Ex-Ante Evaluation

1. Name of the Project

Country: Democratic Socialist Republic of Sri Lanka (Sri Lanka)
Name of the Project: Project for Establishment of Light Rail Transit System in Colombo (I)
L/A Signing Date: March 11, 2019

2. Background and Necessity of the Project

(1) Current State and Issues of the Urban Transportation Sector in Sri Lanka and the Priority of the Project

In the Democratic Socialist Republic of Sri Lanka, more than 90% of human and freight transport depends on the road network (Ministry of National Policies and Economic Affairs, 2016). Particularly in the Western Province, which includes Colombo District, where around 40% of GDP and around 28% of the population is concentrated (Central Bank of Sri Lanka, 2017). Steady economic growth after the end of the Civil War has dramatically boosted the use of various modes of transport such as vehicles, buses and motorcycles, which use the road networks (the total number of vehicles increased by approx. 1.7 times, motorcycles 1.9 times, and buses 1.2 times from 2008 to 2015 (Central Bank of Sri Lanka, 2017)). Approximately 1 million people flow into Colombo Metropolitan Area each day, causing severe traffic congestion during peak times for school and business commuting hours. Especially in the morning and evening hours, vehicles travel no faster than 20 km/h on most sections of the road networks in Colombo Metropolitan Area and its surrounding areas, and no faster than 10 km/h on some sections of the network. The urban traffic network which relies heavily on automobile traffic has already reached its limit. Such a decrease in traffic fluidity negatively affects economic activity in urban areas including Colombo Metropolitan Area and there are also concerns about the negative economic impact on the whole country.

In addition, the proportion of private car owners is expected to increase further along with the recent population growth and economic growth of Colombo Metropolitan Area and its suburbs. Once the share of private modes of transport increases, it will be difficult to encourage conversion back to public transport.

Thus, in view of the fact that the existing main road networks in Colombo Metropolitan Area and its suburbs are saturated, and of the need to introduce transportation alternatives to private modes of transport, with consideration of the future population forecasts and traffic demand forecasts, it is necessary to introduce a public transport system. The system needs to have a transport capacity and a transport speed that are equal to or higher than those of a medium-volume, high-speed transport system with dedicated tracks.

The current government of Sri Lanka (hereinafter referred to as “GOSL”), which was established in January 2015 newly launched the Ministry of Megapolis and Western Development, which will oversee the urban development/ infrastructure development

policy for the Western Province, in response to the above problems. In January 2016, GOSL announced the "Western Region Megapolis Master Plan" which defined the urban development plan for the Western Province including Colombo Metropolitan Area. The master plan states the need to introduce a medium-volume LRT (Light Rail Transit) type urban transportation system as a means to solve congestion in Colombo Metropolitan Area and its suburbs.

The “Project for Establishment of Light Rail Transit System in Colombo” (hereinafter referred to as “the Project”) aims to mitigate traffic congestion and air pollution by introducing the LRT system in sections across the four divisions of Colombo District, including Colombo Metropolitan Area, based on the master plan. Therefore, the Project is positioned as a key project for the urban transport sector in the country.

(2) Japan and JICA’s Policy and Operations in the Urban Transport Sector

Japan’s “Country Assistance Policy for the Democratic Socialist Republic of Sri Lanka (June 2012)” highlights the “promotion of economic growth” as one of its priority areas. It states that “Japan actively supports the development of infrastructure including transport and power, which will promote the economic development of Sri Lanka, and will also contribute to the development and improvement of the business environment for Japanese companies expanding their operations in Sri Lanka, with a view to transferring Japanese technologies.” Meanwhile, the “JICA Country Analysis Paper for the Democratic Socialist Republic of Sri Lanka (December 2014)” analyzed that it is necessary to formulate a mid- and long-term urban transport plan and implement it in accordance with an urban development plan prepared in response to the expansion of urban areas. The Project is consistent with these policies and this analysis. JICA has already provided support in this field including the creation of a comprehensive urban transport master plan for the Colombo metropolitan region, which proposed optimal modes of urban transport in the region. The plan was created as part of Technical Cooperation for Development Planning known as the “Urban Transport System Development Project for Colombo Metropolitan Region and suburbs (2012-2014)”. GOSL, which was established in 2016, formulated the “Western Region Megapolis Master Plan” in line with the basic purpose of the comprehensive urban transport master plan, and eventually indicated that the urban transport mode to be introduced will be LRT. In addition, JICA dispatched an individual technical cooperation expert known as a “Colombo Urban Transport Improvement Adviser (2013-2015)” to advise the government of Sri Lanka in charge of transport policy.

The Project contributes to sustainable urban development and further socio-economic activation in Colombo Metropolitan Area and its suburbs through the introduction of the LRT system. The Project will also contribute to Sustainable Development Goal 11 “Make cities and human settlements inclusive, safe, resilient and sustainable.” Therefore, it is highly necessary for JICA to support the implementation of the Project.

(3) Other Donors’ Activity

The Asian Development Bank plans to carry out the “Colombo Suburban Railway Project,” a modernization project involving the electrification of rail routes in existing

intercity railways including those in Colombo. Fort Station, the starting station of the Project, will be a transfer station for the existing Sri Lanka National Railways supported by the Project.

French Agency for Development is conducting a feasibility study on a Multi-Modal Transport Hub construction project. The hub will be the starting point for changing modes of transport including buses, railways and the LRT around Fort Station, which is the central station in the Colombo metropolitan region.

The Millennium Challenge Corporation of the United States is providing support for the introduction of a traffic management system, the modernization of buses, and improvement of the central ring road in order to alleviate traffic congestion in major cities centered on Colombo City.

3. Project Description

(1) Project Objectives

The Project aims to increase transportation capacity and improve the safety and comfort of public transport services by introducing an LRT system in Colombo Metropolitan Area and its suburbs, thereby contributing to improvement of the urban environment through reducing traffic pollution such as air pollution, and revitalization of socio-economic activities in the region.

(2) Project Site/Target Area

Four Divisions in Colombo District in Western Province (Colombo, Thimbirigasyaya, Sri Jayawardenepura Kotte, Kaduwela)

(3) Project Components

Of the LRT introduction plan (total extension approx. 75.1 km of Lines 1 to 7) in Colombo Metropolitan Area and its suburbs, the Project includes the laying of elevated tracks for a total extension of approx. 15.7 km of the northern section of Line 1 and Line 4, the construction of stations (16 stations) and a depot, rolling stock procurement, and the introduction of a railway system including electricity, communications and signals.

1) Civil and construction work (elevated tracks of approx. 15.7 km of the northern section of Line 1 and Line 4, stations and a depot)
2) Rolling stock
3) Construction work related to electricity, communications, signals, etc.
4) Consulting services (detailed designs, tender assistance, construction supervision, support for operation and maintenance, etc.) (short-list method)

(4) Estimated Project Cost

246,641 million yen (Loan Amount of this period: 30,040 million yen)

(5) Schedule

March 2019 – April 2027 (98 months in total). The commencement date of service (April 2026) shall be the time of the Project's completion.

(6) Project Implementation Structure

1) Borrower: The Government of the Democratic Socialist Republic of Sri Lanka
2) Executing Agency: Ministry of Megapolis and Western Development
3) Operation and Maintenance Agency: Ministry of Megapolis and Western Development

(7) Collaboration and Division of Roles with Other Projects and Donors

1) Japan's assistance activities

None

2) Other development partners' assistance activities

The Project will examine the possibility of partnerships with the other donors who are implementing aid activities as described in 2 (3) for various types of cooperation including mutual transfers between LRT and other modes of transport.

(8) Environmental and Social Consideration/Poverty Reduction/Social Development

1) Environmental and Social Consideration

(i) Category: A

(ii) Reason for Categorization: The Project falls into the railway sector under the JICA Guidelines for Environmental and Social Considerations (proclaimed in April 2010).

(iii) Environmental Permit: The Environmental Impact Assessment (EIA) report for the Project was approved by the Central Environmental Authority in July 2018.

(iv) Countermeasures against pollution: During construction, air pollution and water pollution caused by operating construction machinery will be minimized by water sprinkling and leachate treatment in order to meet Sri Lanka's domestic emission standards and environmental standards. Noise from pilings and vibration from construction equipment are expected to be controlled to a level below Sri Lanka's domestic regulatory standards through measures such as installing sound barriers and thorough maintenance of construction vehicles.

(v) Natural environment: A part of the project site is adjacent to the Sri Jayawardenepura Bird Sanctuary and the Thalangama Environmental Protection Area designated by Sri Lanka ordinance, but the EIA was implemented in accordance with the environmental protection law in the country, and clearance from the Department of Wildlife Conservation has been obtained. Although no particular impact on flora, fauna and the ecosystem is expected due to the implementation of the Project, ecosystem monitoring will be carried out to watch for secondary impacts at the boundaries with those areas during construction and after starting operations.

(vi) Social Environment: The Project requires the acquisition of land of 21.9 ha and relocation of 1 household (3 residents). The land acquisition and relocation will be proceeded based on the domestic procedures of the country and the Resettlement Action Plan formulated according to JICA guidelines. In

discussions with the affected local residents, no particular opposition to the Project was presented.

(vii) Other/Monitoring: During construction, the contractors will monitor the air quality, water pollution, ecosystems, etc. under the supervision of the Ministry of Megapolis and Western Development. The Ministry of Megapolis and Western Development will monitor the land acquisition and resettlement during construction, and the operating company will do so after starting operations.

2) Cross-Cutting Issues: Barrier-free facilities (installation of elevators, etc.)

3) Gender Category: Gender activity integration project (Gender Informed (Significant))

<Description of activities and reason for classification>

In order to ensure that women are able to use the LRT safely and comfortably, several measures are planned for the Project, including the allocating of priority seats for passengers who need assistance such as pregnant women, the installation of security cameras in station buildings and trains, and the introduction of low hand straps, etc. In addition, the introduction of a program to raise awareness of gender issues is under consideration as part of the staff training at the operation and maintenance company which will be established.

(9) Other Important Issues

Technologies of Japanese companies are expected to be introduced for the rolling stock, electrical/mechanical systems, etc. in the Project.

4. Targeted Outcomes

(1) Quantitative Effects

1) Performance Indicators (Operation and Effect Indicator)

Indicator	Baseline (Actual Value in 2018)	Target (2028) [Expected value 2 years after project completion]
Passenger transport volume (1,000 persons/year)	-	132,495
Passengers per kilometer (million passengers per kilometer/year)	-	660
Number of train services (No. of trains/day (one-way))	-	222
Operating rate (%)	-	91.0
Running distance (km)	-	6,245.4
Running hours for a specific section (Fort-IT Park) (minutes)	68.2	32.8

2) Impacts

(2) Internal Rate of Return

Alleviation of noise levels and reduction of air pollution in the project area, improvement in safe and comfortable public transport services through the establishment of reliable travel times, and economic revitalization in Colombo District.

(3) Internal Rate of Return

Based on the conditions indicated below, the economic internal rate of return (EIRR) of the Project is 20.18% and the financial internal rate of return (FIRR) is -5.17%.

[EIRR]

Cost: Project cost, operation and maintenance expenses (taxes excluded for both)

Benefits: Reduction of vehicle running costs, shortening of travel times, reduction of traffic accidents, reduction of CO_2 emissions

Project Life: 35 years

[FIRR]

Cost: Project cost, operation and maintenance expenses

Benefits: Fare income and advertisement revenue

Project Life: 35 years

5. Preconditions/ External Factors

(1) Prerequisites: None in particular

(2) External Factors: None in particular

6. Lessons Learned from Past Projects and Application to the Project

Lessons have been learned from ex-post evaluation results of the “Delhi Mass Rapid Transport System Project (I)-(VI)” in India and other findings; it is important to secure superior human resources and to establish a system for to develop human resources such as implementing effective and efficient training including on-the-job training, reassignments, etc., based on the idea that human resources represent a very important factor which affects organizational management. In terms of the operation/maintenance of the LRT system introduced through the Project, GOSL plans to establish a new operating company, hire staff including drivers and develop their own human resources. However, based on the lessons above, support will be provided, through the consulting services of the Project, for the preparation of training plans targeting employees of the operating company, and for on-the-job training for business operations such as train vehicle operation/inspection work, station building management, track inspections, etc.

In addition, from the ex-post evaluation of the Philippines' “Metro Manila Strategic Mass Rail Transit Development Project,” it has been pointed out that the railway business requires a large initial investment, and it is difficult to maintain the business using fare revenues alone, which is why capital investments and government subsidies are essential. Therefore, it is necessary to formulate a government-supported action plan after conducting detailed financial analysis and financial planning (including methods for systematic repayment of debts, strengthening the management base, etc.), and ensure its implementation in the management

of the Project. Although the financial rate of return of the Project is negative, support will be provided, based on the lessons above, for formulating financial plans as one of the areas of technical support for the operating company through consulting services, etc. of the Project. Furthermore, if a deficit occurs in the business operations, GOSL will compensate for the deficit to secure financial sustainability.

7. Evaluation Results

The Project is consistent with the development issues and policies of Sri Lanka as well as those of Japan, and also JICA's assistance policy and analysis. It contributes to sustainable urban development and socio-economic activation in Colombo Metropolitan Area and its suburbs through the introduction of the LRT system. The Project will also contribute to Sustainable Development Goal 11 "Make cities and human settlements inclusive, safe, resilient and sustainable." Therefore, it is highly necessary for JICA to support the implementation of the Project.

8. Plan for Future Evaluation

(1) Indicators to be Used
Same as 4. (1) - (3)

(2) Timing
Ex-post evaluation (Two years after the project completion)

END