

Ex-post Evaluation Report 2016-4
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# **Ex-Post Evaluation on the Procurement of Single Decker CNG Buses Project**

**The Export-Import Bank of Korea**

(Government Agency for EDCF)

**EDCF Evaluation Team**

(Evaluated by Global Development Cooperation Consulting)

This Evaluation was entrusted to Global Development Cooperation Consulting by EDCF for the purpose of independent evaluation research. The opinion, findings and conclusion or recommendations expressed in this report are those of the external evaluator and do not necessarily reflect the view of EDCF

# I. Project Overview

## 1. Project Details

Name of Project: Procurement of Single Decker CNG Buses for Bangladesh Road Transport Corporation (BRTC) under EDCF Loan

Name of Borrower: Ministry of Finance and Planning (MOFP)

Execution Agency: Bangladesh Road Transport Corporation (BRTC)

Amount of Loan:

- An amount in Korean Won not exceeding the equivalent of 3 million US dollars

Terms of Loan

- Interest rate : 0.5% per annum
- Repayment period : 30 years including a grace period of 10 years

## 2. Project Purpose

The purpose of the project was replacing old diesel buses to compressed natural gas (CNG) buses in order to meet public transportation needs and reduce environment pollutions of Dhaka City and suburbs.

### 3. Project Scope

Item	Details	Original Plan	Actual Outputs	Remarks
CNG Buses	City Bus, Express Bus	CNG Buses 300 (City Bus 150, Express Bus 150)	CNG Buses 255 (City Bus 125, Express Bus 130)	Modifying the project scope due to exceeding loan cost resulting from inflation
Spare parts & equipments	Spare parts & etc.	Not decided	10% Spare Part 10 Set Equipment 10 Set Special Tools	
Training	Local Training	Not decided	Engineers (or technicians) 100 persons × 2 weeks Drivers 100 persons × 1 month	-
	Invitation Training	Not decided	Technicians 20 persons × 1 month Managers 10 persons × 2 weeks	-

[Source: The Project Completion Report by EDCF (2013)]

## **II. Introduction**

- Due to the rapid population increase and heavy traffic on top of poor road infrastructure, Dhaka City, the capital of Bangladesh, had been experiencing serious social and environmental problems such as frequent car accidents and air pollution.
- To solve these problems, the Bangladesh government developed the Development Project Proposal (DPP) to purchase 300 compressed natural gas (CNG) buses and requested the Korean government in September 2006 to provide support through the Economic Development Cooperation Fund (EDCF).
- The Procurement of Single Decker CNG Buses Project was implemented in 2010 and completed in June 2012 which took 4 months less than the original schedule.
- During the implementation period, the BRTC reduced the number of buses to be purchased from 300 to 255 and added spare parts & equipment for maintenance purposes. The main factor of adjustment was the rising inflation during the implementation period. At the time of evaluation, the buses procured from the project were being effectively operated in Dhaka and the surrounding suburbs.

### **III. Summary of the Ex-post Evaluation**

#### **1. Purpose of Evaluation**

- This ex-post evaluation aims to assess the performance of the Procurement of Single Decker CNG Buses Project and to draw lessons learned and recommendations for future projects.

#### **2. Methods of Evaluation**

- The evaluation criteria incorporated the characteristics of the project based on the OECD DAC's five evaluation criteria (relevance, efficiency, effectiveness, impact, and sustainability), and cross-cutting issues<sup>1</sup>). Furthermore, the triangulation method was used to deduct highly feasible results and verify the criteria.
- To achieve the independence and integrity of the evaluation process, the evaluation team complied with the following guidelines: the Evaluation Guidelines of EDCF Ex-post Evaluation and the EDCF Evaluation Manual.

#### **3. Results of Evaluation**

- (Overall) The project is evaluated as successful according to the evaluation guidelines provided by EDCF. The overall result of the evaluation was 3.56 points out of 4.0 points as shown in the table below.

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1) Cross-cutting issues are the issues for which all EDCF projects should be evaluated. This category includes environmental issues, gender and minority, AID/HIV, relocation of population and others.

<Evaluation Result Overview>

Evaluation Criteria	Weight	Evaluation Rating	Evaluation Value
Relevance	20%	Highly Relevant	3.8
Efficiency	20%	Highly Efficient	4.0
Effectiveness	20%	Highly Effective	4.0
Impact	20%	Influential	3.5
Sustainability	20%	Less likely Sustainable	2.5
<b>Overall</b>			<b>3.56</b>

- (Relevance) This project is evaluated as highly relevant (3.8/4.0); the project was well-aligned with both Bangladesh’s transportation sector development policy and EDCF’s priority areas. In addition, the executing agency, the BRTC, actively participated in the project with strong ownership.
  - The project was aligned with the Bangladesh government’s fifth (FY1997-FY2002) and sixth (FY2011-FY2015) five year plans, which aimed to enhance the quality of public transportation more efficiently and safely.
  - Particularly, the procurement of CNG buses was relevant to the solution for Dhaka City’s serious traffic congestions and air pollution problems.
  
- (Efficiency) The project is rated as highly efficient (4.0/4.0); the project was completed within the project time frame which was 20 months, approximately four months earlier than the original plan. The actual project cost remained within the original project budget.

- The amendment took place due to the unexpected inflation during the project implementation period but it was successfully managed by the BRTC.
- (Effectiveness) The project is deemed to have been highly effective (4.0/4.0) based on its achievement of intended output, which is the purchase of 255 CNG buses and spare parts and provision of training programs.
- Compared with diesel buses, the CNG bus emits 1/30 of air pollutants and helps to reduce air pollution. The cost of CNG is less expensive than diesel gas. As a result, it reduces fuel costs.
- (Impact) The project is deemed to have positive impact (3.5/4.0); the procured CNG buses, which were operated and maintained by the Motijheel, Joarsharara, and Narayangonji Depots, have created positive impacts.
- Total CNG bus passengers have increased to 6,843,040 in 2015 from 4,195,482 in 2012, which increased approximately by 63% resulting from establishing six new bus routes and providing better equipped buses.
  - However, it was found that there had been difficulties in measuring and evaluating the accurate impact of CNG buses on mitigating air-pollution and traffic congestion around Dhaka City due to insufficient data.

- (Sustainability) The project is evaluated to be partially sustainable (2.5/4.0).
  - Since the CNG bus was just introduced, the BRTC had difficulty in operating and maintaining the buses because of the lack of professional technicians. Moreover, the BRTC faced difficulty in purchasing spare parts because of limited budget. These could have negative impact on the sustainability of the project as well.

## IV. Lessons and Recommendations

### 1. Lessons

#### Success Factors

- The project is well aligned with the Bangladesh development strategy and transportation development policy, which aim to address traffic congestion and air pollution problems of Dhaka City.
- When the evaluation was conducted, Bangladesh, a natural gas producer, had already been implementing a tax reduction policy to expand the use of CNG vehicles with the aim to achieve fuel cost savings and environmental improvement. Thanks to this, the impact of the project could be enhanced.
- The BRTC, the project executing agency, responded efficiently by adjusting the number of CNG buses to be purchased when risks of inflation occurred during the project implementation period. Moreover, the BRTC proactively carried out business activities such as increasing maintenance parts and training budget in order to enhance the effectiveness and sustainability of the project.

#### Limitations

- The project objective was to replace old diesel buses through the introduction of the CNG bus, thereby alleviating air pollution and eliminating traffic accidents. However, there were difficulties in measuring performance because no detailed measurement indicators had

been designed, which made it unable to measure the broader outcomes of the project.

- The technicians had limited experiences and skills in CNG bus maintenance because the CNG bus was new to them. Since the CNG engines differ from standard diesel engines, it was found that fostering the CNG engine specialists were in need.
- Since the maintenance parts of the CNG bus were being supplied only through a single company, Khaja AS Engineering Co., the parts were relatively expensive and difficult to purchase. This could be a key factor that hinders the sustainability of the project by causing supply problems and price increases.

## **2. Recommendations**

### Enhancing Project Sustainability.

- Despite the fact that the technical training program was offered, the project was evaluated as less likely sustainable because the acquired skills and knowledge were not being adequately shared with other technicians in the executing agency.
- To ensure that the technical training is sustainable and practical, we recommend that the bidding companies provide technical training manual and video that are translated into the local language when they develop the procurement proposal.

### Improving Ex-post Project Management

- The operation and maintenance of equipment including supply parts and components is crucial for the success of the equipment loan projects. Therefore, we highly recommend that a realistic, specific, and detailed ex-post project management plan be developed from the initial project design stage to enable the executing agency to conduct operation and management for itself after the project is completed.

Raising awareness of the safety management

- Safety management on equipment and materials is usually inadequately conducted in developing countries. In supporting equipment loan projects that may have safety issues, safety training programs need to be included as part of the project to increase the awareness of safety management.
- Therefore, we highly recommend that a safety manual written in the recipient country's native language be offered. In addition, taking into account the partner country's environmental factors as well as social infrastructure status, safety training programs should be developed and provided to prevent safety accidents.