

## Ex-Ante Evaluation (for Japanese ODA Loan)

### 1. Name of the Project

Name of the country: Kingdom of Cambodia

Name of the Project: National Road No. 5 Improvement Project (Battambang-Sri Sophorn Section) (II)

Loan Agreement: March 30, 2017

Loan amount: 11,136 million yen

Borrower: The Royal Government of Cambodia

### 2. Background and Necessity of the Project

#### (1) Present State of Development and Problems of the Road Sector in Cambodia

Cambodia is located between Thailand and Vietnam. The territory is also located in the heart of the Southern Economic Corridor, where initiatives to strengthen connectivity are being promoted under the Master Plan on ASEAN Connectivity approved at the 2010 ASEAN top-level meeting. Because of its location, Cambodia is expected to become a regional distribution hub. The Kingdom is making a progress in rehabilitating its transportation infrastructure since the civil wars ended in 1991 with help of the international community, including the World Bank and the Asian Development Bank. Rehabilitation and construction on the core part of its road and bridge infrastructure has almost been completed for the first time during the post-war period. However, some further rehabilitation is still needed due to aged parts and makeshift repairs after the civil war and the narrowness of the roads in order to cope with the increase in domestic and international logistics in line with expected future economic growth in the country.

In particular, Cambodia's arterial national road No. 5 is a part of Asian Highway Route No. 1 and the Southern Economic Corridor, so it is expected to function as a main industrial artery of the Mekong region. The section subject to the National Road No. 5 Improvement Project (Battambang-Sri Sophorn Section) ("This Project") was temporarily rehabilitated. However, the road quality remained poor with deteriorated pavements and insufficient road width. Even worse, traffic volume is continuously increasing. To keep pace with ever-increasing domestic and international cargo volume as a result of economic development in the Kingdom and the ASEAN Economic Community, improving transportation capacity and efficiency of the national road No. 5 – one of the main roads in Cambodia, which is part of the Southern Economic Corridor — has become a pressing issue.

#### (2) Development Policies for the Road Sector in Cambodia and the Priority of the Project

The government of Cambodia has defined rehabilitation and construction of

infrastructure as one of the four pillars of its 2014-2018 National Strategic Development Plan (NSDP). In this context, the Cambodian government defined improvement of traffic networks and the building of intermodal freight transport networks as priority areas. The improvement of national road No. 5 is defined as the most important part under the National Road Network Master Plan (M/P) formulated in 2006 with the help of JICA. Since the project is considered contributory to national and regional integration as part of the Southern Economic Corridor, this Project aims to improve a part of it.

(3) Japan and JICA's Aid Policy/Actual Performance for Road Sector

Japan has defined economic infrastructure development as one of its priority areas under the Country Assistance Policy for the Kingdom of Cambodia. Japan also announced their prioritized projects, such as road network development in the Southern Economic Corridor. Also, an analysis under Country Analytical Work for the Kingdom of Cambodia revealed that infrastructure development to enhance transportation capacity in Thailand and Vietnam was the priority issue. The Project is in line with these analyses and policies. As a grant aid program, JICA implemented a development study titled the Cambodia Nationwide Road Network Investigation (2006) to formulate the M/P as stated above. Also, JICA implemented the following projects to strengthen maintenance capacity and infrastructure development: the National Road No.1 (I) to (IV and urban area) (2005-2017); the Project for Construction of Neak Loeung Bridge (2010-2015); the Strengthening of Construction Quality Control (2009-2012); Project on Capacity Enhancement of Environmental and Social Considerations for Resettlement (2010-2012); and the Project for Strengthening Capacity for Maintenance of Roads and Bridges (2015-2018). Based on the M/P described above, JICA is currently supporting Cambodia to rehabilitate National Road No. 5 by establishing a yen loan agreement to implement the following: May 2013: National Road No. 5 Improvement Project (Battambang-Sri Sophorn Section); July 2014: National Road No.5 Improvement Project (Prek Kdam-Thlea Ma'am Section) (I), March 2015: National Road No.5 Improvement Project (Thlea Ma'am-Battambang, and Sri Sophorn-Poipoet Sections) (I), and March 2016: National Road No. 5 Improvement Project (Prek Kdam-Thlea Ma'am Section) (II).

(4) Other Donor Activities

So far, the Asian Development Bank and World Bank have implemented many aid programs. Recently, more and more aid programs targeting the road sector are being offered from China. Major assistances provided to Cambodia are listed below:

- ADB: "Road Asset Management Project" (2008-2013), "Northwestern Rural Development Project" (2011-2013)
- WB: "Provincial and Rural Infrastructure Project" (2004-2010), "Road Asset

Management Project” (2008-2013)

- China: “Prek Kdam Bridge Construction Project” (2007-2010), “National Road No. 8 Construction Project” (2007-2012), “Project for Rehabilitation of the Second Chroy Changwar Bridge” (2011-2014), “National Road No. 5 Improvement Project” (2013-2017)

#### (5) Necessity of the Project

The aims of the project satisfy the development themes and development policies of the Cambodian government. The M/P defines roads targeted by this project as the most critical section for making a contribution to the country’s economic growth. This project is also in line with Japan’s assistance programs, while making contributions to strengthening connectivity in the Mekong region through infrastructure development addressed by Japan, and benefits SDGs Goal 9. Consequently, providing supports for implementing this project is highly necessary.

### **3. Project Description**

#### (1) Project Objectives

This project rehabilitates and expands width of the existing National Road No. 5 (Battambang-Sri Sophorn Section) and constructs a bypass to reroute the road around the Battambang and Sri Sophorn city areas. National Road No. 5 connects the state capital Phnom Penh and the border with Thailand, while it is a part of the Southern Economic Corridor. The project aims to enhance transportation capacity and improve traffic efficiency in the target area, and thereby contributes to facilitating economic growth in Cambodia.

#### (2) Project Site/Target Area

Battambang and Banteay Meanchey Provinces

#### (3) Project Components

- 1) Rehabilitation of the existing main roads (about 51.48km in total): Double bituminous surface treatment or asphalt concrete (AC). Rehabilitation on pavement Widening traffic lanes (two lanes to four lanes)
- 2) Bypass construction (about 33.2km long in total, Battambang bypass (about 23.9km) and Sri Sophorn bypass (about 9.3 km), and AC pavement (four lanes)
- 3) Construction of a new bridge, replacing and expanding the width of the bridge (12 locations total)
- 4) Construction of dividers (3 m wide)
- 5) Consultation services (e.g. detailed designs (D/D), bidding assistance, and supervision of construction)

#### (4) Estimated Project Cost

Estimated Project Cost (Loan Amount): 25.323 billion yen (Loan Amount: 19.988 billion yen)

(5) Schedule

Planned between May 2013 and May 2021 (total of 97 months) Project completion is defined as the commencement of the service of the facilities (May 2020).

(6) Project Implementation Structure

- 1) Borrower: The Royal Government of Cambodia
- 2) Guarantor: N/A
- 3) Executing Agency: Ministry of Public Works and Transport (MPWT)
- 4) Operation/maintenance/management system: MPWT

(7) Environmental/Social Consideration/Poverty Reduction/Social Development

1) Environmental and Social Consideration

- i) Category: A
- ii) Reason for categorization: This project targeted the road sector and areas vulnerable to the features and impacts defined in the JICA Guidelines for Environmental and Social Considerations (Promulgated in April 2010).
- iii) Environmental permission and authorization: Preparation of an Environmental Impact Assessment (EIA) report for this project is not required under domestic law. However, since the project is categorized as "A", the report was completed on July, 2012. Meanwhile, JICA carried out an Initial Environmental Impact Assessment (IEIA), that is simpler than the EIA (preparation is required by Cambodian law). The EIA was approved by the Ministry of Environment, Cambodia in October 2015. The Ministry of Environment, Cambodia does not require re-approval of the IEIA due to changes in design through the detailed design process.
- iv) Anti-Pollution measures: During construction, measures will be taken to address air quality, noise, vibration, and similar factors. Measures will include setting a limit on work hours and periodic maintenance on construction machines. Once the facilities are in use, impact will be minimized by limiting driving speed as a way to mitigate noise and vibration. During construction, measures will be taken to prevent oil leakage and ensure water quality by installing cofferdams.
- v) Natural environment: The project site is not located in sensitive areas such as national parks. However, the project site has wild animals including the Southeast Asian Softshell Turtle (*Amyda cartilaginea*), which is listed on the International Union for Conservation of Nature and Natural Resources (IUCN) Red List of Threatened Species as Category II "Vulnerable". Adequate measures and monitoring will therefore be carried out.
- vi) Social environment: The project will involve 4,170 households in total, including 901 involuntary resettlements (including setback. 57 households out of the 901 need to be relocated to replacement land, etc.), which will be carried out in

accordance with the nation's domestic procedures and the resettlement action program. Around 177 hectares of land will be acquired for the project. The resettlement plan based on the detailed design results has been revised. The government of Cambodia has stipulated that compensation for the loss of property should be carried out in the form of reacquisition costs, while loss of income should be counteracted by recovery assistance. At this time, the Cambodian government has prioritized major construction sections for land acquisition and resettlement to ensure the smooth progress of the project.

- vii) Other / Monitoring: During the construction period, the MPWT will monitor land acquisition, involuntary resettlement, air quality, waste emission, and the ecosystem. After the handover, the MPWT will continue monitoring air quality, noise, vibration, waste emission, ecosystems, and the like. A third-party consultant hired by MPWT will also monitor compensation payment status and resident living conditions after resettlement. (JICA will receive a quarterly report during construction and a yearly report for two years after handover).

#### 2) Promotion of Poverty Reduction:

The poverty rate in Banteay Meanchey Province, one of the project sites, is higher than the national average. We can expect that implementing this project will contribute to the creation of new jobs for local residents, economic development, and poverty reduction in the project areas.

#### 3) Promotion of Social Development:

- i) Gender Perspective

The MPWT defined a gender mainstreaming strategy to create employment opportunities and make efforts to carry out capacity building for women. The MPWT is expected to implement this project under a gender mainstreaming framework. Additional compensation will be offered to vulnerable households such as those led by widows under the resettlement action plan.

- ii) Measures to Prevent Infectious Diseases Including HIV/AIDS

For construction work, a large external labor force other than local residents is likely to gather in certain places over a long period of time. To mitigate the risk of HIV/AIDS, the MPWT will provide educational activities as a part of health management for the laborers.

#### (8) Collaboration with Other Donors: N/A

#### 4. Targeted Outcomes

##### (1) Quantitative Effects

###### 1) Outcomes (Indicators of operation/effect)

Performance Indicators	Target roads	Reference value (value in 2011)	Target value (2022) [2 years after completion of the project]
Passenger car unit per day (PCU/day)	Main road No. 5	8,491	22,500
	Battambang bypass	-	16,700
	Sri Sophorn bypass	-	7,600
Time required (minutes) (Battambang-Sri Sophorn)		103 (Existing national road No. 5)	86 (Bypass and national road No. 5 after rehabilitation)

(2) Qualitative Effects: Facilitating improvement in the investment climate by improving physical distribution between Thailand and Cambodia, and bringing benefits to Japan-owned corporations in Cambodia. Strengthening connectivity and facilitating regional integration. Enhancing transportation capacity and improving transportation efficiency by rehabilitating existing national roads. Promoting traffic safety by constructing dividers.

##### (3) Internal Rate of Return (IRR)

Based on the conditions below, the Economic Internal Rate of Return (EIRR) of this project was calculated as 17.4%. Since this project constructs roads that will collect no fees, the Financial Internal Rate of Return (FIRR) will not be calculated.

Cost: Project cost (excluding tax), operation and maintenance expenses

Benefits: Shortening time required and cost savings for vehicle traffic

Project Life: 30 years

#### 5. External Risk Factors and Risk Control

N/A

#### 6. Evaluation of Similar Projects and Lessons Learned from Past Projects

##### (1) Lessons learned from similar projects

Ex-post evaluations of the Project for Improvement of the National Highway Route 6 (Siem Reap section) for Cambodia and the Indus Highway Project for Pakistan demonstrated that the traffic accidents caused by reckless driving and overloading increased. Therefore, construction of ancillary roads facilities to ensure traffic safety and measures to eliminate overloading to ensure safety are necessary for the project to ensure safety.

##### (2) Lessons for the Project

Based on the above, the project will construct 3-meter wide dividers as a safety measure in the hopes of reducing traffic accidents. To combat overloaded vehicles, the scope of the National Road No. 5 Improvement Project (Thlea Ma'am-Battambang and Sri Sophorn-Poipoet sections) includes the construction

of facilities to weigh vehicles throughout the length of National Road No. 5. Therefore, specific measures for eliminating overloaded vehicles are expected to be taken for the sections targeted by this project.

## **7. Plan for Future Evaluation**

(1) Indicators to be Used:

- 1) Passenger Car Unit (PCU/day)
- 2) Time required (min.)
- 3) Economic Internal Rate of Return (EIRR) (%)

(2) Timing of Next Evaluation:

Two years after completion of the project