

Ex-ante Evaluation (for Japanese ODA Loan)

South Asia Division 2, South Asia Department

Japan International Cooperation Agency

1. Basic Information

- (1) Country: Nepal
- (2) Project Site/Target Area: Kathmandu Metropolitan Area (population approx. 3 million)
- (3) Project Name: Koteswor Intersection Improvement Project
- (4) Loan Agreement: December 3, 2025

2. Background and Necessity of the Project

- (1) Current State and Issues of the Transportation Sector/Area and the Priority of the Project in Nepal

Nepal (hereinafter referred to as “the Country”) has maintained relatively steady economic growth in recent years, achieving an average real GDP growth rate of approximately 6% or higher since FY2017/18, following recovery from the temporary downturn caused by the 2015 earthquake (IMF, 2020). Although the real GDP growth rate for FY2019/20 fell to -2.4% due to the impact of the global COVID-19 pandemic, it recovered to 4.8% in FY2020/21 and is projected to return to a growth trajectory of 4–6% through FY2024/25 (IMF, 2023).

Against this backdrop of robust economic growth, socio-economic activities are thriving in the Kathmandu Metropolitan Area, which comprises Kathmandu, Bhaktapur, and Lalitpur Districts. Furthermore, the population of the Kathmandu Metropolitan Area, which was approximately 2.52 million in 2011 (Nepal Central Bureau of Statistics, 2011), increased to approximately 3 million in 2021 (Nepal Central Bureau of Statistics, 2021), resulting in a significant increase in traffic volume in the area. However, the Kathmandu Metropolitan Area includes an ancient capital since the 5th century, and due to its historical development, its roads are narrow, with the city center already experiencing significant population density (approximately 27,000 people/km²) (JICA, 2022) renders expansion of the road network challenging. Public transportation is limited to bus services operated mainly by private companies, and issues such as overlapping routes hinder the system’s ability to adequately absorb traffic demand. Consequently, traffic congestion in Kathmandu continues to worsen, resulting in economic losses due to increased travel times and air pollution from vehicle emissions. Particularly in Bhaktapur City, located in the eastern part of the Kathmandu Metropolitan Area, new residential developments are advancing, resulting in significant population growth. Traffic volume between central Kathmandu and Bhaktapur City in the east is expected to continue increasing. The road network in the Kathmandu Metropolitan Area consists primarily of a single ring road and main arterial roads spreading out radially from the city center. Intersections where the ring road meets these radial arterial roads experience

traffic congestion, particularly during morning and evening peak hours. Among these, the Koteshwor intersection—where the Arniko Highway, the only arterial road connecting central Kathmandu and Bhaktapur in the east, intersects with the ring road—experiences the highest traffic volume and suffers from severe congestion. In fact, during peak hours, it currently takes approximately 50 minutes to pass through Koteshwor and adjacent intersections. In the current context, due to population growth in the eastern area, traffic volume at Koteshwor is projected to increase by approximately 1.64 times between 2020 and 2030 (JICA, 2022). Alleviating congestion and improving traffic flow at this intersection is therefore an urgent priority. Furthermore, adjacent intersections at Tinkune and Jadibuti also experience congestion, and because the section between Koteshwor and Jadibuti lies along the extended runway alignment of Tribhuvan International Airport, structural height restrictions apply to any grade-separated structures. For these reasons, it is necessary to construct grade-separated intersections at Koteshwor, Tinkune, and Jadibuti.

Under these circumstances, the Koteshwor Intersection Improvement Project (hereinafter referred to as “the Project”) aims to ease congestion and improve traffic flow in the Kathmandu Metropolitan Area by grade-separating three intersections—Tinkune, Koteshwor, and Jadibuti—along the main arterial road connecting central Kathmandu and Bhaktapur. In doing so, the Project will contribute to economic growth and urban environmental improvement in the Kathmandu Metropolitan Area. The Project aligns with the policy set forth in the 15th National Development Plan (FY2019/20–2023/24), which is the Country’s highest-level development plan, emphasizing “realization of economic prosperity through the reduction of travel time by developing modern road infrastructure, including grade-separated structures in urban areas.” It is also positioned as a high-priority project in the Comprehensive Urban Transport Master Plan (2017), formulated under the Kathmandu Valley Urban Transport Improvement Project (Technical Cooperation).

(2) Japan’s and JICA’s Cooperation Policy and Operations in the Transportation Sector

Japan’s Country Development Cooperation Policy for Nepal (September 2021) identifies the transportation sector as a priority area within the focus field of “Economic Growth and Poverty Reduction.” Furthermore, the JICA Country Analytical Work for Nepal (August 2020) states that, given Nepal’s continued economic growth and its expected graduation from Least Developed Country (LDC) status in 2026, promoting the development of economic infrastructure is essential for accelerating quality growth. As mentioned above, JICA supported the formulation of the Comprehensive Urban Transport Master Plan for the Kathmandu Metropolitan Area through the “Kathmandu Valley Urban Transport Improvement Project” (Technical Cooperation, 2014–2017). In addition, under JICA’s Global Agenda for the Transportation Sector, assistance for developing transport infrastructure is emphasized. The Project is fully aligned with these policies and analytical frameworks.

(3) Other Donor's Activities

In Nepal, the World Bank and the Asian Development Bank (ADB) provide support in the transportation sector. The World Bank approved the “Accelerating Transport and Trade Connectivity in Eastern South Asia – Nepal Phase 1 Project” (commitment amount: USD 275 million) in 2022, supporting the digitization of trade systems, the development of key logistics roads, and the strengthening of institutions and policies related to transport and trade. The ADB, through the “Kathmandu Sustainable Urban Transport Project” (loan: USD 10 million and grant: USD 10 million), approved in 2010, has supported improvements in public transportation and related capacity building, enhanced traffic management, improved walkability in the city center, and strengthened air pollution monitoring. Under this project, studies have been conducted on introducing mass transit systems in the Kathmandu Metropolitan Area, including conventional buses, Bus Rapid Transit (BRT), Light Rail Transit (LRT), and metro systems.

3. Project Overview

(1) Project Overview

- ① Project Objective: The Project aims to ease traffic congestion and improve traffic flow in Kathmandu by grade-separating three intersections—Tinkune, Koteswor, and Jadibuti—thereby contributing to economic growth and urban environmental improvement in the Kathmandu Metropolitan Area.
- ② Project Components
 - a) Grade separation of Koteswor, Tinkune, and Jadibuti intersections (construction of flyovers and underpasses; total length approx. 1.9 km) and widening of existing roads (International Competitive Bidding).
 - b) Consulting services (detailed design, bidding assistance, construction supervision, etc.) (shortlisting method).
- ③ Project Beneficiaries (Target Group)
 - Direct beneficiaries (users of the Project): approx. 770,000 people
 - Ultimate beneficiaries (population of Kathmandu Metropolitan Area): approx. 3 million people

(2) Estimated Project Cost

40,221 million Yen (Japanese ODA loan for this tranche: 34,490 million Yen)

(3) Project Implementation Schedule (Cooperation Period)

December 2025 - August 2035 (117 months). The Project will be considered complete upon the commencement of operations in February 2034.

(4) Project Implementation Structure

- 1) Borrower: The Government of Nepal

2) Guarantor: N/A

3) Executing Agency: Department of Roads, Ministry of Physical Infrastructure and Transport (DOR)

(5) Collaboration and Sharing of Roles with Other Donors

1) Japan's Activity

The Arniko Highway, which includes the intersections targeted by the Project, connects to the road improved under Japan's Grant Aid project, "Road Improvement Project between Kathmandu and Bhaktapur" (Grant Agreement signed in FY2008; grant amount: JPY 2.689 billion). Therefore, the Project is expected to enhance the convenience of the Kathmandu–Bhaktapur road, creating synergistic effects between the two projects.

2) Other Donors' Activity: N/A

(6) Environmental and Social Consideration

① Category: B

② Reason for Categorization: The Project does not fall under the large-scale road sector projects listed in the "JICA Guidelines for Environmental and Social Considerations" (published April 2010), and adverse environmental impacts are not considered significant. Furthermore, the Project does not involve areas with sensitive characteristics or vulnerable regions as defined in the guidelines.

③ Environmental Permit: Preparation of an Environmental Impact Assessment (EIA) report is not required under Nepalese law. However, preparation of an Initial Environmental Examination (IEE) and approval by the supervising authority—the Ministry of Physical Infrastructure and Transport—is required. Approval was granted in December 2023.

④ Anti-pollution measures: During construction, measures will be implemented to meet national and international standards for air quality, water quality, noise, and vibration, including water spraying, leachate treatment, appropriate specifications for construction equipment, and work-hour management. During operation, impacts on air quality and noise/vibration from vehicle traffic are anticipated; however, mitigation measures such as roadside tree planting and proper traffic management are planned.

⑤ Natural Environment: The Project area is not located within or near national parks or other sensitive areas, and adverse impacts on the natural environment are expected to be minimal.

⑥ Social Environment: The Project involves the acquisition of 0.25 ha of land near the airport and Jadibuti intersection and the involuntary resettlement of 18 households. Land acquisition and compensation will be carried out in accordance with Nepalese

procedures and based on a simplified resettlement plan prepared in line with JICA's Guidelines for Environmental and Social Considerations.

- ⑦ Other/Monitoring: During construction, contractors will monitor air quality, water quality, noise, and vibration under the supervision of the executing agency. During operation, the executing agency will monitor air quality and related parameters.

(7) Cross-Cutting Issues

During construction, contractors will monitor air quality, water quality, noise, and vibration under the supervision of the executing agency. During operation, the executing agency will monitor air quality and related parameters.

The Project aims to improve traffic flow and alleviate congestion, and the estimated reduction in greenhouse gas (GHG) emissions is approximately 12,359 tons of CO₂ equivalent per year. This contributes to climate change mitigation and aligns with Nepal's targets under its Nationally Determined Contribution (NDC) based on the Paris Agreement.

(8) Gender Classification

[Not Applicable] ■GI (Gender Mainstreaming Needs Assessment Project)

<Activity Content/Reason for Classification>

Although social and gender analysis was conducted during the preparatory survey, no specific plans or indicators for promoting gender equality or women's empowerment were established. However, during construction, measures to promote gender inclusion—such as providing facilities for female workers—will be implemented.

(9) Other Important Issues

There is potential for applying technology in which Japanese companies hold a comparative advantage (narrow-width box girders with composite deck slabs) in the flyover sections.

4. Targeted Outcomes

(1) Quantitative Effects

Outcomes (Operational and Effect Indicators)

Indicator	Baseline (2023)	Target (2036) [2 years after project completion]
Average Daily Traffic Volume (PCU/day)	149,460	271,396*
Travel Time (Peak Hours, min)	50	2.2**
Average Travel Speed (km/h)	20	50**

* Combined traffic volume of the grade-separated facilities constructed under the Project and existing roads.

** Refers to traffic on the grade-separated structure between Jadibuti Intersection and Tinkune Intersection.

(2) Qualitative Effects

Improved travel comfort in the target area, mitigation of air pollution through reduced travel time, and the promotion of regional economic growth.

(3) Internal Rate of Return

Based on the following assumptions, the Economic Internal Rate of Return (EIRR) for the Project is estimated at 14.1%. The Financial Internal Rate of Return (FIRR) has not been calculated, as the Project does not assume toll collection from users.

【EIRR】

Costs: Project costs and operation/maintenance costs (excluding taxes)

Benefits: Time savings and reductions in vehicle operating costs

Project Life: 30 years

5. Assumptions and External Conditions

Prerequisites/External Conditions: N/A

6. Lessons Learned from Past Projects

In the post-evaluation of the “Tazara Intersection Improvement Project” in the United Republic of Tanzania (Evaluation Year: FY2021), it was noted that during the construction period, close coordination among the implementing agency, contractors, and traffic police ensured that traffic control measures were properly implemented, thereby avoiding severe congestion and ensuring construction safety. This highlighted the lesson that, for projects requiring traffic regulation and safety measures on existing roads, it is crucial to implement appropriate measures through close coordination among stakeholders.

The site of this Project is adjacent to Tribhuvan International Airport, requiring construction under airspace restrictions. Therefore, close coordination during the construction period with the Civil Aviation Authority of Nepal (CAAN)—which is responsible for the operation and maintenance of Tribhuvan International Airport—will be essential. In this Project, it has been agreed that the implementing agency, the Department of Roads (DOR), will take responsibility for coordinating with stakeholders such as traffic police, CAAN, and contractors, drawing on the above lessons.

7. Evaluation Results

The Project is consistent with Nepal’s development challenges and policies, as well as Japan’s and JICA’s cooperation policies and analytical frameworks. It helps address the rapidly increasing transportation demand in the metropolitan area and is considered to contribute to SDG Goal 9, “Build Resilient Infrastructure,” and Goal 11, “Make Cities Inclusive, Safe, Resilient, and Sustainable.” Therefore, the necessity of supporting the implementation

of the Project is regarded as high.

8. Plan for Future Evaluation

(1) Indicators to be Used

As outlined in Section 4.

(2) Future Evaluation Schedule

Two years after project completion: Ex-post evaluation

END

Attachment: Map of Koteswor Intersection Improvement Project

Koteshwor Intersection Improvement Project Map
[Project Area Map]



[Project Section]



Source: Prepared by JICA, based on the "Preparatory Survey Report for the Kathmandu Intersection Improvement Project."