Plant Project

Loan Contract Number : INA-7

Loan Approval Date : December 8, 1999

Country : Indonesia

The Export-Import Bank of Korea

(Government Agency for the EDCF)

EDCF Evaluation Team

(Evaluated by Korea Institute for Development Strategy)

1. INTRODUCTION

In the late 1990s, only 7.3% of Indonesia's public hospitals were equipped with wastewater treatment facilities, and most hospitals were directly discharging wastewater into rivers without purifying it. Although some hospitals were treating wastewater using treatment facilities combined with septic tanks, many of their facilities were not functioning properly due to deterioration and lack of experts. As wastewater was being discharged from hospitals, the groundwater, which is used by residents as drinking water, had been polluted, and it had increased the risk of infectious diseases. In some areas, hospitals' wastewater flowed into the farmland through irrigation canals, and it is feared that the crops may also be polluted.

The object of this project is to improve the hygiene conditions of hospitals and their environs through preventing water pollution and the spread of diseases in the adjacent areas by building and operating wastewater treatment. The scope of this project in terms of the number of hospitals was initially defined to include 40 public hospitals in seven provinces, but was later changed to 42 public hospitals in eight provinces. Also, this project is to provide education and training regarding water quality management and facility operation. New wastewater treatment plants were constructed at 40 hospitals and the existing plants were renovated for the other 2 hospitals. Technical training for operating those plants was conducted.

Construction of hospital wastewater treatment plants, supply of equipments, education and training (training in Korea and Indonesia) and support for O&M were all completed as planned. It was found that the newly constructed hospital wastewater plants have been successfully operated.

2. EVALUATION BY CRITERIA

Overall this project is evaluated as ‘successful.

In terms of relevance, the project is ‘highly relevant’, as it is highly aligned with Indonesia’s national development plan and the EDCF’s cooperation strategy appropriately designed and participated by stakeholders. In terms of efficiency, the project is evaluated as ‘partly efficient’, because there were slight delays in the project implementation process. In terms of effectiveness, the project is evaluated to have achieved all goals set at the point of project designing and planning. In particular, the project is ‘highly effective’ in water quality improvement and environmental protection. The economic, institutional and technical impacts of the project are ‘highly influential’, and the financial and institutional sustainability of the project is evaluated as ‘highly positive’.

Result Matrix of Comprehensive Evaluation

Criteria	Weight	Score	Results
Relevance	20%	3.60	Highly Relevant
Efficiency	20%	2.40	Partly Efficient
Effectiveness	20%	4.00	Highly Effective
Impact	20%	4.00	Highly Influential
Sustainability	20%	3.65	Highly Positive
Comprehensive Evaluation Score	**3.53**		**Successful**

2.1. Relevance

According to the evaluation of alignment among the project and Indonesia’s national development plan and EDCF’s assistance strategy, the appropriateness of project plans and the participation level of stakeholders, the project is evaluated as ‘highly relevant’.

The EDCF’s policy, ‘Comprehensive Improvement Plan for EDCF Operation’, designated strategic project sectors for partner countries including Indonesia. Those sectors were communications, power, transportation, education and health. This project is one of the ‘health and social welfare’ sector projects, and is aligned to the EDCF’s policy.

When the project was prepared, the Indonesian government established Repelita VI (1994-1998), the 6th five-year national development plan, and proceeded this project as a part of the plan. At that time the government was highly interested in the protection of the environment, which was proven by its enactment of the law on hazardous waste treatment. In this regard, the relevance is high between the development needs of the Indonesian government and this project.

In addition, engineering and construction parts were separated from the beginning stage of the project. Accordingly, the skills for hospital wastewater treatment selected during the feasibility study were appropriately applied in the actual project implementation, and it made technical transfer much easier. These points were evaluated as positive for the project.

2.2. Efficiency

According to the evaluation results on the project implementation period and the project costs, this project is evaluated as 'efficient'.

In evaluating project implementation period, 'the period of civil engineering and procurement', 'the period of installation and functional test' and 'the total project period' were reviewed. For all these three, implementation schedule were a little delayed. The delays were largely attributed to the changes in the scope of the project as the target hospitals were changed. Also, in order to reflect these changes, the engineering contract and the construction contract were changed several times. This project is rated as 'inefficient' in terms of the project implementation period only.

As for evaluating the project costs, the costs were classified into specific items into 'project preparation cost, engineering and construction cost, equipment cost, educational and training cost, monitoring and quality management cost, and O&M cost', and the execution result vis-à-vis the original plan was reviewed. According to the review, 'the project preparation cost, engineering and construction cost, and equipment cost' exceeded the budgets a little, and 'education and training cost, monitoring and quality management cost, and operation O&M cost" were executed as planned. However, this project was completed within the planned budget on the whole by using contingency. Accordingly, in terms of project cost, this project is estimated to have been 'efficient'.

2.3. Effectiveness

According to the evaluation of the project in terms of ‘whether the short-term goals of this project are accomplished or not’ and ‘achievements and contributions through the project’, this project is evaluated to have been ‘highly effective’.

First, the hospitals were classified into five groups according to the number of beds, and the quality of treated water of each group was evaluated based on BOD, COD and SS content. Every group satisfied the water quality initially planned, and the results even satisfied the reinforced legal requirements for water treatment quality, making the project ‘very effective’ in terms of the achievement of the short-term project goals.

Second, the results of the project were evaluated in terms of three criteria, ‘supplied equipment’, ‘dispatch of experts and consulting’ and ‘contents of training and technology transfer’. The project received very high scores for these three criteria. In addition, this project is being recognized as a project that contributed to environmental improvement. In particular, it is estimated to have significantly contributed to the improvement of living conditions of residents, and the prevention of waterborne infections. Such high recognition of the effectiveness of this project is estimated to have significantly improved the image of Korea and expanded ties between the two countries at the end.

2.4. Impact

According to the evaluation of the project in terms of economic, institutional and technical impacts, this project is estimated to be ‘highly influential’.

In the evaluation of the direct economic impacts of the project, the project appears to have contributed to job creation. In addition, this project has indirectly contributed to the activation of the economy by expanding hygiene services for local residents based on the improved infrastructure for local hospitals’ wastewater treatment. The wastewater treatment facilities of target hospitals have reduced the occurrence of diseases contributing to the expansion of labor forces and improvements in labor productivity, and the expansion of economic growth potential and the long-term economic development through the promotion of the health of local residents.

To evaluate the institutional impacts of the project, the criteria ‘impacts on future environmental policies’ and ‘impacts on customs’ were selected. According to the evaluation, the project had a significant institutional impact.

The technical impacts of the project were also evaluated to be very significant. First, this project is estimated to technically affect the operation and management of wastewater treatment facilities. Second, the technologies for developing major equipment of wastewater treatment facility seem to have been transferred through education and training. Finally, since this project could expedite the increase of wastewater treatment facilities and the growth of the environmental industry in Indonesia, then the development of the related industry for chemicals that are used for wastewater treatment would ensue as well.

2.5. Sustainability

According to the evaluation of the project’s financial and institutional sustainability, this project is estimated to be ‘highly sustainable’.

First, to evaluate the financial sustainability, the ratio of the operating costs of wastewater treatment facilities to the total annual revenue of each hospital was analyzed. In the analysis on financial soundness based on these figures, the hospitals showed very positive results.
Second, to evaluate whether those hospitals are equipped with institutional systems for sustainable operation of wastewater treatment facilities, the management organization was reviewed. Mid-to-large-sized hospitals had institutionally defined roles and responsibilities for the management and supervision of wastewater treatment facilities, and the roles were clearly allocated. However, small hospitals somewhat lacked those systems. According to the average score of all target hospitals, the overall institutional sustainability of the project was ‘positive’.

3. LESSONS AND RECOMMENDATIONS

3.1. Lessons

1) Reinforcement of Feasibility Study and Appraisal

This project had a relatively lower score for efficiency compared to other evaluation criteria because the period of the project was partially extended.

To minimize changes in the process of project implementation, a rigorous feasibility study, appraisal and close consultation between EDCF and project executing agency should be conducted. In particular, the feasibility study and the appraisal on the project covering various regions like this project need to be supplemented with research for each region. The plans to increase the participation of technical experts and to employ local consultants should be considered.

2) Improvement of Sustainability of Projects

O&M after the completion of a project is the responsibility of the partner country, but methods of securing the project's sustainability to improve the aid effectiveness should be considered at the EDCF's side, too. As a method to improve the financial sustainability of the project, it is recommended to differentiate the channels of equipments supply according to the size of hospitals considering the relatively limited budgets of small hospitals, so that those hospitals can easily purchase spare parts from the local markets. In addition, it is also recommended to further reinforce and support post-completion management activities through grant aid or the dispatch of technical experts by EDCF.

3.2. Recommendations

1) Reinforcement of M&E Systems

It is necessary to establish specific performance indicators from the stage of appraisal to prepare methods to achieve project goals as well as to handle diverse risk factors affecting the achievement of the goals. To this end, it is required to collect related materials from the project's feasibility study and appraisal stage and to develop performance indicators for

monitoring. In addition, EDCF, project executing agency and supplier need to build a close cooperation network.

2) Expansion of Local Procurement

To minimize O&M problems and reduce the secondary factors impeding sustainability, it is recommended to actively introduce a method for procuring local equipments. Suppliers should provide project executing agency with the guidebooks specifying methods to procure spare parts and maintain the facilities.

3) Improvement of Maintenance Systems

In order to improve the sustainability of the project, the number of O&M staffs and the work scope of suppliers for maintenance should be stipulated in the contract. They need to be considered when EDCF reviews and agrees to the procurement contract.