

Ex-Ante Evaluation (for Japanese ODA Loan)

**1. Name of the Project**

Country: India  
 Project: Bihar National Highway Improvement Project (Phase 2)  
 Loan Agreement: January 30, 2014  
 Loan Amount: 21,426 million yen  
 Borrower: The President of India

**2. Background and Necessity of the Project**

(1) Current State and Issues of the Road Sector in India

The road shall be roughly categorized into national highways (NH), state roads (SH), major district roads (MRDs) and local roads. In 2012, the National Highways in India constitute 76,818 kilometers, or about 2 percent of the total 4.11 million kilometers of national road network. However, they bear about 40 percent of transportation on the road network as a whole. In such a scenario, improving the new national highways and widening existing ones to meet the growing demand for road transportation is an urgent issue. Moreover, developing outworn road facilities such as old bridges and improving traffic conditions around the congested downtowns by developing bypasses are the other issues for better mobility and accessibility.

(2) India's Development Policies for the Road Sector and the Role of the Current Project

In the 11th Five-Year Plan (April 2007 to March 2012), the Government of India specifies the policy for a combined development of national highways, mainly through the promotion of the national highway development plan (NHDP)<sup>1</sup>, and the development of local roads. Recently the Government of India released the 12th Five-Year Plan (April 2012 to March 2017), where road sector is successively given a priority and a poor capacity shall be continuously attacked. In the Plan, completion of on-going works on NHDP Phases I & II and constructing another 10,000 km of national highways are specified as the main targets.

Along with this, the Government of the State of Bihar formulated "Bihar Approach to 11th Five Year Plan", which stated that the State will achieve comprehensive growth through the improvement of roads. Especially, 4-laning of NHs in the State is listed as one of the main challenges to be addressed and the Project is also mentioned in the Approach paper.

(3) Japan and JICA's Policy and Operations in the Road Sector in India

In the Japan's Country Assistance Programs for India (May 2006), the "promotion of economic growth" was identified as a priority area. In response to this, JICA has adopted "support for sustainable economic growth through improvement of the economic infrastructure" as a priority sector. JICA's policy is to support improvements in the efficiency of passenger and freight transport through the sustainable development of intercity core traffic networks, the elimination of bottlenecks and the establishment of logistics hubs and to support economic and social development in India. This Project is consistent with these policies. JICA has so far approved 9 loan projects totaling 154.3 billion yen (4% of the total loan amount to India) for the road & bridge sector. As for technical cooperation, JICA is dispatching experts to Ministry of Road, Transport & Highways (MoRTH) and National Highways Authority of India (NHAI) to improve skills in the establishment, management and maintenance of expressway networks.

(4) Other Donors' Activities

Recognizing that the realization of comprehensive growth requires development of the infrastructure in rural areas where many poor people live, the World Bank has been providing funds for the Government of India's local road development plan. Recognizing the importance of the improvement of the infrastructure in the transport sector, the Asian Development Bank (ADB) has also been supporting the development of local roads especially in poor states (including Bihar) and northwestern states (including Mizoram, Assam, Manipur and Tripura).

(5) Necessity of the Project

Though Bihar is one of the most impoverished states of India and 42.6 percent of the State's population lives below the poverty line (in 2000), which is far higher than the national average of 26.1%, it has achieved a remarkable economic growth in recent years. In FY2011, Bihar's GSDP(Gross State Domestic Product)

<sup>1</sup> NHDP envisages the development of major national highways spreading more than 50,000km all over India. NHDP is first introduced in 1998 and Phase I – VII is in progress or being planned. In NHDP-I & II, Golden Quadrilateral, aiming at connecting the main four cities of Delhi, Kolkata, Chennai and Mumbai with a total length of 5,846 km, and NSEW Corridor, targeting connecting Srinagar, Kanyakumari, Silchar and Porbandar with a total length of 6,319 km, has been strongly pushed forward and most of the work has been completed during 11<sup>th</sup> Five-Year Plan (April 2007 to March 2012).

marked a growth of 13.1%, which ranked first among all states in India for 2 years in row. With an increasing population and economic development, the number of registered vehicles in Bihar increased from 1,020,000 in FY2002 to 2,670,000 in FY2011. However, the road length per million people was only 125.85 kilometers, which is much less than the average of 388km for the entire India. It is therefore necessary to immediately establish road networks to cope with the sharply increased demand for road transport.

The section covered by this Project links the intersection with NH83 at Gaya and eastern Bihar cities such as Rajgir and Nalanda. NH83 is being developed into 4-lanes through JICA-funding "Bihar National Highway Improvement Project" and runs between NH2 and NH28 which were both developed under National Highway Development Plan (NHDP). In Rajgir and Nalanda, the new campus is proposed to be constructed under Indian Government's "The Revival Plan of Nalanda University," towards which the Government of Japan is extending support.

As the traffic volume is expected to increase reflecting all these factors, it is essential to improve the transportation by improving the main highways and constructing bypasses to overcome congestion and to support the establishment of an investment environment through the development of the road infrastructure. Furthermore, the project contributes to adaptation to climate change.

Under such conditions, as the Project is obviously consistent with India's development strategies and Japan's and JICA's aid policies, JICA's support towards the Project is deemed necessary and relevant.

### 3. Project Description

#### (1) Project Objective

The objective of this Project is to improve accessibility in the State of Bihar, through widening existing NH-82 and constructing bypasses to circumvent major downtowns located on the route, thereby contributing to mitigation of traffic jams and promoting regional economic development including tourist traffic.

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

State of Bihar

#### (3) Project Components

This project involves 4-laning of National Highway 82 (Gaya to Biharsharif), which is a main arterial road in Bihar, as well as constituting bypasses in congested areas.

- 1) Road construction (92 km of main road (including bypasses of about 11 km and 27 crossroads), 16 km of service roads, etc.)
- 2) Consulting services (work supervision, environmental and social consideration support, etc.)

#### (4) Estimated Project Cost (Loan Amount)

29,363 million yen (Loan amount: 21,426 million yen)

#### (5) Project Implementation Schedule

March 2014–February 2022 (98 months). The Project will be completed when the use of the facilities begins (February 2019).

#### (6) Project Implementation Structure

- 1) Borrower: The President of India
- 2) Executing Agency: Bihar State Road Development Corporation Limited
- 3) Operation and Maintenance System: Ministry of Road Transport & Highways

#### (7) Environmental and Social Considerations/Poverty Reduction/Social Development

##### 1) Environmental and Social Considerations

- (i) Category: A
- (ii) Reason for the Categorization: This Project is classified as Category A because it falls under the category of a large-scale project in a sector likely to have an impact and has characteristics likely to have an impact according to the "Japan Bank for International Cooperation Guidelines for the Confirmation of Environmental and Social Considerations" (established in April 2002).
- (iii) Environmental Permit: This Project requires the preparation of an environmental impact assessment (EIA) report under India's domestic laws, and environmental permission was obtained from the Ministry of Environment and Forests in February 2011.
- (iv) Pollution Control Measures: To prevent noise, dust and waste from harming to surroundings during work, a) the construction is limited to daytime, b) low-noise work equipment is installed and covered during operation, c) watering is done regularly and d) soil is disposed properly. With

regard to air pollution and noise in service, the installation of soundproof walls, tree planting and other measures are taken if needed.

- (v) Natural Environment: Because this Project requires the felling of plantation forests during construction, the State Forest Department will plant replacement trees. In addition, it is firmly assured that no plan of widening road is planned along the within/around Rajgir Wildlife Sanctuary (particularly between 65.750 to km and 70.200 km), to keep the road along the sanctuary as it is.
  - (vi) Social Environment: Because this Project requires the acquisition of sites totaling about 336 ha (including 296ha of private land) and the relocation of about 1,166 households, the acquisition of the sites and the relocation & resettlement of the residents with are carried out according to a resident relocation plan prepared and approved by the executing agency.
  - (vii) Other aspects/Monitoring: In this Project, the executing agency monitors pollution control measures (air quality, noise, vibration, water quality, etc.), the impact on ecosystems, safety measures during the roadworks, the status of relocation of the residents, etc.
- 2) Promotion of Poverty Reduction: Of the residents affected by the Project, socially vulnerable individuals can receive vocational training and employment support.
  - 3) Promotion of Social Development (e.g. Gender Perspective, Measures for Infectious Diseases Including HIV/AIDS, Participatory Development, Consideration for Persons with Disability, etc.):The executing agency hires an NGO to carry out activities to prevent migratory workers from contracting HIV.

**(8) Collaboration with Other Schemes or Donors**

The project cooperates with NGOs to support the residents on their relocation, training and employment.

**(9) Other Important Issues**

- 1) As the Maoism group was previously active in the southern part of the State of Bihar, in the course of project implementation, a close communication with executing agency on public safety as well as PR activities in order that Project continuously obtain a positive response from local residents are highly needed.
- 2) Because this Project is designed to secure the planned heights of roads and bridges in the case of flooding and aims to cope with the impact of climate change, it contributes to adaptation to climate change.

<b>4. Targeted Outcomes</b>
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**(1) Quantitative Effects**

**1) Performance indicators (operation and effect indicators)**

Indicators	Baseline (2011)	Target (2021) (two years after project completion)
Annual Average Daily Traffic (AADT) (PCU/day)	13,321	23,428
Travel time (hours/vehicle) (Gaya – Biharsharif)	2.22	1.58
Average speed (km/hour)	41.86	58.82

**2) Internal Rates of Return**

Based on the following preconditions, the economic internal rate of return (EIRR) of the Project is 27.24%, and the financial internal rate of return (FIRR) is -0.45%.

**EIRR**

Cost: Project cost (excluding taxes), operating and maintenance cost

Benefits: Reduction in vehicle running costs and travel time

Project life:30 years

**FIRR**

Cost: Project cost, operating and maintenance cost

Benefit: Revenues from road charges

Project life: 30 years

**(2) Qualitative Effects**

Promotion of local economic development, improvement of road traffic safety and comfort, improvement of convenience by ensuring punctuality when traveling, urban environmental improvement through the mitigation of traffic pollution and adaptation to climate change in the State of Bihar

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

Political and economic stagnation/deterioration and natural disasters in India and the area surrounding the project sites

## **6. Results of Evaluations and Lessons Learned from Past Projects**

Based on the results of past projects involving the large-scale relocation of residents, it has been pointed out that it is necessary to take measures to secure the means of livelihood and improve the living standards of the people who have to relocate. Under this Project, it is planned to place consultants and NGOs in the project implementation system and comprehensively monitor the acquisition of sites and the relocation of residents so that appropriate compensation and livelihood improvement measures will be carried out according to the resident relocation plan.

More precisely, the rehabilitation & resettlement plan BSRDC prepared with help of consultant will be carried out by hired NGO. The progress of the plan will be feed backed into the consultant from the NGO and reported quarterly to JICA in writings, via BSRDC.

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

(1) Indicators for Future Evaluation

- 1) Annual Average Daily Traffic (PCU/day)
- 2) Travel time (hours/vehicle) (Gaya – Biharsharif)
- 3) Average speed (km/hour)
- 4) Economic internal rate of return (EIRR) (%)
- 5) Financial internal rate of return (FIRR) (%)

(2) Timing

Two years after project completion