



**ASIAN INFRASTRUCTURE
INVESTMENT BANK**

PD000153-BGD
March 13, 2020

**Project Document
of the Asian Infrastructure Investment Bank
Sovereign-Backed Financing
People's Republic of Bangladesh
Sylhet to Tamabil Road Upgrade Project¹**

¹ Includes “Improvement of Sylhet – Tamabil Road to a 4-lane Highway with separate SMVT lane”.

Currency Equivalents
(Effective as of Jan. 22, 2020)

Currency Unit	–	Bangladesh Taka (BDT)
BDT1.00	=	USD0.012
USD1.00	=	BDT84.88

Borrower's Fiscal year
July 1-June 30

Abbreviations

AADT	Average Annual Daily Traffic
AIIB	Asian Infrastructure Investment Bank
BDT	Bangladesh Taka
DNST	Dhaka-Narsingdi-Sylhet-Tamabil (National Highway Corridor)
EIA	Environmental Impact Assessment
EMP	Environmental Management Plan
E&S	Environmental and Social
ESEL	Environmental and Social Exclusion List
ESIA	Environmental and Social Impact Assessment
ESMP	Environmental and Social Management Plan
ESMU	Environmental and Social Management Unit
ESS	Environment and Social Standards
FIDIC	Fédération Internationale Des Ingénieurs-Conseils
FM	Financial Management
FMA	Financial Management Assessment
FS	Feasibility Study
GDP	Gross Domestic Product
IOCS	International Open Competitive Selection
IUFRs	Interim Unaudited Financial Reports
MDB	Multilateral Development Banks
M&E	Monitoring and Evaluation
MOF	Ministry of Finance
MRTB	Ministry of Road Transport and Bridges
NCT	National Competitive Tendering
NGO	Nongovernmental Organizations
O&M	Operation and Maintenance
PAP	Project-Affected People
PDS	Project Delivery Strategy
PIU	Project Implementation Unit
PP	Procurement Plan
PPM	Project-Affected People's Mechanism
PPP	Public-Private Partnership

RAP	Resettlement Action Plan
RHD	Road and Highways Department
RPF	Resettlement Planning Framework

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1. Summary Sheet

People's Republic of Bangladesh Sylhet to Tamabil Road Upgrade Project

Project No.	0000153
Borrower	People's Republic of Bangladesh
Guarantor	N/A
Project Implementation Entity	Ministry of Road Transport and Bridges
Sector	Transport
Subsector	Roads
Project Objective	The project objective is to improve intercity connectivity in Bangladesh and cross-border connectivity between Bangladesh and India by upgrading Bangladesh National Highway N2 between Sylhet and Tamabil.
Project Description	The project will upgrade National Highway N2 between the city of Sylhet to the Tamabil border point from a two-lane single carriageway to a two-lane dual carriageway highway. The project will finance: (a) road construction and operation and maintenance works, (b) consulting services; and (c) institutional development and project management support.
Implementation Period	Start Date: May 15, 2020 End Date: May 15, 2025
Expected Loan Closing Date	Nov. 15, 2025
Cost and Financing Plan	Total Project Cost: USD568.9 million AIIB Loan: USD404.0 million Government: USD164.9 million
Size and Terms of AIIB Loan	USD404.0 million Final maturity of 25 years; average maturity of 14.91 years, including a grace period of five years. AIIB's standard interest rate for sovereign-backed loans.
Cofinancing (Size and Terms)	N/A
Environmental and Social Category	Category A
Risk (Low/Medium/High)	High
Conditions for Effectiveness	i) Establishment of a fully functional Project Implementation Unit (PIU); and ii) adoption of a Project Implementation Manual to guide the PIU operations.
Key Covenants/Conditions for Disbursement	Covenants. 1) Mid Term Review. By the time of mid-term review (MTR), the contracted value of accounted works shall reach a minimum 25 percent of total loan amount. Each component (including subcomponents) should have gone through the bidding process and all relevant contracts should be ready for

	<p>signing.</p> <p>2) Resettlement Action Plan shall be finalized and approved for use prior to the commencement of civil works.</p> <p>3) A sustainable funding mechanism of project road maintenance shall be agreed with AIIB no later than 6 calendar months before the project road is open to traffic.</p>
Policy Assurance	The Vice President, Policy and Strategy, confirms an overall assurance that AIIB is in compliance with the policies applicable to the Project.

President	Jin Liqun
Vice President	D.J. Pandian
Director General, Investment Operations Department 1	Supee Teravaninthorn
Manager	Gregory Liu
Project Team Leader	Luquan Tian, Principal Investment Operations Specialist ² Natalia Sanz, Investment Operations Specialist
Project Team Members	<p>Somnath Basu, Principal Social Development Specialist</p> <p>Zhixi Zhu, Environment Specialist</p> <p>Julius Thaler, Senior Counsel</p> <p>Yunlong Liu, Procurement Specialist</p> <p>Ning Wu, Financial Management Consultant</p> <p>Shonell Robinson, Financial Management Specialist</p> <p>Mirza Nadia Bashnin, Young Professional</p> <p>Susmita Bandyopadhyay, Consultant (Social Development Specialist (Consultant))</p> <p>Jiasi Liu, Team Assistant</p> <p>Yongxi Liu, Team Assistant</p>

² Luquan Tian worked at AIIB until December 2019.

2. Project Description

A. Rationale

1. **Country Priority.** Bangladesh is a lower-middle-income country where economic growth is currently driven by manufacturing, services and public investment.³ It is the eighth most populated country with a population of 168 million (2018) and with one of the highest population densities in the world at 1,237 people per square kilometer (km). Export-led growth especially in the garment sector has been a catalyst for growth and job creation. Sustained economic growth has rapidly increased the demand for energy, transport and urbanization. However, insufficient planning and investment have resulted in increasingly severe infrastructure bottlenecks.⁴ Export growth has remained stagnant for years, attributable to the increase in export prices and worsening trade logistics bottlenecks. The World Economic Forum reports that the quality of infrastructure in Bangladesh still pales in comparison with other countries in the region. For example, the country's infrastructure performance score was 2.9 in 2017-2018 compared with India (4.2), Sri Lanka (3.8), Thailand (4.7) and China (4.7). Bangladesh ranks 121 on the road connectivity index and 111 in road quality. Additionally, Bangladesh relies on neighboring countries to provide necessary raw materials and industrial products, such as construction materials.

2. **Geographical conditions combined with the extremely high population density and climate characteristics of Bangladesh pose additional challenges to infrastructure development and maintenance.** It is a low-lying riverine country with a mean elevation of 8.5 meters, located in a deltaic plain where the Ganges, Brahmaputra, Meghna Rivers and their tributaries meet. More than 90 percent of the country is low land—an alluvial plain formed by sediment. Bangladesh has a tropical monsoon climate with heavy seasonal rainfall, high temperatures and high humidity. As indicated in the Second National Communication of Bangladesh to the United Nations Framework Convention on Climate Change, by 2050 the maximum temperature could increase by 1.96 degrees Celsius and annual rainfall could increase by 32.61 percent.

3. **A major part of public sector investment is directed toward major infrastructure projects.** To achieve the government's policy of high growth and high employment, public investment will need to reach 7-8 percent of gross domestic product (GDP) by fiscal year (FY) 2020. Around 30-35 percent of annual development budget already goes to the infrastructure sector each year. The Government of Bangladesh (GoB) prioritizes the modernization of transportation in its "7th Five Year Plan" (2016-2020) specifically: (a) timely completion of all ongoing road and bridge projects, especially projects related to intercity highways; (b) fast-tracking transformational infrastructure investment, and (c) promoting regional connectivity and support for the Trans-Asian Highway Project.⁵

³ GDP reached USD1,480 per capita in 2017. GDP growth in FY 2017 is estimated at 7.24 percent. Growth outlook remains strong and the government targeted an annual average growth rate of 7.4 percent between 2019 and 2020. (Bangladesh Overview, World Bank, June 2018)

⁴ <http://www.worldbank.org/en/country/bangladesh/overview>.

⁴ <http://www.worldbank.org/en/country/bangladesh/overview> (same as above)

⁵ The Asian Highway is a cooperative project among countries in Asia and Europe and the United Nations Economic and Social Commission for Asia and the Pacific (ESCAP), to improve the highway systems in

4. **Sector Context.** Despite Bangladesh's strategic geographic location, international trade suffers due to transport infrastructure bottlenecks. During 2011-2014, the GoB spent USD2.9 billion on transport infrastructure development⁶ (road, rail and bridges) with the road sector accounting for approximately 40 percent of the total budget for the sector. Given its location, Bangladesh plays a key role in regional economic development, especially as a transit country in the regional trade and logistics networks, facilitating movement among several neighboring countries especially between mainland India, landlocked Nepal and Bhutan as well as surface trade flows between South Asia and Myanmar and the rest of Southeast Asia. Unlocking the bottleneck of transport infrastructure service is the key to improving regional trade and transport supply chains. As an example, the "Order to Delivery Cycle" of Bangladesh manufacturers is 35 to 60 percent longer than many other competitors, which is due to lengthy transport time on the deteriorated and over capacity road network and the cumbersome management and clearance process at borders, seaports and land ports.⁷ A study by the Asian Development Bank (ADB) shows that investments in transport infrastructure to increase Pan-Asian connectivity could reduce trade costs by more than 12.5 percent in Bangladesh. The lower trade costs would, in turn, yield annual gains of around six percent of GDP in 2020.⁸

5. **The Sylhet-Tamabil road (about 56.16 km) is part of the Dhaka-Narsingdi-Sylhet-Tamabil (DNST) National Highway 2 (N2) corridor** with a total length of 286 km. DNST is one of the three most important corridors⁹ in the country, connecting the entire northeastern districts with Sylhet and Sylhet Division and Dhaka, and with Tamabil on the northern border with India (see maps of project area in Annex 1). Currently, the corridor mainly serves the domestic economy connecting Sylhet Division with the rest of the country. Sylhet is the fifth largest city in Bangladesh in terms of population (estimated at more than 500,000). The Sylhet Division is important for tea production (producing 80 percent of tea in the country), gas and mineral reserves (largest natural gas reserves) and is the center of electric power generation and construction materials.

6. **The DNST corridor is strategically important for sub regional connectivity with seven northeastern states of India, Bhutan, Myanmar and China.** The corridor is part of route 1 of the Asian Highway Network, connecting South Asian countries with Kunming in Yunnan Province of China and the Association of Southeast Asian Nations (ASEAN) countries. Currently, the Sylhet-Tamabil road is already an important trade route for bilateral trade between Bangladesh and Meghalaya and Assam states of India. The border post at Tamabil is one of the most important land ports in Bangladesh. More than 2.5 million tons of stone and two million tons of coal enter Bangladesh through this border post. Main import items are coal, limestone, boulder, stone, glass sand, fruits and raw hides. Export items include food and beverage items, plastic goods and bricks. The rapid

Asia (Status of the Asian Highway in Member Countries | United Nations ESCAP. www.unescap.org. Retrieved 2018-01-12).

⁶ About two percent of the country's GDP in 2014 (USD172.9 billion).

⁷ World Bank, 2013, Diagnostic Trade Integration Study (DTIS).

⁸ Fan Zhai. ADBI Working Paper Series. The Benefits of Regional Infrastructure Investment in Asia: A Quantitative Exploration. No. 223, June 2010.

⁹ The other two corridors are Dhaka to Chittagong Corridor and Dhaka to Kolkata Corridor (the 7th Five Year Plan).

deterioration rates of the road condition are attributed to the substantial increase in traffic flows, especially the significant amount of heavy commercial vehicle flows importing boulders and cobble stones.

7. **Growing road safety concerns.** The poor quality and resultant deterioration of the roads is one of the factors that have contributed to growing road safety concerns in the country. Road accidents cost Bangladesh about 2 percent of GDP annually¹⁰. In 2018, there were protests related to road safety across the country following the death of two students. The World Health Organization released a major report in 2015 on road safety, which used modelling to estimate that in 2013, road safety conditions were especially high for the region.¹¹

8. **The project will significantly upgrade critical infrastructure to improve connectivity between Tamabil and Sylhet and even Dhaka. It will play a large role in unlocking the potential to increase cross-border trade between Bangladesh and India, Bhutan and even the southwestern part of China.** The road project will primarily facilitate economic connectivity from the border to important economic hubs in the country, particularly, Dhaka and Sylhet. The road is particularly important in reducing logistical costs of construction materials (the country is one of the major exporters of cement and glass in the region). Additionally, the upgraded road will help develop tourism potential in the Sylhet Division, thus generating economic opportunities for the local population. As far as cross-border trade is concerned, the government is currently upgrading the land port and modernizing custom services at Tamabil with support from the World Bank. The Japan International Cooperation Agency (JICA) is assisting the Government of India to upgrade the road section from Tamabil up to Shilong, the capital of Meghalaya State. The upgraded road will significantly reduce travel time and vehicle operating cost for freight and passenger transport.

9. **Institutional Context.** The Roads and Highways Department (RHD) under the Ministry of Road Transport and Bridges (MRTB) is responsible for planning, constructing and maintaining the major road and bridge networks of the country. The Planning Commission is responsible for coordinating investment planning and policies and approving all public investment projects. Land ports are managed by the Land Port Authority under the Ministry of Shipping. The private sector had limited involvement in the transport sector in the past, but its role has increased considerably recently. In recent years, the government has been pushing PPP initiatives, particularly for large projects in the rail, road and port subsectors. Although the growth of PPP projects has been slow, the private sector is expected to play an increasing role in road construction and management in the future.

10. **Insufficient Road Operation and Maintenance (O&M).** In Bangladesh, there is a general lack of a maintenance culture, resulting in premature deterioration of roads and other infrastructure. Adequate funding, efficient operations and maintenance are mostly absent on a large part of the road network, especially routine and periodical maintenance and immediate repairs in wet seasons. Maintenance planning for the network of main

¹⁰ National Committee to Protect Shipping, Roads and Railways (NCPSRR), 2019

¹¹ Road Safety Status 2015, World Health Organization, 2016
https://www.who.int/violence_injury_prevention/road_safety_status/2015/en/

strategic highways is the responsibility of the RHD and is then executed through RHD's divisional and district offices. To address the challenge of inadequate operations and maintenance, many external funding agencies (e.g., ADB, World Bank, USAID and DFID) are already providing large-scale technical and financial support to RHD, to develop O&M policies, establish laboratory facilities and technical capacity for road asset management. The project will address operations and maintenance issues at the divisional and district levels by financing (the critical gaps of supply chains and contracting and management issues for maintenance works).

11. **Strategic fit.** The project meets two of three key thematic investment priorities of AIIB, namely cross-border connectivity and sustainable infrastructure. It is also fully aligned with AIIB's Transport Sector Strategy priority of improving transport network capacity and connectivity. Furthermore, the project directly supports the Sustainable Development Goals, especially Goal 9, to "build resilient infrastructure, promote sustainable industrialization and foster innovation.

12. **Value addition by AIIB.** AIIB's involvement in the project would help the client strengthen its capacity in addressing transport challenges including improving technical solutions on road capacity and safety and managing fiduciary, social and environmental risks in line with international good practice. Specifically, the introduction of new processing technologies of bitumen material and cold mix practices will potentially allow more private sector participation and community involvement in road maintenance. Moreover, AIIB's sizable financial support fills the crucial financing gap that the GoB faces in developing its road infrastructure.

13. **Value addition to AIIB.** The project, as the first AIIB stand-alone transport project in Bangladesh, will open AIIB's business in the transport sector and provide an opportunity for the Bank to gain experience in cross-border connectivity within the South Asian region. The project will further demonstrate AIIB as a strong and reliable partner of the GoB.

B. Project Objective and Expected Results

14. **Project Objective.** The Project Objective (PO) is to improve intercity connectivity in Bangladesh and cross-border connectivity between Bangladesh and India by upgrading Bangladesh National Highway N2 between Sylhet and Tamabil.

15. **Expected Results.** The PO indicators include (a) reduced travel time for selected road user groups, namely Heavy Goods Vehicles (HGV), buses and private cars and Light Goods Vehicles (LGV) and (b) improved safety rating.

16. **Expected Beneficiaries.** Passengers and freight transportation to and from Tamabil City and crossing the Tamabil border from both the India and Bangladesh borders will benefit from the project. Moreover, tourists to the Tamabil area, individuals, households and small shop owners are also expected to benefit from the project. Indirectly, the cement and garment and other industries in Bangladesh as well as the mining industry in India are expected to benefit from the improved road services.

17. **Women will benefit** from improved mobility, safety and access to markets and services, especially along the project road. During social safeguards consultations (especially on resettlement), special efforts were made to ensure the participation of women. This is measured through intermediate indicators and reported on a rolling basis. There is no accurate gender-specific data on road users, pedestrian traffic and traffic injuries and deaths along the planned highway. However, in terms of safety benefits, it is likely that women and children will benefit from increased pedestrian safety as a result of the project. This is because women and children tend to constitute the majority of pedestrians in villages and bazaars along the road (as they need to access social services, markets and stores).

C. Description and Components

18. The project will upgrade National Highway N2 between Sylhet City and Tamabil border point from a two-lane single carriageway to a four-lane dual carriageway highway. It consists of three components as described below.

19. **Component 1. Construction works, equipment installation and O&M works (USD485 million inclusive of government land acquisition costs of USD110 million and taxes of USD46 million).** The project will consist of construction of road works, traffic engineering, traffic management and tolling facilities (e.g., road earthworks, bridges and structures, pavements, installation of traffic management equipment and traffic surveillance, roadside service facilities, tolling and communication systems). Additionally, the project will also provide for workshops for processing cold mix bitumen materials in a selected test road and a maintenance camp of the Sylhet Division.

20. **Component 2. Consulting services (USD14.8 million).** This component will comprise two subcomponents: (1) for the project road, detailed design enhancements and construction supervision of the project (about USD8.1 million) and (2) for selected priority roads of RHD network, feasibility studies (FS), environmental and social safeguard studies and preliminary designs (about USD6.7 million).

21. **Component 3: Project management support and capacity building (USD4 million).** Component 3 comprises the project management costs of the project implementation unit. The project will also include training, capacity building and institutional development of RHD for operating, managing and maintaining the RHD networks of the project division areas, including training in contract management of Output and Performance Based Road Contract (OPBRC) to manage the O&M stage of project road.

22. **Other costs (USD65.1 million).** In addition to the baseline cost, price contingency of about USD30.7 million, commitment charge of USD2.87 million, front end fee of USD1.01 million and interest during construction of USD30.52 million are included.

D. Cost and Financing Plan

23. **Project Cost.** Based on the enhanced detailed design, the project cost is estimated to be USD585.3 million inclusive of project and financing costs for USD568.9 million (of which USD404.0million inclusive of price contingency¹² and financing costs is covered by the AIIB sovereign-backed loan), and project preparation cost of USD16.4 million (of which USD0.8 million was covered by an AIIB's Project Preparation Special Fund Grant). The government will provide counterpart funds for a total of USD180.5 million which covers land acquisition, tax, a portion of price contingency and preparation costs. These include the commitment cost, front-end fee and interest during construction. The financing sources are as provided in the table below.

Table 1: Project Cost and Finance Plan

Components	Cost (USD mil)	Financing (USD mil)		Remarks
		AIIB loan	Government Budget	
Baseline cost¹³				
Component I: Construction of road works, and O&M works	485	329	156	Gov budget including Land acquisition costs of USD110 M and tax of USD46 M
Component II: Consulting services	14.8	11	3.8	
Component III: Project management support and capacity building	4	3	1	
Subtotal	503.8	343	160.8	
Other costs				
Price Contingency (8%)	30.7	26.6	4.1	
Commitment fee	2.87	2.87		
Front-end fee	1.01	1.01		
Interest during construction	30.52	30.52		
Subtotal	65.1	61.0	4.1	
Total Project	568.9	404.0	164.9	
Total Project percentage	100%	71%	29%	

¹² A price contingency of eight percent has been included after careful analysis of the major construction materials and labor costs.

¹³ Five-percent contingency included.

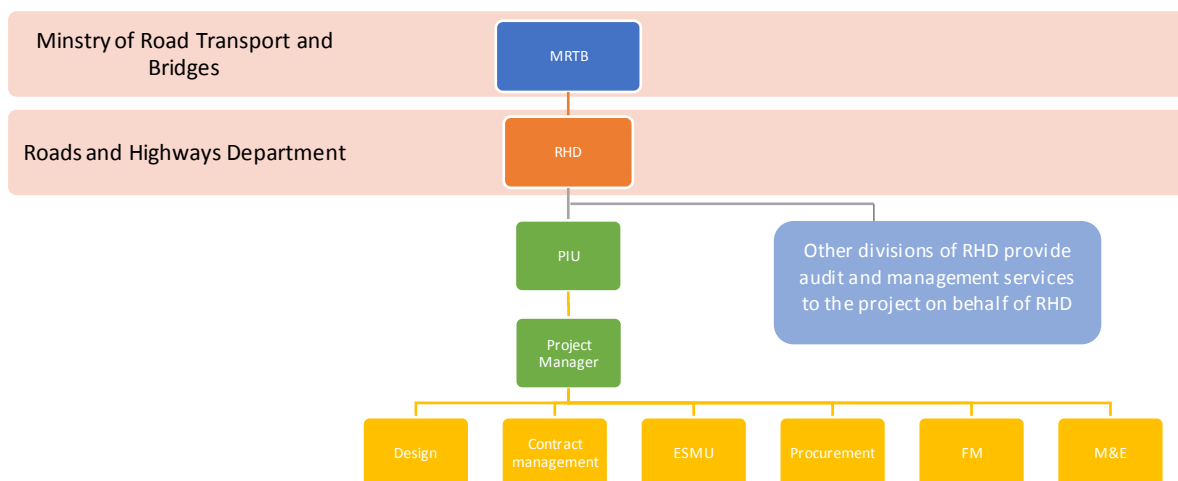
Project preparation	16.4	0.8	15.6	<p>AIB contribution consists of a grant via Project Preparation Special Fund.</p> <p>Counterpart consists of resettlement costs of USD15.25 million and consultant for RAP implementation for USD0.35 million</p>
Grand Total	585.3	404.8	180.5	

E. Implementation Arrangements

24. **The Implementation Period** is expected to be five years, which includes four years of construction and an extra year of technical support during the maintenance period. The construction stage is expected to be four years from May 2020 to May 2024, considering the process of high embankment settlement on soft ground and complexity of resettlement.

25. **Implementation Management.** The RHD, one of MRTB’s departments, is the project implementation agency and will set up a Project Implementation Unit (PIU) to manage day-to-day project implementation under the leadership and direction of the ministry (see organizational structure of the project implementation below). A manual for project implementation will be prepared to clearly describe the functions of each unit of the PIU and the essential workflows for key project activities.

Figure 1: Project Implementation Structure



26. **Monitoring and Evaluation (M&E).** An M&E team in the PIU will be responsible for data collection and daily monitoring and evaluation. Through monthly and annual reports,

RHD's M&E team will report the overall project progress, especially the indicators in the agreed result framework. The incremental costs for M&E will be financed through the loan under component 3.

27. **Government M&E.** The National Integrity Strategy (NIS), which is enforced by the government to improve governance and project integrity will apply to this project. RHD will also assign the Bangladesh Road Research Laboratory (BRRL) and its Monitoring and Evaluation Circle to audit quality and progress on behalf of the ministry. Furthermore, the Implementation Monitoring and Evaluation Division (IMED) of the Planning Commission will monitor and supervise the project, as it is a large infrastructure project. Monitoring and supervision will be conducted by reviewing construction progress and evaluation of economic indicators to ensure that overall project objectives are being met. The Controller and the Auditor General of Bangladesh will carry out regular financial audits of the project.

28. **AiIB's Implementation Support** missions will be carried out twice a year. In addition, AiIB specialists may conduct technical review visits for special implementation support as needed at different implementation stages. A comprehensive implementation support plan is provided in Annex 6.

29. **Procurement.** The procurement and contract management of the works, goods, non-consulting and consulting services financed by AiIB under the project will be carried out by the PIU under the oversight and supervision of RHD and other relevant government departments. This will be done in accordance with AiIB's Procurement Policy (January 2016, updated from time to time) and the Interim Operational Directive on Procurement Instructions for Recipients (dated June 2, 2016, updated from time to time).

30. A draft Project Delivery Strategy (PDS) together with a Project Procurement Plan (PP) for the whole project implementation period has been prepared by the RHD (PIU) and submitted to AiIB for its review and comment. AiIB's Procurement Specialist has provided comments and the revised PDS and PP is acceptable. The PDS provides detailed assessment of operational factors affecting procurement. It includes market supply analyses for high-value, high-risk activities and identifies procurement-related risks and corresponding mitigation measures to be considered in procurement arrangements. These constitute the basis and justification for formulating an optimized contract strategy and procurement arrangements—including contract packaging, procurement methods and specific procurement procedures—with a view to achieving the project's objective in a fit-for-purpose and value-for-money approach.

31. According to the Project Procurement Plan, project activities will mainly be comprised of: (1) three works contracts for road construction and maintenance services, each with a cost estimate of USD80-90 million and (2) one construction supervision services contract and (3) a few small-value goods and works contracts. All works contracts will be procured via International Open Competitive Selection (IOCS). The construction supervision consultant will be selected through IOCS using Quality and Cost Based Selection (QCBS). The procurement plan and any update thereof shall be subject to AiIB's prior review on a "no objection" basis. All high-value contracts will be subject to AiIB's prior procurement review. The Bank will provide procurement support and carry out procurement field supervisions and post-reviews on a regular basis.

32. Harmonized MDB Standard Tender Documents/Request for Proposals for procurement of large value works, goods and consulting services will be used for the procurement of contracts through IOCS using QCBS, subject to modifications of the tender documents to meet AIB's specific policy requirements. The MDB Standard Tender Documents for IOCS works contracts will adopt 1 stage plus 2 envelopes and post qualification procedures. Any goods and works contracts other than IOCS contracts will be procured through the National Competitive Tendering (NCT) method, whereby the client's model bidding documents will be used. The NCT documents have been modified to reflect AIB's particular requirements and have been subjected to AIB's review and acceptance. The procurement process and procedures adopted are materially consistent with AIB's Core Procurement Principles and Standards as specified in AIB Procurement Policy.

33. **Financial Management (FM).** A PIU to be established under RHD will be charged with the financial management responsibility of the project. The FM team within the PIU will consist of one Accounts Officer and three Accountants from the Accounts Division of the Comptroller and Auditor General's Office. The Accounts Division as well as RHD have experience in implementing projects financed by MDBs such as World Bank and ADB, as well as other international agencies. The proposed arrangements, based on RHD's established financial management systems and procedures, are deemed to be acceptable for project implementation. In enhancing the internal controls and ensuring that the FM procedures are compliant with AIB's requirements, a financial management procedures manual acceptable to the Bank must be in place prior to project effectiveness. In addition, AIB's task team will closely monitor the overall execution of such agreed procedures to ensure that they are consistently applied. The PIU will be required to submit to annual project audit reports comprising of the audited financial statement and management letter which will be due to AIB within six months after the end of the year.

34. **Disbursement.** Proceeds of the AIB loan will be disbursed mainly through direct payment and reimbursement methods. For direct payment, the Bank will disburse at the request of RHD through the PIU and pay directly to the account of contractors and suppliers. Under the reimbursement method, the Bank will disburse using the Statement of Expenditure approach. All withdrawal applications will be signed by the PIU's Project Director. AIB may also disburse loan proceeds using the advance method through a Designated Account established and managed by RHD through the PIU or using the special commitment method if it is required for importing significant amount of goods during implementation.

35. The project expenditures will include civil works, goods, consulting services and incremental project operating cost.

3. Project Assessment

A. Technical

36. **Project Design.** The selected project design option is the most effective solution in economic, social and environmental terms.¹⁴ The project supports the widening and upgrading of the current Sylhet-Tamabil road from a two-lane single carriageway to a four-lane dual carriageway highway. Comparing the proposed widening option to that of a new alignment, the proposed option requires less land acquisition and has significantly lower costs. As far as environmental issues are concerned, a new alignment would: (1) pass through low-lying flood plains in many sections with potential wetland impacts, (2) cause inundation during high floods during the monsoon season and (3) possibly increase flood risks. The environmental impacts of the project have been adequately assessed and appropriate engineering solutions have been developed for and targeted at the identified potential adverse environmental impacts.

37. **Premature pavement deterioration under excessive heavy truck flows.** It is necessary for the project to fully address the issue of repeated premature deterioration of pavements which have been observed on the project road. Premature deterioration is caused mostly by excessive use of heavy trucks loaded with imported gravels and sands. The traditional bitumen pavement structure has lower resilience to the frequent force of trucks applying brakes. Frequently overloaded trucks make the deterioration even worse. A comprehensive solution package has been put in place under the project which will include (a) strict control of overloaded vehicles (e.g., installation of weighing pads); (b) use of appropriate high-strength and abrasive-resistant pavement design, including modified asphalt concrete on the wearing course and cement concrete pavement in village, bazaar and toll plaza sections and (c) timely maintenance during the wet season.

38. **Improvements of highway drainage system.** Traditional drainage designs, including roadside ditches (in rural sections) and box culverts alongside the road (mostly used in sub-urban and bazaar sections), need to be improved. Due to exponentially growing urbanization, properties and shops are often quickly built up alongside roads. Ditches and drainage systems consequently become blocked. In sub-urban and bazaar areas, roadside box culverts are often blocked by excessive sediments caused by inadequate garbage collection and other urban-related services. These problems bring about frequent flooding in the bazaar and sub-urban areas, eventually causing premature road failure. Improvement measures include (a) providing filter drains at the edge of the pavement structure, (b) improving inlet design to avoid dust and sediments from entering main carrier drains and (c) providing retention ponds to improve flood resilience. The improvement measures also target the increased chances of extreme weather conditions (e.g., intensified hourly rain drops and more frequent chances of heavy rains).

39. **Safety and security.** A road safety audit was carried out as part of the project feasibility study. Substantial safety improvements to the preliminary design have been

¹⁴ The project Feasibility Study (FS) was completed in June 2014 while the detailed design was completed in January 2015. Both the FS and the detailed design were sponsored by ADB.

incorporated in the final detailed design. Road safety improvements are expected to be significant and the consequent reduction in road accident costs is expected to be substantial. Safety improvements will be mainly brought about by the implementation of the dual carriageway and the reduction in potential head-on collisions by the presence of a central median and safety barrier. The physical segregation of slow-moving vehicle traffic from normal motorized traffic is anticipated to further decrease the potential for serious accidents. To prevent accidents at night, streetlights powered by solar panels will be installed on all busy bazaars and village sections. Reflective signages, cat eyes and road markings will also be introduced in highly populated sections. Streetlights will also improve the security of villages and bazaars. Reduction of road accidents is one of the indicators of project outcomes related to improvements in road safety.

40. **Road infrastructure for all.** The project design encompasses accessibility and travel needs for all vulnerable users, including elderly and disabled people, women and primary and high school students. Measurements to improve accessibility will include pedestrian bridges (including ramps), barrier-free and safe access to bus stations and road crossings, traffic circulation at Tamabil Zero Point for easy access to land port services and access to roadside shops and services.

41. **Improvements in Operation and Maintenance (O&M).** Due to growing traffic demand and extreme climate conditions, high-strength and abrasive-resistant pavement structures are gradually being introduced in the construction of new roads in Bangladesh. Accordingly, maintenance of highways with dense traffic flows will have to be upgraded and improved to take into account high traffic and changing climatic conditions. Based on various site surveys and discussions with RHD, the project focuses its support on the “practical” and “grassroot” approaches to operations and maintenance. Specifically, the project will: (a) support RHD local divisional offices to enhance contract management capacity through OPBRC, (b) support RHD in developing an inspection manual for maintenance works and (c) enhance RHD’s maintenance camp capacity to produce bitumen emulsion, modified asphalt and cutbacks¹⁵ for high-performance pavements and rainy season maintenance works.

42. Overall, the road and bridge work for the project road are extensive, but the works and related building technologies have been successfully carried out previously in Bangladesh and are considered to be technically feasible.

43. **Operational sustainability.** Once construction is completed, the road will be maintained via an OPBRC contract carried out by the private sector to ensure the quality and efficiency of maintenance works. Local RHD technical staff will also be trained in contract management for operations and maintenance. Furthermore, the government will collect tolls on the project road and use the toll charges for operations and maintenance of the road.

¹⁵ A gasoline solution of bitumen.

44. **O&M funding.** Assessment of the tolling mechanism at existing toll station and the maintenance needs of the project road shows that the government will need to adjust the existing toll rate to cover the maintenance needs of the project road. (see Annex 2)

45. **Lessons learned and reflected in the project design.** Reviews of the country's experience and other international financial institutions' involvement in the transport sector of the country have demonstrated the importance of proper O&M arrangement and sufficient funding. The OPBRC arrangement for O&M proposed in the project will be an improvement from the input-based traditional in-house maintenance carried out by RHD local offices. The OPBRC mechanism (linking road performance to the maintenance budget) improves budget transparency compared to the traditional in-house option. The project will support the RHD local offices to manage the OPBRC contracts by ensuring smooth transfer to the private sector (transferring the responsibility of managing the O&M contract by RHD's own staff). This will be done at the O&M stage during the defect liability period. Other lessons, e.g., premature pavement failure, climate change impacts, traffic safety and accessibility for all users, have been summarized above and in Section D.

B. Economic and Financial Analysis

46. **Traffic forecast.** The traffic study in the feasibility study was updated during preparation, to take into account new traffic counts and Origin-Destination analysis. Traffic forecast is based on GDP growth rates and future projections, data on historical traffic growth and elasticity of traffic demand from previous studies. The annual daily traffic is expected to reach 31,156 vehicles per day (exclusive of motorcycles) in 2043 (see more details in Annex 3). A sensitivity analysis was conducted on the traffic to take into account traffic growth rates and passenger car units (PCU) conversion. The proposed technical standard—namely the two-lane dual carriageway with slow-moving vehicle lanes on both sides—is considered appropriate.

47. **Economic Analysis.** The quantified economic benefits include reduction in vehicle operating costs (VOCs) due to improved road conditions, travel time savings and reduction in road accidents. The project costs comprise project capital expenditures, O&M and environmental costs. A cost-benefit analysis (CBA) was conducted to calculate the EIRR and NPV of the road upgrade based on the HDM4¹⁶ model. Details of the economic analysis are provided in Annex 3.

48. The project is economically viable with an economic internal rate of return (EIRR) of 15.59 percent and net present value (NPV) of USD102.11 million at a 12-percent discount rate. The sensitivity of the EIRR was tested against different cost and traffic scenarios and confirms the robustness of economic benefits. The economic rate of return is sensitive to increase in construction costs and decrease in traffic/benefits, while delays in

¹⁶ HDM4 (Highway Design and Maintenance model version 4) is a road asset management system created by the World Bank. It can be used to estimate the economic or engineering viability of road investment projects by performing life cycle analysis of pavement performance, maintenance and/or improvement effects together with estimates of road user costs. <http://www.hdmglobal.com/hdm-4-version-2/about-hdm-4/project-analysis/>

project implementation does not have a significant impact on the rate of return. The results of the cost-benefit and sensitivity analyses are illustrated in Table 2.

Table 2: CBA Results and Sensitivity Analysis

	Scenarios	EIRR	NPV (USD million)
1	Base case	15.59%	102.11
2	Construction cost increases by 20%	13.79%	57.68
3	Traffic/benefits decrease by 20%	13.41%	37.26
4	Both capital costs increase and traffic decreases by 20%	11.76%	(7.17)
5	Project delayed by one year	15.11%	73.57

49. **Fiscal analysis.** RHD is non-revenue-generating government agency and the national government will be the ultimate borrower. The project will be funded by a sovereign backed AIIB loan. Land acquisition (estimated at USD110 million) will be financed by the government and the budget has been allocated for this purpose.¹⁷ The Bangladesh public debt-to-GDP ratio was 33.2 percent in 2017. This is expected to increase but remain below 40 percent of GDP under the assumption of continued robust growth.¹⁸ Hence, it is not foreseen that repayment of the project loan would bring about particular fiscal burden to the country.

C. Fiduciary and Governance

50. **Procurement.** A dedicated PIU under the supervision of RHD is being established. The procurement branch of the PIU will be responsible for the procurement and contract management of the project. All procurement staff will be assigned from RHD. Professional and experienced consultants will also be employed to assist the PIU in procurement and contract management, including the provision of support in preparing tender documents, clarifications and bid evaluation reports.

51. Through its past investment projects financed by different international financial institutions including the World Bank, ADB, JICA, RHD) has acquired project implementation experience in MDB projects. It also has a sufficient number of qualified staff responsible for procurement of civil works, goods and consulting services contracts. Since the procurement policies and procedures of other MDBs are materially consistent with AIIB's Procurement Policy and PIR, the RHD/PIU has enough technical and managerial capacity and resources to carry out the project procurement and contract management. A procurement capacity assessment was carried out during project preparation. According to the assessment, there may be potential delay in the procurement process and contract awarding due to the government's internal bureaucratic approval procedures. Large-value contracts are subject to approval of the national cabinet committee according to the

¹⁷ Development Project Pro-forma (DPP) for the project land acquisition have been approved by the government, which shows the government has allocated the budget for land acquisition.

¹⁸ International Monetary Fund (IMF). 2018. Country Report No.18/158 2018 Article IV consultation–Press release; staff report; and statement by the executive director for Bangladesh. June 2018.

Government of Bangladesh regulations. With this in mind, the AIIB team will strengthen its supervision of RHD's procurement capacity and will conduct frequent monitoring of the procurement process to ensure timely awarding and implementation of contracts. Based on the procurement capacity and risk assessment conducted, the project procurement risk is rated as "Medium."

52. **Financial Management.** A financial management assessment of the proposed arrangement was conducted in accordance with the requirements of Operational Policy on Financing (July 1, 2019). The assessment concluded that the proposed arrangements are adequate to enable the PIU to provide reasonable assurance that the proceeds of the financing will be used for the purposes for which they are granted, and that there should be provision of timely and accurate financial information on implementation. As RHD has the required experience and adequate FM systems established, which will be adopted by the PIU, the overall FM risk of the project is assessed to be moderate.

53. RHD has a systematic process for annual budget preparation, review, approval and analysis. However, the budgeting review and analysis process should be enhanced to include quarterly budget vs actual analysis. This will ensure closer monitoring of available resources against the progress of implementation, mitigating possible delayed payments to contractors. Overall, RHD is however found to have a reasonably effective system of control on contract awards, execution, payment and completion. RHD utilizes an automated accounting system "Integrated Budgeting and Accounting System" to account for, maintain and report on project transactions. Transactions are accounted and reported on in accordance with The Bangladesh Accounting Standards, which are broadly based on the cash-basis International Public Sector Accounting Standards.

54. The accounts of the project will be audited by the Foreign Aided Project Audit Directorate (FAPAD), a specialized arm of the Comptroller and Auditor General of Bangladesh that is dedicated to providing independent assurance to Parliament as well as to development partners regarding the proper use and accounting of resources for foreign-funded projects. The PIU shall provide to the Bank annual audit reports consistent with the Government of Bangladesh year end and due within 6 months of such reporting period. Unaudited project financial statements will also be required and due within thirty (30) days of the reporting period end.

55. The financial management system of RHD will apply to the project, and in line with AIIB's financial management policy. A financial management manual will be prepared by the PIU—which will include the financial management requirements of both RHD and AIIB—to ensure the project has a proper financial management system.

56. **Governance and Anticorruption.** AIIB is committed to preventing fraud and corruption in the projects it finances. It places the highest priority on ensuring that projects it finances are implemented in compliance with AIIB's Policy on Prohibited Practices (2016). The Bank will monitor the work related to tender document preparation and tender/proposal evaluation and award under Bank financing. Implementation will be monitored regularly by AIIB staff. The Bank reserves the right to investigate, directly or indirectly through its agents, any alleged Prohibited Practices relating to the project and to take and/or require the

borrower to take necessary measures to mitigate the risk of such practices and address any issues in a timely manner, as appropriate.

D. Environmental and Social

57. Environmental and Social Policy (Including Standards) and Categorization.

AIIB's Environmental and Social Policy (ESP), including the Environmental and Social Standards (ESSs) and Environmental and Social Exclusion List (ESEL), apply to the proposed project. In accordance with the provisions of the ESP, the project has been rated Category "A" because of the scale and complexity of the involuntary resettlement involved (i.e., relocation of businesses affecting a total about 2,000 people). ESS-1 on Environmental and Social Assessment and Management, and ESS-2 on Involuntary Resettlement are applicable. Based on the initial census data, ESS-3 on Indigenous Peoples is not triggered.

58. The key environmental and social (E&S) risks and impacts identified during appraisal include involuntary resettlement; impacts to wetlands and water bodies; vulnerability of the road to flooding and erosion and health, safety and security risks to project workers and communities.

59. **Environmental and Social Assessment.** Under the detailed engineering design, RHD's consultant carried out an Environmental and Social Impact Assessment (ESIA) and Resettlement Action Plan (RAP) in 2015 financed by ADB. The ESIA includes environmental and social baseline studies and an Environmental and Social Management Plan (ESMP), which details mitigation measures to address various environmental and social impacts due to the project. Through the Project Preparation Special Fund, AIIB provided a grant to fund consultancy services to update the existing RAP and to enhance the road design—focusing on climate resilience, accessibility and safety. A Resettlement Planning Framework (RPF) has been prepared in accordance with AIIB's ESP, which provides guidance on updating the RAP. The RAP has also been updated in line with the detailed design and the RPF.

60. **Environmental Aspects.** The project is located in a built-up area. No protected areas are identified in the project area. The ecological impact is limited as no natural habitat will be affected by the project according to the due diligence. However, the project will have negative short-term environmental impacts during construction works, including water pollution and flooding risk, air pollution, noise, soil erosion and contamination, wastes and tree cutting. These impacts will be mitigated by measures proposed in the ESMP. Long-term impacts that are expected to occur during the operation phase include vehicular noise and air emissions. It is anticipated that the noise level and air pollution will be reduced due to good geometrical design with high quality pavement and smooth surfaces.

61. Each proposed location where wetlands or surface water bodies will potentially be impacted was analyzed. The adverse impacts could include change of surface water hydrology and water pollution during construction. To address the former impact, the retention capacity of the catchment area was assessed, and adequate drains, culverts and bridges will be designed to ensure induced flooding is not likely to occur as a result of road

widening. In addition, measures for clearing the stormwater drains and highway drainage system are proposed to avoid chocking. Mitigation measures are also proposed in the ESMP to address disruption of natural cross drainage and water pollution during construction. The ESMP will be incorporated into the tender documents and construction contracts.

62. **Climate Change Risks and Opportunities.** A climate risk assessment was conducted for the project road. Key climate change risks identified were extreme rainfall events, changes in seasonal and annual average rainfall levels, increase in maximum temperature and heat waves. The road design incorporated climate resilience features such as improved surface drainage (road drains, curbs and gutters), improved design criteria for bridges and culverts to account for increased peak flows and floods, erosion control measures for embankment slopes and hillside cuts (e.g., increased tree planting and revegetation) and enhanced pavements and road base in areas prone to flooding.

Table 3 List of Climate Change Adaptation Activities

	Adaptation Activity	Target Climate Risk	Estimated Adaptation Cost	Adaptation Finance Justification
1	Pavement performance enhancement (including bitumen modification and rigid pavement adapted for weather conditions)	Rainfall, flooding and increased temperatures	10% increase in pavement cost (about USD17 M), about 5% of construction cost	Increased infrastructure life and reduced life cycle cost
2	Ditch and pavement drainage inside village areas and bazaar areas	Rainfall, flooding	5% reduction of maintenance costs 5% increase (USD14 M) of construction costs	Increased infrastructure life and reduced life cycle cost
3	Road surface drainage discharge to natural water reservoirs, water quality control points.	Rainfall, flooding, increased temperatures	5% increase in land acquisition costs about USD6 M.	Increased infrastructure life and reduced life cycle cost

63. **Social Aspects.** Substantial improvements in travel time and associated cost savings; improved connectivity to health, educational and other social services; and better access to employment opportunities are all positive social impacts expected as a result of the proposed road upgrading works. Taken together, the positive impacts far outweigh the negative impacts over time. The project's adverse social impacts will primarily comprise involuntary resettlement for people with businesses and residences along the right-of-way. Although no visible cultural resources have been identified, RHD will make use of chance find procedures outlined in the ESMP.

64. **Involuntary Resettlement.** AIIB's ESS-2 applies as the project will result in land acquisition, disruption of agricultural and livelihood activities and displacement of residential and commercial structures. Most of the road alignment passes through agriculture and uncultivated land with a few households. However, several market areas are located along the right-of-way, which will result in physical and economic displacement. The latest census data prepared in 2019 indicates that approximately 132.43 hectares of land would be

acquired and about 620 residential households and 914 commercial units will require relocation. Additionally, 107 units having both residence and shops will be relocated.

65. A Resettlement Planning Framework (RPF) has been prepared in accordance with AIIB's policy requirements. The existing RAP has been updated with the country's latest land acquisition policy (2017) and gender-disaggregated census information in line with the RPF and AIIB's policy requirements. Under the RAP, a livelihood restoration program has been included for PAPs who will lose their income as a result of the project. The timeframe for completion of RAP implementation is estimated at 12 months, and its successful completion will be a prerequisite for the commencement of civil works. Furthermore, an IT-based monitoring system has been developed to track the progress of relocation and resettlement assistance, including a detailed inventory of PAPs, status of compensation and other milestones.

66. **Gender Aspects.** The project will take a proactive approach to gender, with the environmental and social instruments addressing gender-specific aspects. For example, the information and analysis within the ESIA and RAP have been disaggregated by gender, and the public consultation was gender-inclusive, including focus group discussions with women. Primarily because of the influx of construction workers along the project areas, the proposed project poses a risk of gender-based violence (GBV). An information awareness campaign to combat GBV will be implemented throughout project implementation.

67. **Occupational Health and Safety, Labor and Employment Conditions.** Labor risks associated with the project include occupational health and safety during construction, child and forced labor, and risks and impacts related to labor influx (e.g., conflicts between local and external laborers, spread of contagious diseases from migrant labor, etc.). Mitigation measures are outlined in the ESMP (which will be part of the tender documents) and include prohibitions on hiring children, measures to address worker health and safety, and measures to create a safe working environment for both male and female staff in accordance with ESS 1.

68. **Stakeholder Engagement, Consultation and Information Disclosure.** Consultations were held in phases during the preparation of the ESIA. The ESIA was finalized based on comments and feedback received from the participants/affected people during the consultations. The RPF in English was disclosed on the RHD website¹⁹ on September 23, 2019, and on the AIIB website on September 27, 2019 respectively. The Bangla version of the RPF was disclosed on October 18 and October 21, 2019 on RHD²⁰ and AIIB websites respectively. The ESIA (including the Executive Summary translated into Bangla) were disclosed on RHD's website²¹ on October 11, 2019 and on AIIB's website on

¹⁹ <https://rhd.portal.gov.bd/site/notices/dc27e73f-ecc8-4447-87e3-93624bb74496/Resettlement-Planning-Framework-Improvement-of-Sylhet-Tamabil-Road-to-a-4-Lane-Highw>

²⁰ https://rhd.portal.gov.bd/sites/default/files/files/rhd.portal.gov.bd/notices/ca852117_74d7_460b_a0f3_21e5490af928/596c717c4b9428db000ee201285303c0.pdf

²¹ Please see the EISA in English at

https://rhd.portal.gov.bd/sites/default/files/files/rhd.portal.gov.bd/notices/5cb90c04_305b_4a0d_858e_df78cd563f9a/2020-04-02-19-52-91d4bb36592344dff0d1525ebb24aa91.pdf;

October 12, 2019. The RAP, which is based upon the RPF, was disclosed on RHD's website²² on March 25, 2020. The disclosed E&S documents can all be found on AIIB website²³.

69. Consultations and focus group discussions with PAPs are ongoing and will continue throughout the construction phase. An IT system consisting of an interface that will enable RHD to disseminate information to stakeholders, track resettlement actions and receive grievances through a toll-free mobile phone SMS was developed with support of AIIB's Special Fund.

70. **Project Grievance Redress Mechanism and AIIB's Project-Affected People's Mechanism.** The same IT system that will be used for information dissemination and resettlement tracking also functions as a Grievance Redress Mechanism (GRM). When launched, the IT system will be accessible by the general public and PAPs. Grievances can be lodged via a toll-free mobile phone SMS which will be broadly advertised through the project area. The GRM operates on three levels: (a) PIU field officers receive and respond to grievances from PAPs and seek to resolve minor grievances; (b) if the grievance cannot be resolved at the field level, it is referred to a PIU Grievance Committee and (c) if the matter cannot be resolved at the PIU Grievance Committee level, the matter is referred to a Grievance Redress Committee. The RHD, PIU and AIIB will be able to monitor the status of grievances through the IT system.

71. The Project-Affected People's Mechanism (PPM) has been established by the Bank to provide an opportunity for an independent and impartial review of submission from PAPs who believe they have been, or are likely to be, adversely affected by AIIB's failure to implement its policies in situations when their concerns cannot be addressed satisfactorily through the Project-level GRM or AIIB Management's processes.²⁴

72. **Supervision Arrangements.** As per the FIDIC contract requirements, a construction supervision consultant will be retained by the client to oversee the construction of the road. The consultancy will include environmental and social specialists to monitor the environmental and social aspects of the project and supervise the implementation of the ESMP. The PIU will also have its own environmental and social staff responsible for supervising the implementation of the ESMP and RAP. Additionally, AIIB will provide regular support and supervision during project implementation.

E. Risks and Mitigation Measures

The Executive Summary in Bangla at

https://rhd.portal.gov.bd/sites/default/files/files/rhd.portal.gov.bd/notices/1b9404b8_2c67_4424_bdbd_468e1b649e6d/Executive%20Summary%20Sylhet-Tamabil%204-Lane%20Upgradation.pdf

²² Please see the RAP at

https://rhd.portal.gov.bd/sites/default/files/files/rhd.portal.gov.bd/notices/18fee3f7_7034_48c5_ba35_901abd669f8d/2020-03-25-11-49-fe925cd4762a84f7df27a5b6f16a2101.pdf

²³ <https://www.aiib.org/en/projects/details/2018/proposed/Bangladesh-Sylhet-Tamabil-Road.html>

²⁴ For information on the PPM, including how to make submissions, please visit <https://www.aiib.org/en/policies-strategies/operational-policies/policy-on-the-project-affected-mechanism.html>

73. Overall project risk is rated as “High” based on the project team’s risk assessment. Major risks are listed in the table below and the risk analysis is summarized in detail as follows.

74. **Security and Macroeconomic risks are rated low** in terms of their impact on the project meeting its objectives.

- a. **Security.** The security situation in the country has a “Low” level risk for the achievement of the project objectives. Country overall security risk is rated as “Medium” by the United Nations²⁵ with travel risk rated “High” in Dhaka and “Medium” at the project site.²⁶ Based on the analysis to the risks identified, security risk may not have any impact to local communities, contractors, consultants or clients involved in the project.
- b. **Macroeconomic.** There is a “Low” risk that macroeconomic issues could affect project implementation. The overall macroeconomic outlook remains stable although current account deficit and trade deficit are expected to increase which present latent risks.

75. **Sector Strategies and Policies.** There is a “Medium” risk that current sector policies will affect the implementation of the project. This is mainly due to the Government’s lack of a strategy and policy for road management and maintenance which have been described earlier (see para 10), e.g., lack of financial resources for O&M. To mitigate such risks, the project will support the client to introduce OPBRC and modern maintenance technologies to reduce maintenance or life cycle costs. Such arrangements aim to improve capacity at the divisional level for project road maintenance.

76. **Technical design.** There is a “Medium” risk that the technical design and/or construction works of the project will be of insufficient quality. This risk is mitigated through the review of the design during the construction stage by RHD, site supervision engineers and other technical specialists and subsequent modifications to the design and timely variation orders to correct any errors. Moreover, hybrid tender packages for civil works are designed to use the same contractor for both construction and maintenance. The hybrid-type contract binds the contractors’ responsibilities to ensure the quality of construction works. Aside from the government’s quality assurance systems, AIIB will also arrange frequent site visits to provide timely supervision.

77. **Institutional capacity.** The project will be implemented by a project team which will be composed of experienced civil service staff of the RHD complemented by specialized consultants providing implementation consultant services. Although the RHD has already successfully implemented many MDB projects in the road sector, inconsistent performance in implementation has always been observed among contractors and consultants in various government agencies. The risk related to institutional capacity is rated “Medium,” due to the size and technical and social complexity of the project. As a

²⁵ Medium-level risk, on the condition of essential mitigation measures in place, e.g., control room. Otherwise the risk would be “high.”

²⁶ Risk Map 2018. www.controlrisk.com

mitigation measure, qualified consultants will be hired to support the PIU's operation to ensure consistently high performance. AIIB will also enhance implementation support services by increasing the number of missions to provide timely support for the client to address quality control, safeguards and fiduciary issues.

78. **Fiduciary.** Based on the procurement and financial management assessments carried out during preparation, the fiduciary risk is rated "Medium." Lengthy procurement processes (usually about six months) for large civil works contracts have been identified as a critical challenge. In respect to Financial Management, there may not be timely and periodic monitoring of budget against actual resources and expenditure conducted, which could result in delayed payments to contractors. Mitigation measures include (a) hiring experienced procurement and FM consultants to enhance the efficiency and quality of procurement and financial systems and (b) having regular reviews (including reviews of procurement and financial management processes, as necessary) to ensure adequate fiduciary support to avoid any potential delays. AIIB will conduct frequent missions and technical visits to closely monitor system performance and help the client improve the system and provide essential training when necessary.

79. **Environment and Social.** This risk is rated "High" due to the scale of land acquisition and resettlement associated with the project. The project is rated "Category A" in accordance with the ESP. Poor construction site management is identified as "Medium" level risk. To ensure the smooth implementation of land acquisition and resettlement processes, RHD will contract a qualified consultant to update and assist in implementing the RAP. For construction site management, RHD will enhance its health and safety inspections during the normal site visits and quality auditing activities. Additional mitigation measures include: (a) real-time monitoring of grievances and resettlement progress via an IT system and (b) training for PIU staff.

80. **Stakeholder.** The risk is rated "Medium" due to the weak coordination and working relationship between the local government and communities. Mitigation measures include ongoing engagement with local communities, facilitated by a qualified consultant, and improvements to the GRM through an IT system to address project-related complaints effectively.

Table 4: Summary of Risks and Mitigation Measures

Risk Description	Current Rating	Risk Mitigation
<p><i>Security and Macroeconomic</i></p> <p>No major risks identified. The security situation in the country could pose a risk for the achievement of the project objectives. Risk that macroeconomic issues could affect project implementation.</p>	Low	None.
<p><i>Sector Strategies and Policy</i></p> <p>Government's lack of strategy and policy for road management and maintenance</p>	Medium	Introduction of OPBRC and modern maintenance technologies to reduce maintenance or life cycle costs.
<p><i>Technical Design</i></p> <p>Insufficient quality of designs and construction works.</p>	Medium	<ol style="list-style-type: none"> 1) Review of the design during the construction stage by RHD, site supervision engineers and other technical specialists and subsequent modifications to the design and timely variation orders to correct any errors. 2) Apply hybrid tender packages of civil works that are designed to use the same contractor for both construction and maintenance. This binds the contractors' responsibilities to ensure the quality of construction works. 3) Use the government's quality assurance systems. 4) Enhanced implementation support missions by AIIB.
<p><i>Institutional Capacity for Implementation and Sustainability</i></p> <p>Inconsistent performance among contractors and consultants, and in various government agencies.</p>	Medium	<ol style="list-style-type: none"> 1) Experienced consultants will be engaged to ensure the PIU's consistently high performance and capacity. 2) AIIB's timely "trouble-shooting" support.
<p><i>Fiduciary</i></p> <p>Lengthy procurement processes. Possible delay of payments due to the lack of periodic monitoring of budget against actual available funds and expenditures.</p>	Medium	<ol style="list-style-type: none"> 1) Hiring experienced procurement and FM consultants to enhance the efficiency and quality of procurement and financial systems. 2) Having regular reviews to ensure the level of service to avoid any potential delays, including reviews of procurement process, and revising PDS/PP and FM guidelines as necessary.
<p><i>Environment and Social</i></p> <ol style="list-style-type: none"> 1) Large scale of land acquisition and resettlement. 2) Poor site management. 	High	<ol style="list-style-type: none"> 1) RHD to hire a qualified consultant to implement the RAP. 2) RHD to enhance Environmental, Social, Health and Safety inspections. 3) Real-time monitoring of grievances and resettlement progress via an IT system. 4) Provide essential training to PIU staff.
<p><i>Stakeholders</i></p>	Medium	<ol style="list-style-type: none"> 1) Ongoing engagement with local communities,

Risk Description	Current Rating	Risk Mitigation
Weak coordination among the client and local government and local communities.		facilitated by a qualified consultant. 2) Improve GRM to address project-related complaints effectively.
OVERALL	High	

Annex 1: Results Monitoring Framework

Project Objective:	The project objective is to improve intercity connectivity in Bangladesh and cross-border connectivity between Bangladesh and India by upgrading the Bangladesh National Highway N2 between Sylhet and Tamabil.									
Indicator Name	Unit of measure	Base-line Data Year	Yearly Target Values					End Target	Frequency	Responsibility
			YR1	YR2	YR3	YR4	YR5			
Project Objective Indicators:										
1. Reduced Travel Time										
a. Average travel time for (HGV) trucks on Sylhet Tamabil Road	Hours	3 hours						2.5 hours	Before /After	RHD
b. Average travel time for passenger vehicles	Hours	2 hours						1 h	Before /After	RHD
c. Average travel time for buses	Hours	2.5 hours						1 h	Before /After	RHD
2. Road Safety										
a. Safety Rating: Number of Hazardous locations	No.	3						0	Before /After	RHD

Project Objective:		The project objective is to improve intercity connectivity in Bangladesh and cross-border connectivity between Bangladesh and India by upgrading the Bangladesh National Highway N2 between Sylhet and Tamabil.								
Indicator Name	Unit of measure	Base-line Data Year	Yearly Target Values					End Target	Frequency	Responsibility
			YR1	YR2	YR3	YR4	YR5			
Intermediate Results Indicators:										
1. Road riding quality		fair	fair	bad	bad	good	good	good	Yearly	RHD
2. Domestic employment created directly from the civil works	Labor year	0	1,620	3,210	4,360	1620	70		Yearly	RHD
3. Accounted works completion rate (accumulated rates), including	Percent	0	15	45	85	90	100	100	Yearly	RHD
a. Earthwork completion rate	Percent	0	40	90	98	100	100	100	Yearly	RHD
b. Pavement completion rate	Percent	0	5	20	80	100	100	100	Yearly	RHD
4. Technical standards for maintenance inspection	Y/ N	N	N	Y	Y	Y	Y	Y	Yearly	RHD
5. GRM operational with registry of complaints and	Y/N	N	Y	Y	Y	Y	Y	Y	Yearly	RHD

Project Objective:		The project objective is to improve intercity connectivity in Bangladesh and cross-border connectivity between Bangladesh and India by upgrading the Bangladesh National Highway N2 between Sylhet and Tamabil.								
Indicator Name	Unit of measure	Base-line Data Year	Yearly Target Values					End Target	Frequency	Responsibility
			YR1	YR2	YR3	YR4	YR5			
record of response times										
6. No. of public consultations organized	Number	2 – 3	3	2	2	2	1	9	Yearly	RHD
a. Number of women only consultations	Number	0	1	1	1	1	0	4	Yearly	RHD
7. No. of Staff trained for O&M contract management	Number	0	0	0	5	15	15	>=15	Yearly	RHD

Annex 2: Detailed Project Description

1. The Project Objective would be achieved through the implementation of the three project components described below. The total project cost is estimated at US\$568.9 million, of which US\$164.9 million comprise of RAP implementation costs, duties and taxes, financial costs including front end fees and interest charge in construction stage etc to be covered by the Government.

2. **Component 1. Construction works and Operation and Maintenance (USD485 million inclusive of USD 110m of land acquisition and compensation).** The component includes civil works construction, installation and procurement of goods and operations and maintenance.

3. *Civil works for road widening and new lanes for slow-moving vehicles* forms the major parts of the project investment. The proposed 56.16 km road section starts from the roundabout of Sylhet Jaflong Bypass with Sylhet – Fenchugonj Road (N208), connecting Umonpur, Jaintiapur and Tamabil, and ends at Tamabil 0 Point, the border point with the Meghalaya State of India. The road will be widened to accommodate increased traffic demand and improve the level of road service. Slow moving vehicle lanes will be provided for safe travel of pedestrians, carts, trikes and bikes, which will also improve the travel efficiency for fast moving vehicles on motor vehicle traffic lanes, like trucks, buses and cars. Additionally, improved technical standards will be applied to mitigate climate change impacts. Concrete pavements are proposed in the sections crossing villages and bazars so the road is more resilient to frequent flood waters; and bitumen modification is also proposed to improve the resilience to increased chances of extreme temperature. Roadside drainage systems will be improved to manage changed rainfall and water run-off patterns.

4. *Traffic surveillance and traffic management equipment* (e.g. weighing pads, CCTV cameras, electrical lights) will be installed to: (a) address the issue of overloading vehicles on the project road, (b) monitor traffic flows at critical trunk road links, and (c) improve traffic safety and road user security at selected villages and bazars alongside project road.

5. *Operation and maintenance.* It is imperative to ensure that adequate road maintenance is provided once the road construction work is completed. To achieve this, the proposed project will: (a) apply an input and output hybrid contract model to include road maintenance in the contract for construction works, and (b) introduce modern maintenance technology to fill critical gaps in supply chain.

6. Since the bitumen modification is introduced in pavement construction, the routine and periodic maintenance of pavement will use bitumen modification and emulsion to ensure maintenance quality. Research on the local market and supply chain of bitumen modification and emulsion has found that:

- a. Maintenance contractors seldomly set up an asphalt plant for a maintenance contract due to cost reasons, e.g. small amount asphalt mixture needed for road maintenance, and therefore maintenance contractors will have to rely heavily on local market to buy hot mix bitumen materials; and
- b. Most of pavement deterioration (e.g. crack, fretting and potholes) develops in the wet season and the road deterioration (e.g. potholes, cracking) always need immediate intervention. Sometimes, due to high frequency of rains, hot mix asphalt materials may not be appropriate to use in wet season.

7. Therefore, the introduction of modern maintenance technology (e.g., cold mixed asphalt materials via bitumen emulsion, modified bitumen and cutbacks²⁷) is deemed as highest priority by RHD to improve the efficiency and quality of maintenance works. On the other hand, since the modern technology does not require an expensive asphalt plant to mix bitumen materials, more unskilled labor from local community and small and medium sized private sector companies can be involved in road maintenance. This involvement again further improves the efficiency and reduces the costs of road maintenance. Furthermore, bitumen emulsion, modification and cutbacks also allow the application of climate resilience engineering options (e.g. micro-resurfacing). The following activities are therefore included in the component:

- a. Test road sections about 3 kilometers is proposed for RHD to formulate construction standards or codes for cold mix technology²⁸; and
- b. Workshops of bitumen emulsion, cutbacks and modification to be built and installed at a selected maintenance camp in Sylhet Division.

8. *O&M funding.* Currently, government is charging tolls on the road and the toll rate is set based on the maintenance needs for the bridge nearby the toll station. The government adjusts the toll rate at regular intervals of between 3 to 5 years in order to offset the inflation. Assessment to the tolling mechanism at existing toll stations and the maintenance needs of the project road shows that, the government will have to update the existing toll rates to cover the maintenance needs of project road in addition to bridge. The increase of the toll rate is marginal. With only about 3 percent increase to the existing toll rate, the maintenance needs for the life cycle can be covered. However, the government will have to use other budgets to cover the financing gap at the first eight years of maintenance.

9. **Component 2. Consulting services (USD14.8 million).** This component comprises of two subcomponents of consulting services, namely (a) construction supervision services of the civil works (about USD8.1 million) and (b) for selected priority roads of RHD network, feasibility studies (FS), environmental and social safeguards and

²⁷ Gasoline or diesel solutions of bitumen

²⁸ Technical supports are included in Component 3 Project management supports and capacity building;

preliminary designs (about USD6.7 million), Feasibility studies for the western and southern sections of Dhaka Inner Circle Road will be prepared as part of this subcomponent.

10. *Construction supervision services.* The road civil works will be contracted under a hybrid model in which the bidder will be responsible for construction under the traditional Fédération Internationale Des Ingénieurs-Conseils (FIDIC) procedures and for an eight-year maintenance under an Output and Performance Based Road Contract (OPBRC) after construction. Such hybrid model binds both construction and maintenance responsibility to one contractor and therefore ensure the quality and sustainability. Hence, besides the “Engineer” role of a traditional FIDIC contract, the construction supervision consultant is also required to provide a two-year technical assistance to RHD divisional and district staff for hand on supports to manage OPBRC and trainings of both on and off jobs.

11. *The Dhaka Inner Circular Road* is one of the critical links with highest priority by the government. It connects the National Roads of N1 to N8²⁹ around Dhaka and aims to divert all strategic traffic currently moving through Dhaka central areas out via a higher standard expressway. The feasibility studies (FS), environmental and social safeguards and technical designs have been completed according to the standards of the government. However, to ensure that the studies meet international standards, essential due diligence reviews on, e.g., traffic modelling and studies, selection of technical standards, cost estimates, preferred option assessments, strategic environmental and social impacts are proposed to be carried out under the project. Moreover, a policy research to review international practice on financing and development of land is proposed in order to support the government to tackle the issues of high land acquisition costs.

12. **Component 3. Project management support and capacity building (USD4 million).** Component 3 is comprised of several subcomponents:

13. *Enhancement of road asset management at divisional and district level.* A consultant will be hired: (a) to review the maintenance management work flows from headquarter to divisional and district level, (b) to prepare an inspection manual for daily maintenance and specific tests, (c) to develop maintenance management information system as a sub system of the road asset management system, and (d) to develop mobile applications for maintenance inspections and communications between headquarter and divisional and district levels.

14. *Training, capacity building and institutional development.* This subcomponent will include resources to fund various types of training, institutional development activities to benefit RHD and its staff, with specific focus for operating, managing and maintaining the RHD networks of the project division areas, e.g. training which will enable both headquarter and local level RHD offices to be fully equipped with OPBRC management capacity.

²⁹ Namely, N1: Dhaka – Chittagong, N2: Dhaka – Sylhet – Tamabil, N3: Dhaka – Mymensingh; N4: Dhaka – Jamalpur, N5: Dhaka – Banglabandha, and N8 (Dhaka – Southwestern parts of Bangladesh via Padma Bridge). N6 and N7 join with N5 after crossed Padma River leading to Dhaka.

15. *Project management support*, including the incremental cost of the PIU's operation. Exclusive of PIU civil servant staff salary, the incremental cost includes operation cost incurred in the PIU, e.g. extra office rent and hiring of short-term contract staff.

Annex 3: Economic and Financial Analysis

A. Introduction

1. A Cost-Benefit Analysis (CBA) was conducted to calculate the EIRR and NPV of the road upgrade based on HDM4 model. The scope of the Project investment consists on upgrading 56.16km of the N2 DNST Corridor, the Sylhet-Tamabil segment, from a two-lane single carriageway to a four-lane dual carriageway highway. The road intervention will increase road capacity to serve a growing demand of both passenger and freight traffic, improve road safety and enhance the country connectivity with India and with the region through the dry port in Tamabil.

B. Methodology and Key Assumptions

2. The analysis covers the period of 24 years in line with the life cycle of the road and it is assumed that the road maintenance will continue over the full study period following the RHD Road Maintenance Strategy (see paragraph 14 of this annex). The road improvement will occur over the first four years in a 15:30:40:15 ratio. The operating period will continue for 20 years after the completion of construction and opening of project roads to the traffic.

3. The financial construction cost and annual operation and maintenance cost were estimated at detailed engineering design level. The construction costs were increased by 5-7% with regards to the estimations for the feasibility study due design cost estimates. The economic costs were derived from the financial costs by applying shadow prices adjusting duties and taxes from the cost of imported equipment and materials, and by applying a standard conversion factor of 0.85 to non-tradable items.

4. The scenario of without-project is an "improved base case", meaning it assumes that periodic and routine maintenance would still be carried out in case there was no upgrade of the project road section. The social discount rate used is 12 percent. The analysis was carried out using 2019 constant prices.

C. Estimating Economic Benefits

5. **Traffic analysis.** The feasibility stage traffic study was updated considering new traffic numbers and Origin Destination analysis. As per fresh traffic survey the total weighted Annual Average Daily Traffic (AADT) in 2019 is 5,561 vehicles per day excluding motorcycles. The traffic is dominated by trucks and cars. Almost all cargo traffic is generated in Tamabil carrying imported commodities. As the road serves a significant volume of heavy construction materials transportation and with weak enforcement of maximum axle loads, the current road condition is severely damaged by truck overloading and flash floods and therefore significantly impacts travel time. Nonmotorized traffic is marginal with around 250 vehicles

per day. Congestion or lower speed is experienced only in sections where marketplaces are located. Table 5 shows traffic composition and forecast until 2043.

Table 5 AADT excluding Generated Traffic

Year	2 wheel	3 wheel	Cars	SUV	Micro Bus	Mini Bus	Bus	LGV	MGV	HGV	Total all type	Total Ex. Motor bikes and trikes	PCU ^a
2019	1,263	2,218	594	1,013	367	592	187	456	1,964	389	9,043	5,561	15,715
2023	2,335	3,104	760	1,699	437	706	222	619	2,663	527	13,071	7,633	21,623
2028	5,306	5,174	1,147	3,464	610	986	310	996	5,125	1,128	24,246	13,767	39,327
2033	9,107	6,798	1,385	5,413	689	1,112	350	1,270	6,534	1,438	34,095	18,191	52,216
2038	15,035	8,914	1,689	8,241	793	1,280	403	1,623	8,350	1,837	48,165	24,216	69,958
2043	23,095	11,233	2,000	11,806	894	1,443	455	2,001	10,293	2,265	65,485	31,156	90,709

Note: (a) PCU or Passenger Car Unit values are based on HDM4 used by RHD at 3 PCU for trucks and buses.

Source: Updated traffic study

6. Traffic forecast. According to the feasibility study, traffic forecast was based on historical GDP growth rates and future projections, data on historical traffic growth on various sections of the DNST corridor, and elasticity of transport demand from previous studies. Annual GDP growth in Bangladesh in the last decade (2007-2017) averages at 6.3 percent. According to IMF projections³⁰, GDP is forecasted to grow at 7 percent from 2019 to 2023. In the longer term, annual GDP growth of Bangladesh is projected to average around 6.5 percent.³¹ Motor vehicle registration grew at 12 percent on average since 2007. Historical data shows that elasticity of transport demand was between 1.5-1.67 for different types of vehicles. Traffic growth on the DNST corridor was 9-15 percent during 2007-2011. In the present study fresh traffic growth rates have been worked out through econometric models considering various indicator like GDP, per capita GNI, population. The most likely scenario for traffic growth rates is presented in Table 6.

Table 6 Traffic Growth Rates

Vehicle Type	2020-2024	2025-2029	2030-2034	2035-2039	2040-2044	Average Growth (% p.a.) for next 25 years
Cargo / Covered / Delivery Van	13.80	11.73	9.97	8.47	7.20	10.21
Truck/ Tanker	7.91	6.72	5.71	4.86	4.13	5.86
Two Wheelers	16.59	14.10	11.99	10.19	8.66	12.27

³⁰ See Table 11 in Annex 4

³¹ PWC (2015) The World in 2050: Will the Shift in Global Economic Power Continue?

Auto Rickshaw, Tempo & Human Hauler	8.76	7.45	6.33	5.38	4.57	6.49
Bus, Mini / Micro Bus	4.49	3.82	3.24	2.76	2.34	3.33
Passenger Car , Jeep & Taxi	6.37	5.41	4.60	3.91	3.32	4.72
Others	5.00	4.25	3.61	3.07	2.61	3.71

7. **Vehicle Operating Cost (VOC) savings.** Savings in VOC is one of the most important benefits of the project. A total of 10 categories of fast vehicles identified by the RHD were included in the VOC calculations for the with and without-project scenarios. HDM-4 VOC model was used to calculate the VOC for Bangladeshi representative vehicles in respect to road surface condition of roughness, geometry and width, traffic volume, speed flow, etc. VOC per vehicle-km for each type of vehicle in the with- and without-project scenario are computed automatically in HDM model.

8. **Passenger travel time savings.** Passenger travel time savings is another main benefit of road improvement project. Passenger value of time was calculated as USD per passenger hour. In the absence of a revealed or stated preference survey the value of time savings was calculated using appropriate income levels of passengers and crews included in the RHD cost studies³².

9. **Avoided costs of accidents.** Another key benefit of the project is to improve road safety for both pedestrians and road users which will result in avoided fatalities on the project road and other injuries related costs. The project proposed road design is expected to reduce significantly the rate of traffic incidents and associated costs. For any given alternative, HDM-4 calculates expected traffic incident cost savings using incidents frequencies per 100 vehicle km and average incident costs.

10. To quantify this benefit, the economic analysis first derived the baseline accidents rate from the Bangladesh Road Transport Authority (BRTA) statistics³³.

11. The value of a fatality and an injury was estimated based on the Value of Statistical Life (VSL) using the human capital approach. Based on the PRP report and on the country characteristics, the analysis considered US\$30,000 for income loss and an additional 20% (US\$6,000) for damage and emergency services, for a total VSL of USD36,000. Social cost of serious injury was estimated at 20-45% of fatality (USD10,000) and minor injuries at 10% of fatality (USD3,000). The costs of fatal and non-fatal incidents (2014 prices) are therefore set at USD 76,000 and USD9,600 respectively.

12. **Economic considerations of Green House Emission and other pollutants.** Table 7 below shows the project will cause an increase in the Green House Gas (GHG) emissions as well as other pollutants, which is largely due to the additional traffic induced in the improved technical standards and better road conditions in “with project” scenario. However, in terms of vehicle wise pollutants and net changes per vehicle kilometer, significant reduction of pollutants could be seen in the “with project” scenario. GHG emissions and pollutants have been included as one of project costs in the economic analysis.

³² RHD Road User Cost, Annual Report for 2004-2005 and SRTPPF, 2013

³³ Economic Evaluation report, PRP, RHD, 2011

Table 7: Results of GHG emissions and other pollutants

	Daily AADT	Quantity in Tonnes in 2043						
		HC	CO	NOx	SO ₂	CO ₂	Par	Pb
Without project	824	4,653	15,857	2,334	47	2,30,187	39	27,107
With project	1045	5,850	22,225	3,069	88	2,62,656	44	31,399
Net Change in Emission	221	1,198	6,368	735	41	32,469	5	4,293
Percentage Increase	26.8	25.7	40.2	31.5	86.5	14.1	13.8	15.8

D. Estimating Economic Costs

13. The capital expenditure used in the economic analysis are the cost estimates from the detailed design report in 2014 updated to 2019. The cost of construction includes cost of civil works for upgrading road to 4 lanes, construction of SMVT lane on both sides of the main carriageway, land acquisition and resettlement, road safety, ancillary and protective works, road marking, supervision and contingencies. The financial cost of construction (excluding maintenance) is USD 332.47 million and its economic cost is USD 282.60 million. The economic costs were derived from the financial costs by deducting taxes and duties from the cost of imported equipment and materials and by applying a standard conversion factor of 0.85 to non-tradable items.

14. Normal maintenance will be done after completion of construction works for the whole life cycle period of 20 years. According to the RHD Road Maintenance Strategy, normal maintenance includes several work categories that will be triggered considering yearly condition survey. The economic cost per maintenance category are as follows:

Table 8: Maintenance costs

Works	Economic cost (in Tk.)-2014	Economic cost (in USD)-2019
Routine maintenance beyond carriageway	Tk. 62,790/km	USD 975/km
Shoulder patching	Tk. 1,255/m ²	USD 19/m ²
Crack sealing	Tk. 269/m ²	USD 4/m ²
Thin overlay	Tk. 897/m ²	USD 14/m ²
Construction 120mm	Tk. 4,485/m ²	USD 70/m ²

Source: DBST Detailed engineering design report, 2015

E. Summary of Results and Sensitivity Analysis

15. Based on available data and assumptions adopted, the project has an EIRR of 15.59 percent and NPV of USD 102.11 million at 12 percent discount rate. The EIRR is above the hurdle rate of 12 percent and the project is considered economically viable.

16. Sensitivity analysis has been conducted to test the robustness of EIRR to different variations in market and project-specific parameters. Sensitivity analysis was conducted in four scenarios including: (i) 20 percent increase in construction cost; (ii) 20 percent decrease in traffic/benefits; (iii) both costs increase and benefits reduction by 20 percent; (iv) project delayed by one year. The analysis suggests that construction cost increase and traffic diversion to other alternative routes will have the most significant impact on EIRR. The analysis shows that the project investment is robust to withstand variations in both cost and demand side parameters. The results of the sensitivity analysis are shown in Table 9.

Table 9: CBA Results and Sensitivity Analysis

	Scenarios	EIRR	IPV (US\$ million)
1	Base case	15.59%	102.11
2	Construction cost increases by 20%	13.79%	57.68
3	Efficiency/benefits decrease by 20%	13.41%	37.26
4	High capital costs increase and traffic decreases by 20%	11.76%	(-)7.17
5	Project delayed by one year	15.11%	73.57

17. In addition, the switching analysis was also conducted to further analyze the sensitivity of EIRR and NPV to key project parameters and to identify the switching values which will turn the EIRR of the project to below the hurdle rate of 12 percent and render the project not economically viable. The results of the switching values are provided in the table below.

Table 10: Switching Values of Key Parameters

	Parameter Impact on EIRR	Switching Value
1	Base Case Evaluation (Base Case)	15.59%
2	Switching Value -Cost	46.00%
3	Switching Value -Benefit	31.00%

Annex 4: Sovereign Credit Fact Sheet

A. Recent Economic Development

Bangladesh is a lower-middle-income country with per capita income of USD1,480 in 2017. Its export-led growth over the last two decades has been supported by an abundance of low-cost labor, an increase in female labor force participation and productivity gains from a shift from agriculture to manufacturing. It registered robust growth, averaging 6.5 percent per annum during 2011-2016. Real GDP growth in FY2017 accelerated to 7.3 percent from 7.1 percent in FY2016, led by strong private consumption and investment. Headline inflation picked up slightly toward the end of the fiscal year with higher food prices caused by flood-related disruption in agricultural harvest. The current account balance turned into a deficit due to slower export growth, higher imports and decline in remittances.

B. Economic Indicators

Table 11: Selected Macroeconomic Economic Indicators (FY2015-2020)

conomic Indicators	FY15	FY16	FY17	FY18*	FY19*	FY20*
ional income and prices (% change)						
Real GDP growth		7.1	7.3	7.0	7.0	7.0
PI inflation (% change, average)		5.9	5.4	5.9	6.0	6.0
Central government operations (% of GDP)						
Overall balance (including grants)		-3.4	-3.3	-4.2	-4.6	-4.3
External debt (% of GDP)	19.5	18.5	18.5	17.5	17.2	17.2
Net external financing need (billion USD)	-0.3	3.4	9.2	17.9	17.8	16.7
Public debt (% of GDP)	33.7	33.3	33.2	34.0	35.2	36.1
Net public financing need (% of GDP)	7.3	6.5	9.2	9.8	8.5	7.2
Money and credit						
Broad money (M2, % annual change)	12.4	16.3	10.9	12.9	--	--
Foreign direct investment inflow (% of GDP)		0.6	0.7	0.7	0.8	0.7
Foreign reserves (months of imports)		7.2	7.0	6.4	5.7	5.2
Current account balance (% of GDP)		1.9	-0.6	-1.8	-2.3	-2.4
Exchange rate (taka/\$, end period)	78.1	78.9	82.65	--	--	--

Note: * denotes projected figures. Source: IMF Country Report No. 18/158, June 2018.

C. Economic Outlook and Risks

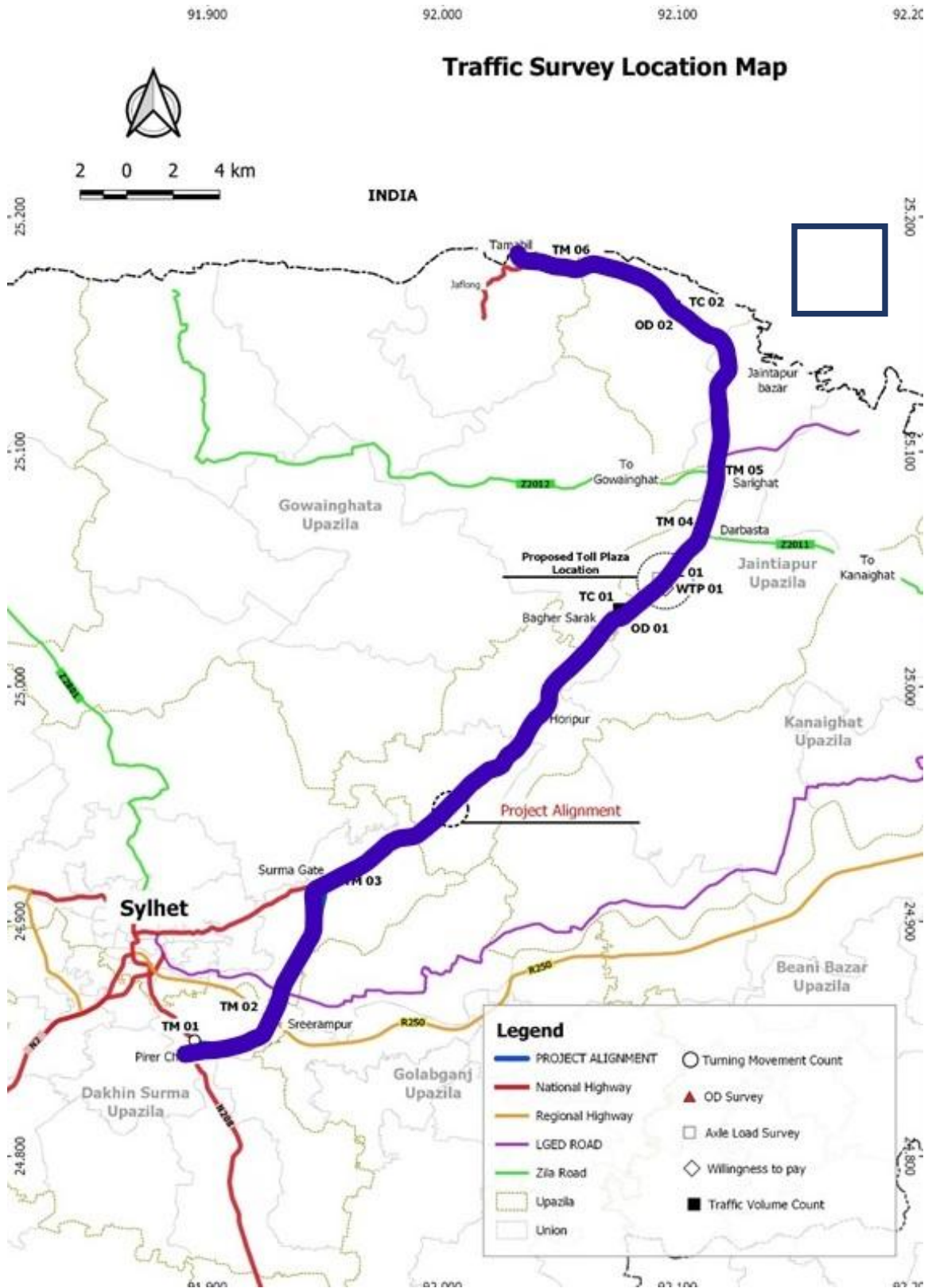
Looking ahead, Bangladesh's GDP growth is projected at around seven percent, driven by strong domestic demand. Inflation is expected to remain below six percent as flood-related pressure on prices of goods eases with the rice harvest recovery. The current account deficit is projected to widen to around two percent with stronger import demand for food, industrial raw materials and capital machinery, while remittances and exports start to recover. In the near-term, the main downside risks include the impact from global trade downturn, the Rohingya refugee crisis and a resumption of political unrest in the run up to the December elections.

Bangladesh's risks of external debt distress and overall debt distress continue to be assessed as "low." The external debt-to-GDP ratio is projected to remain stable around 18 percent in the medium term. Public debt-to-GDP ratio is expected to increase from 33.2 percent in FY2017 to 39 percent in FY2023, before trending down over the long term. It remains well within the benchmark value under the baseline and for all standard stress tests.³⁴

³⁴ International Monetary Fund (IMF), 2018 Country Report No.18/158 2018 Article IV consultation—Press release; staff report; and statement by the executive director for Bangladesh, June 2018.

Annex 5: Maps of the Project Area

Figure 2: Project Location



Annex 6: Implementation Support Plan

1. The Implementation Support Plan is prepared based on the nature of activities involved in the project and the commensurate risk profile in accordance with the risk assessment. The plan aims for: (a) monitoring and evaluating results on the ground (b) facilitating the timely implementation of the risk management measures identified in the project, and (c) providing the necessary technical advice to the implementing agencies to build capacity. The Implementation Support Plan is also a live document and will be reviewed regularly and revised as required during the implementation stage.

2. The project risks identified include one “high” risk, namely “environmental and social” related to land acquisition and resettlement and several medium-level risks, namely (a) quality of construction works and designs, (b) security (for Bank team travels), (c) fiduciary and (d) institutional capacity risks. The AIIB mission will take the following measures to address the risks:
 - a. Increase the number of implementation support missions and technical visits from twice a year to four times a year.
 - b. Carry out more in-depth quality auditing activities in the missions or visits.
 - c. Monitor and supervise the client safeguard and GRM systems and address any complaints directly addressed to AIIB.
 - d. Provide hands-on support for safeguards, procurement and financial management.

3. Table below shows the proposed resources required for implementation support activities. Generally, the AIIB project team will carry out implementation support missions based on the risks identified and the time which the risks are like to occur. It is expected that, implementation support missions may have to be arranged every quarter in the first year. Aside from the client’s efforts to enhance institutional capacity on quality auditing under Component D, it is important for AIIB to arrange quality checks in all missions. Works on safeguards, especially land acquisition and resettlements, are concentrated at the beginning of the implementation. Handholding support on procurement and FM are also essential at the initial stage of implementation; and similar support for operation and maintenance will be arranged towards the last two years of the project.

4. It is anticipated that local consultants may be necessary to support several key tasks to utilize their significant advantage of local knowledge and site assessment. But such cost will not add in extra expenditure of implementation support mission.

Table 12: Proposed Resource for Implementation Support Enhancement

Time	Focus	Skills Needed	Resources (man weeks)
0 – 12 months	<p><u>Project management and Technical aspects:</u></p> <ul style="list-style-type: none"> • Finalizing baseline surveys; • Monitoring and supporting the client to set up of the quality assurance mechanism and its implementation • Assigning local quality assurance consultant to provide independent inspection report • Providing technical support for Dhaka Inner Circular Road studies, especially traffic modelling and analysis, and preferred route selection. (including refinement of TOR) • Monitoring of agreed actions linked to institutional development, Financial management, procurement, governance, social and environmental; • Monitoring of resource flow, and counterpart budgeting; <p><u>Safeguards</u></p> <ul style="list-style-type: none"> • Monitoring the progress of land acquisition and resettlement; • Supervising agree actions settled in resettlement action plan; • Inspecting the compliance of AIIB's environmental and social policies; <p><u>Fiduciary:</u></p> <ul style="list-style-type: none"> • Supervising the procurement and financial management activities; • Providing handholding supports for any procurement and contract management issues 	<ul style="list-style-type: none"> • Task leadership • Economic data analysis • Road and bridge engineering (to review any changes) • Traffic modelling/planning • Quality assurance • Social • Environmental • Financial management • Procurement 	<p>Team leader: 1 staff, 2 missions and 2 tech visits, 8 staff weeks; (2 weeks per mission/visit)</p> <p>Technical: 2 - 3 staff, 4 missions/visits, 16 - 24 staff weeks;</p> <p>Environmental and social: 2 staff, 3 missions/visits, 12 staff weeks</p> <p>Procurement: 1 staff, 3 missions/visits, 6 staff weeks;</p> <p>FM: 1 staff, 2 missions, 4 staff weeks</p>

Time	Focus	Skills Needed	Resources (man weeks)
12 – 48 months	<p><i>Project management and Technical aspects:</i></p> <ul style="list-style-type: none"> • Monitoring the performance of the quality assurance mechanism • Assigning local quality assurance consultant to provide independent inspection reports • Monitoring of agreed actions linked to institutional development, Financial management, procurement, governance, social and environmental; • Monitoring the process of hand over from construction to maintenance stage. • Training to RHD local staff on output based contract <p><i>Safeguards</i></p> <ul style="list-style-type: none"> • Supervising GRM system performance; • Inspecting the compliance of AIIB's environmental and social policies; <p><i>Fiduciary.</i></p> <ul style="list-style-type: none"> • Supervising the procurement and financial management activities; • Providing handholding supports for any procurement and contract management issues 	<ul style="list-style-type: none"> • Task leadership • Road and bridge engineering (to review any changes) • Quality assurance • Output based contracting • Social • Environmental • Financial management • Procurement • 	<p>Team leader, 1 staff, 4 missions/visits per year, 8 staff weeks*3 years= 24 staff weeks;</p> <p>Technical: 1 - 2 staff, 3 missions/visits per year, 6 - 12 staff weeks*3 years = 18 – 36 staff weeks;</p> <p>Environmental and social. 2 staff, 2 missions per year, 8 staff weeks *3 = 24 staff weeks</p> <p>Procurement. 1 staff, 2 missions per year, 4 staff weeks *3 years = 12 staff weeks;</p> <p>FM: 1 staff, 2 missions per year, 4 staff weeks *3 years = 12 staff weeks;</p>

Time	Focus	Skills Needed	Resources (man weeks)
48 – 60 months	<p><i>Project management and Technical aspects:</i></p> <ul style="list-style-type: none"> • Carrying out project completion studies (on major highway construction works only); • Supporting the client to carry out its own post evaluation; • Setting up and Monitoring the performance of the quality assurance mechanism for output-based contract. • Monitoring of agreed actions linked to institutional development, Financial management, procurement, governance, social and environmental; <p><u>Safeguards</u></p> <ul style="list-style-type: none"> • Inspecting the compliance of AIIB’s environmental and social policies for O&M works; <p><i>Fiduciary:</i></p> <ul style="list-style-type: none"> • Supervising the procurement and financial management activities; • Providing handholding supports for any output-based contract management issues 	<ul style="list-style-type: none"> • Task leadership • Post evaluation • Road and bridge designs (to review any changes) • Quality assurance • Output-based contract training and timely guidance <ul style="list-style-type: none"> • Social • Environmental • Financial management • Procurement 	<p>Team leader, 1 staff, 2 missions, 4 staff weeks per year *2 years = 8 staff weeks;</p> <p>Technical: 1 - 2 staff, 2 missions per year, 4 - 8 staff weeks; *2 years = 8 - 16 staff weeks</p> <p>Environmental and social: 2 staff, 1 mission per year, 4 staff weeks, * 2 years = 8 staff weeks.</p> <p>Procurement: 1 staff, 2 missions, 4 staff weeks; * 2 years = 8 staff weeks;</p> <p>FM: 1 staff, 1 mission, 2 staff weeks, * 2 years = 4 staff weeks</p>