



Western Economic Corridor and Regional Enhancement Program (WeCARE)

Environmental and Social Impact Assessment (ESIA)

Jashore-Jhenaidah Road Corridor

Prepared For

Roads & Highways Department (RHD)

Prepared By



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ABBREVIATIONS AND ACRONYMS

ADB Asian Development Bank

BBS Bangladesh Bureau of Statistics

BCAS Bangladesh Centre for Advance Studies

BCR Building Construction Rules

BECA Bangladesh Environmental Conservation Act

BRTA Bangladesh Road Transport Authority

BECR Bangladesh Environmental Conservation Rules

BOD Biological Oxygen Demand

BOQ Bill of Quantity

BWDB Bangladesh Water Development Board

CITES Convention on International Trade of Endangered Species

COD Chemical Oxygen Demand

CPR Community Property Resources

DCs Deputy Commissioners

DGWT Deep Ground Water Table

DO Dissolve Oxygen

DoE Department of Environment

EA Environmental Assessment

EC Executive Committee

ECC Environmental Clearance Certificate

EIA Environmental Impact Assessment

EMP Environmental Management Plan

ESCP Environmental and Social Commitment Plan
ESMP Environmental and Social Management Plan

ESF Environmental and Social Framework
ESSs Environmental and Social Standards
FAO Food and Agriculture Organization

FD Forest Department
GHG Greenhouse Gas

GIS Geographical Information System

GOB Government of Bangladesh

GRC Grievance Redress Committee
GRM Grievance redress mechanism

GW Groundwater

HFL Highest Flood Level

IEE Initial Environmental Examination

IECs Important Environment Components

LGED Local Government Engineering Department

LGRD &C Local Government Rural Development and Cooperative

MOA Ministry of Agriculture

Mortb Ministry of Road Transport & Bridges

MOEFCC Ministry of Environment, Forest and Climate Change

NCS National Conservation Strategy
NEC National Environmental Council
NEP National Environmental Policy

NEMAP National Environmental Management Action Plan

NGO Non-Governmental Organization

NO_X Oxides of Nitogen

PAPs Project Affected Persons

PIU Project Implementation Unit

PM Prime Minister

PM Particulate Matter

PMMU Project Monitoring and Implementation Unit

PPEs Personal Protection Equipment
RHD Roads and Highways Department

RoW Right of Way

SAFTA South Asian Free Trade Area

SCR South Central Region
SWR South- West Region

SGWT Shallow Ground Water T able

SO_x Oxides of Sulphur

SPM Suspended Particulate Matter

TA Technical Assistant
TDS Total Dissolve Solids

TSS Terms of Reference

ToR Total Suspended Solids

USDA United States Department of Agriculture

WARPO Water Resources Planning Organization

WB World Bank

WMP Waste Management Plan

EXECUTIVE SUMMARY

1.0 Project Description

1. Road transport accounts for 70 percent for passenger and 60 percent for freight traffic in Bangladesh. The total road network size of the country is roughly 375,000 km (road density of roughly 250 km per 100 km2), reflecting the progress in improving connectivity access. The rural road network makes up 94 percent of the network, and Bangladesh has one of the highest scores on the Rural Access Index. Yet, despite improvements in access, the overall quality of the road network remains poor. Only 27 percent of the rural roads and 40 percent of the main roads are paved, half of which are in good condition. Currently, most inter-district roads and highways do not conform to the standards of the Asian Highway norms. To improve the condition of the Jhenaidah to Jashore road, the Government of Bangladesh (GoB) has requested the World Bank to finance the upgradation of the existing 2-lane highway to a 4-lane road through the WeCARE project. The total length of the road is approximately 48.7 km. This road connects Natore, Pabna, Kushtia districts to Jashore, Khulna and Satkhira districts.

2.0 <u>Description of the Jhenaidah-Jashore Route</u>

- 2. The Jhenaidah Jashore road begins at Al-Hera Mor in Jhenaidah and continues till Murali Mor, Jashore (48.7km approx.). The route connects with the existing N7 national highway heading in a westerly direction through Magura and on to Jhenaidah before turning south to Jashore and finally south-east to Khulna. These districts are connected by roads, railway, and river launches (passenger and cargo). The nearest airport is situated at Jashore (within 5 km distance from the starting point). The horizontal alignment of the existing road is open and free-flowing; however, there are constrictions to the alignment in a number of areas. During the field visit, several structures were observed on both sides of the highway corridor. Examples of the observed structure include but not limited to schools, colleges, medical facilities, mills and factories, a portion of the Jashore cantonment, bazaars, cell phone towers, business and government-owned structures.
- 3. The road is situated close to the railway track, and this feature presents a number of challenges. The road and railway track run parallel to each other (in some locations) and the J-J road bypasses the railway line at a number of locations. Agricultural lands and trees were observed on both sides of the roads. Moreover, the J-J road is joined by various small and semi-paved road originating from nearby villages, and unions. While the road is mostly smooth, however, there are a number of locations (8-10) where the state of the road can be considered risky. This road is usually frequented by bus, trucks, cars and motorcycles, and locally improvised four and three wheelers (nasimun and karimun). The presence of smaller vehicles often leads to accidents on this route. Shalabhara part of the J-J road is infamous for the number of accidents observed per year. Temporary markets are set up on a regular basis in different places of the roadside that exacerbate the risks of accidents.
- 4. Currently, the width of the existing road is approximately 7.5 to 8 meters. Upgrading the 2-lane highway into a four-lane highway may require an increase in the RoW to approximately 50 to 60 meter in rural areas and 30 to 40 meter in urban areas. In some sections, the present RoW and its adjacent RHD lands in shoulders are sufficient for widening the road; however, this is not the case for the entire road, and hence land acquisition will be required. Land acquisition and civil works are likely to trigger involuntary physical (loss of agricultural and homestead land) and economic displacement (loss of income, business structures) and may cause environmental degradation through loss of trees along

the ROW, including very old trees, changes to local drainage patterns and health and safety of workers and communities.



Figure ES-0.1: Project Location Map

5. The total number of bridges and culverts in the nearby area is 220, of which 2 (two) road bridges, 1 rail over bridge and 8 (eight) rail overpasses, and 187 are culverts are over 100 meters long. Roadside drainage shall also be required at a number of locations where the road passes through markets and local markets (bazaars).

3.0 Purpose and Scope of ESIA

6. An Environmental and Social Impact Assessment (ESIA) of the project is required to assess the environmental and social risks and impacts of the upgradation of Jashore-Jhenaidah Road from 2-lane to 4-lane road and to develop measures based on mitigation hierarchy to manage environmental and social risks and impacts. RHD prepared an EIA in 2015 for the same road section. The EIA has been updated through this ESIA to ensure that the present ground reality is accounted for and the

requirements of the World Bank's ESF are met. Thus. This ESIA is based on a preliminary design prepared for Jashore-Jhenaidah Road by ADB and is prepared in accordance with the World Bank Environmental and Social Framework (ESF) and its relevant Environmental and Social Standards (ESSs) as well as with the Government of Bangladesh's Environmental Conservation Rules 1997, EIA Guidelines 1997 and other relevant laws and policies. This ESIA will be updated and finalized based on the detailed engineering design of Jashore-Jhenaidah Road, which will be undertaken after World Bank Board approval of the project.

- 7. The scope of the updated ESIA report describes the following most important features:
 - i. A general description of the project and existing physical, biological and socio-economic conditions;
 - ii. Analysis of different alternatives to the project in terms of environmental and social perspectives; identification and assessment of the potential risks and impacts on the natural and human environment in the project area, from the construction of the project;
 - iii. Consultation with the locals/stakeholder involving concerned people in order to identify and act on any undocumented or perceived environmental issues and;
 - iv. Identification of mitigation measures in the form of an Environmental and Social Management Plan (ESMP).

4.0 Legal and Institutional Framework

8. The ESIA presents a review of the existing laws and policies related to the environmental and social dimensions of the Jashore-Jhenaidah road corridor project. Along with providing a summary of the relevant GoB laws and policies, it presents the World Bank's Environmental and Social Standards (ESS). Gaps between the relevant government laws and World bank ESS are also presented along with remedial measures to address the gaps.

5.0 Environment and Social Baseline

- 9. The baseline conditions of environmental quality at the project site and the preliminary road design serve as the basis for identifying, predicting and assessing impacts. The Baseline environmental quality is assessed through field studies within the RoW for the different components of the environment, viz. Air, noise, water, land, socio-economic, etc. along with the project activities.
- 10. The project area (Jashore to Jhenaidah road) corridor is located in the south-western region of the country. Though far less than half of Bangladesh is in the tropics, the influence of the Himalayan Mountain Range has created a tropical macroclimate over most of East Bengal's landmass.
- 11. In Jashore, the average wind speed ranges from 5 to 19 km/h during most of the months in a given year. In the project location, the extremes of the zones to the north are somewhat tempered in the south-west zone. Rainfall varies from 1,500 mm to 1,800 mm. The mean highest possible summer temperature is less than 35 ° C. The general topography of the project area comprises of floodplains in the majority of the road and terraces. The topography of the project area slopes from north to south with elevation ranged from 15 m a.m.s.l to 11 m a.m.s.l. The project road alignment area lies mostly in the north-western and south-western part of the country and depends on the Ganges River for freshwater supply. The entire road alignment runs through Ganges Floodplain physiographic unit.

The general soil types of the project road area predominantly include the Calcareous Alluvium, and Calcareous Dark Grey Floodplain soils and Calcareous Brown Floodplain soils. The quality of the local soil was identified to characterize the baseline status. During the survey period, soil samples were collected from the possible 2 locations. The samples were sent to the laboratory of Dhaka University.

- 12. The project road alignment crosses Bhairab River, Chitra River, Begobati River at several locations. There are also significant numbers of beels (stagnant water body) and canals in and around the project locations. Besides, there are numerous ponds and ditches available in the project area. The surface water quality assessment in the project influence area has been carried out for the most critical parameters. The sampling was undertaken from the rivers of the proposed bridge locations (Bhairab River, Begobati river, Bishkhali River, Chitra River) during the field survey. From quality test report, it has been anticipated that the maximum parameter is complied with the national standard except for a few parameters. The deep groundwater table (DGWT) in terrace land (Project area) fluctuates between 15.0m and 20.0m during the dry season and reaches to the surface during the rainy season. Groundwater in terrace lands is over exploited due to domestic, industrial and agricultural uses and the draw down is near to 7.0m during the dry season.
- 13. As per the seismic zone classifications, project road falls in zone III means low seismic intensity. The project area does not fall under the risk zone of the cyclone. The drainage of the surrounding areas is mostly dependent on the water levels of the peripheral rivers. Therefore, the project area is risk free from cyclone and flood hazard.
- 14. Air pollution is localized and comparatively moderate in the project corridor. Air pollution in the project area is from road dust, black smoke from diesel engines, construction dust, windblown dust from agricultural lands, domestic heating and cooking, and transportations.
- 15. According to World Health Organization's Guidelines for Community Noise (1999), daily sound pressure levels of 50 decibels (dB) or above can create discomfort amongst humans, while ongoing exposure to sound pressure levels over 85 dB is usually considered the critical level for temporary hearing damage. The vibration level of the surroundings of the project area is insignificant. However, there is a negligible vibration level from the traffic movement on the nearby road.
- 16. The project is located on flat land with mixed vegetation and has a low chance of being inundated. Crops, vegetables are cultivated at the surrounding mainly include rice, wheat, tobacco, corn, nut, rabi (winter) crops and variety of homestead vegetables. Different types of aquatic flora species were recorded along the project roadside. The ponds and burrow pits within RoW are presently used for fish culture or fish stocking. There is no natural stream or wetland within the RoW, so upgrading the 4-lane will not impact local or regional hydrology. There are hardly any physical structures and/or cultural heritage sites along the highway or within 5.0 km of the route. Marjat Baor is an ecologically critical area situated in the Kaliganj Upazila of Jhenaidah, which is more than 5 km away from the project site. So, there is no environmental sensitive location within a 5 km radius of the project influenced area.
- 17. A Social Survey was carried out in the project intervention areas to create a profile of the socio-economic features of the communities. The survey team interviewed 200 households (HHs) across Jashore and Jhenaidah. Out of the 200 surveyed HHs, 55 HHs are located in Jashore while 145 HHs are located in Jhenaidah. The average age of each HH is approximately 31.17. Education status indicates

that 22 percent of individuals are regularly attending school. Around 10.14 percent of the surveyed individuals are currently involved in NGO run microcredit programs. Fourteen percent of HH are sharecropper. About, 67.35 percent report that then the land they own is in the same district and near their house. The average value of land owned by HH is BDT1284793 (USD15,000), and 393 individuals residing in the surveyed HH owns land. About 60.5 percent of HH live in homestead owned by themselves. The current mean value of HH assets is BDT 16,902 (USD 200). The respondents strongly suggested that there is no restriction in the project area related to land use. Only 2.5 of respondents have reported restrictions, and this restriction is linked to people owning land. Close to 80 percent of the surveyed HH expected that the project would benefit the entire community, followed by transport related entrepreneurs.

18. The respondents expect no negative impact as a result of labor influx since migrant labor will live in separate camps and their movement will be restricted. Around 65 percent of HH reports that the market will be affected and another 13.5 percent of HH expect schools and madrasas might be impacted as a result of the project. The HH perception of women's status and rights are captured by 16 questions in the survey. Broadly the results indicate that women are discriminated against in the surveyed regions.

6.0 Vulnerable Groups

19. The social analysis carried out thus far has indicated the presence of a number of vulnerable HHs based on age, income, disability and self-reported food status. The approximate Bangladesh poverty line is Tk5000 / month (equivalent to US\$2/person/day). Keeping in mind the challenges faced by the poverty line measure, the ESIA finds that there 34 HH who earn less than or equal to BDT5000 and hence can be categorized as vulnerable. Income data also shows that there are 210 individuals in the surveyed HH who earn less than or equal to BDT 5000 a month may become vulnerable due the project depending on the transaction cost that might be incurred during the various phases of the project .(e.g. of transaction cost may include: additional travelling cost, opportunity cost of lost income, inability to find similar jobs in the local labor market etc.). Close to 16 percent of the HH faced some degree of food shortage. The survey has identified 68 individuals whose age is higher than 60 years and the project may impact them disproportionately. Moreover, 12 individuals suffering from a disability has also been identified. Acquisition of land may also cause some individuals to lose a significant proportion of land (10 percent) and make these individuals or HH vulnerable as a result of the project. However, "vulnerability" as a result of land acquisition will become apparent closer to census survey before the RAP is designed.

7.0 Analysis of Alternatives

- 20. A major infrastructure project has the potential to transform regions and their economic outlook. However, it also has the potential to impart negative externalities on the locality. In accordance with the principle of avoid, minimize or mitigate this ESIA considered a number of alternatives in project design along with carrying out analysis on the no project scenario. The three options that have been considered in the preliminary design are as follows:
 - Widening of RoW to allow 4 lanes and any necessary junctions with the demolition of commercial areas: during construction this would impose a negative impact on the economic

- health of the area and may cause significant physical displacement. It would also worsen the road safety for pedestrians, and other road users.
- Bypass: This alternative will negatively affect agricultural land and farmers. It should only be considered for larger centers. The health of the existing commercial area may be adversely affected by the loss of trade due to the establishment of the bypass;
- Flyover (elevated road): This may have advantages over widening the RoW, which will require
 extensive land acquisition and resettlement. However, it would reduce the environmental
 quality of the land and building below the flyover and may still require some land acquisition
 and resettlement.
- 21. The present alignment between Jashore and Jhenaidah will require numerous short distance realignments to be straightened in order to ensure that the designed alignment is in accordance with the RHD standards. The selection of these minor realignments has ensured a minimum negative impact on the local environment and built environment; and reduced the need for more land acquisition and resettlement. There are a total of 10 diversions or minor diversions to straighten the alignment or to improve approaches to new or existing bridges.

7.1 No Project Scenario

22. Given the transformative implications of the project, the no build alternative is perhaps not an acceptable option. An infrastructure project in terms of the scale of the proposed project is likely to have some negative impact, however, installing robust environmental and social measures will ensure that the negative impacts of the project are minimized and affected HHs can be at least at the same level in socio-economic terms if not in a better position. Therefore, at the margin, the cumulative benefits of the project significantly outweigh the costs.

8.0 Anticipated Environmental and Social Impacts and Mitigation Measures

23. The project's likely environmental and social risks and impacts by each relevant standard have been assessed based on the current design and measures to mitigate them have been proposed.

8.1 E&S risks and impacts on Disadvantaged and Vulnerable persons

24. Project shall define a vulnerable person in terms of various criteria including female headed HH, physically challenged individual, income of less than BDT5000 per month, widows, and individuals above the age of 60 years irrespective of whether they are titled land owners. Vulnerable groups would also include those farmers who (after the acquisition of land) become small/marginal farmers and also qualify for inclusion due to income equal to or less than BDT 5000. Needs and concerns of the local people including the disadvantaged groups like physically challenged people were considered. As mentioned earlier, the social survey has identified a number of vulnerable people in the area. The project will ensure individual and HH level special economic package for vulnerable groups and individuals as additional assistances as part of R&R measures. In addition, provision of public amenities like toilets, drinking water provision of streetlight in settlement areas, road safety during construction particularly at socially sensitive locations such as hospitals, schools, etc. will consider access of differently able people.

25. Positive cumulative impacts of the project are expected to outweigh any negative cumulative impacts. With no new capital investment in the road, the Jashore-Jhenaidah road would have to undergo the challenges of all future traffic flows, which are expected to increase given the envisaged future development in the area. This would create a significant environmental and social disturbance on the existing communities residing along the present alignment. There would be sharp increases in noise and vibration and air pollution. Not implementing the project will also have social implications. Road users, local communities and pedestrians would have to contend with an increased level of health and safety risks as a result of higher traffic flow. Crossing the road would become more hazardous and the roadside communities would be physically segregated between the different sides of the road. Traffic congestion would increase, and the economic cost of traffic jams is likely to impose a negative externality on the local economy. Overall the quality of the environment and social conditions would deteriorate along the road corridor in the no project scenario. With the project, road conditions will improve, health and safety will also improve with separation of Slow-Moving Vehicle Traffic (SMVT) from fast moving vehicles and the implementation of safety design features of the road, including imposition of traffic speed limits and signages. There will also be reduction in travel time and trading of goods is expected to increase and be made more efficient. A Regional Environmental and Social Assessment that includes a detailed Cumulative Impact Assessment will be carried out in the Western Corridor of Bangladesh during the implementation of the project.

8.2 E&S risks on labor and working conditions

26. RHD shall contract agencies to undertake civil works, agencies/firms to support core-functions; primary suppliers of material/equipment and other implementation support partners. The various categories of project workers include: Direct workers, Contracted workers (including Migrant Workers) Primary supplier workers (those providing goods and materials, e.g. IT services, security services outsourced through by the contractor); **Risks include**: employment of child labor, non-payment of wages by employer; non-payment of benefits (compensation, bonus, maternity benefits etc.) by employer; discrimination in employment (e.g. abrupt termination of the employment, working conditions, wages or benefits etc.); possibility of gender based violence as the road shall traverse through sensitive locations such as hospitals, schools, etc. that are near to habitations; health risks of labor relating to HIV/AIDS and other sexually transmitted diseases.

8.3 E&S risks relating to resource efficiency and pollution prevention

27. The assessment of impacts and risks due to road constructions has considered a settlement, nearby infrastructure, drainage pattern of the area, water bodies, roadside trees/plantation, erosion prone locations, sensitive receptors of air, water, noise and soil quality etc. In addition, natural calamity like landslide, earthquake and flooding were also considered during assessment due to the location of road in such sensitive geography. The main impacts include air pollution due to dust emission and noise pollution along with potential water pollution if remedial measures are not ensured.

8.4 E&S risks and impacts relating to Community Health and Safety

28. The road will act as a haul road for transporting construction materials will cause a nuisance to local road users (road users and pedestrians). **Risks include**: i) road excavation, use of vibratory equipment,

construction debris handling and disposal etc. during construction; ii) high likelihood of direct exposure to increased construction related traffic related accident especially at road sections traversing settlement area with limited carriageway/roadway width, and sensitive receptors such as schools, religious place, health center/hospitals; iii) high dust levels from earthworks, high noise and emission level from traffic congestion and idling of vehicles; iv)) influx of migrant workers could potentially cause local unease or potential conflicts with local people v) possibility of involving child labor.

8.5 E&S risks and impacts on land & assets

29. The nature of the intervention is linear and will require land acquisition. In total 106.29 and 148 hectares of land will need to be acquired respectively from Jhenaidah and Jashore for the Jashore-Jhenaidah part of the project. Land acquisition will lead to loss of land for both title and non-title holders and cause disruption in income and livelihood streams for individual and groups of people. During the construction stage, land acquisition is anticipated to be required to establish construction camps, material stock yards, hot mix plants and machinery for road expansion. These land requirements will be fulfilled through using the encumbrance free government land adjacent to the road or by taking the land on lease from the willing parties or purchasing private lands. With the development of the road, avenues for economic activities and opportunities will be created. The RAP and entitlement matrix will be prepared. In managing lack acquisitions and involuntary land resettlement, relevant stakeholders will be consulted and engaged as proposed in the Stakeholder Engagement Plan. In addition, in cases of impacts on livelihood, rehabilitation through appropriate skill training/financial counselling would be required. Finally, concerns and needs of vulnerable groups will be addressed through a mix of measures that includes additional assistances as part of R&R measures.

8.6 E&S risks linked to Cultural Heritage

30. The alignment of the project road does not have any cultural heritage; thus, the project is not expected to affect cultural heritage. There will some madrasah and graves that will be physically affected and they will be relocated and included in the RAP. A chance find procedures will be incorporated in the ESMP, and a chance find clause will be incorporated in work contracts with contractors.

8.7 E & S risks linked to Biodiversity

- 31. <u>Impact on Flora</u>: The site clearance activities for road construction will involve the removal of roadside vegetation and felling of trees. The results of the baseline survey indicate that the project corridor is relatively less diverse due to human intervention. Ecological investigations have indicated the absence of any environmentally-sensitive habitats or ecosystems; there are also no rare, endangered and threatened species within the corridor.
- 32. <u>Impacts on Fauna:</u> There is no National Park or wildlife sanctuary with in 10km from the project corridor. The biodiversity investigation along the project corridor has not indicated the presence of Monitor Lizard (*Varanus bengalensis*) and common peafowl (*Pavo cristatus*) comes under Schedule-I (part-II) category of Wildlife Protection Act, 1972. The habitats and ecosystems in the project area support various types of animals as given in Table 6.19.

9.0 Information Disclosure, Consultation and Participation

33. It will be essential to continue the consultation process to ensure that the community remains supportive and that they are fully informed of progress, particularly before and during the construction period. During the ESIA stage, household survey and FGDs were conducted to collect relevant data and inform the communities about the project. Environmental consultations were held at (eight locations along the proposed alignment of the project. All attendants at the meetings welcomed the improvement of the road and hoped that implementation would proceed as early as possible

10.0 Environmental and Social Management Plan (ESMP)

34. An ESMP has been designed to mitigate the Project's environmental and social risks and impacts. It includes mitigation measures, capacity building, responsibilities and reporting system and budget. In addition, the ESMP provide measures to address GBV issue at the project level. A separate Resettlement Action Plan will be prepared during the detailed design phase when the final alignment and detailed design are completed to address any land acquisition and physical and economic displacement related to involuntary land take. The ESMP obligates the contractor, prior to mobilization, to prepare the C-ESMP, which shall be approved prior to the commencement of construction activities. The Contractor's CESMP shall include OHS plan, Water and Waste Management Plan, Influx management Plan, Workers camp management plan, CHS Plan, Traffic management and road safety management Plan, borrow area management plan, and Site restoration Plan among others in accordance with the GoB and WBs standards and guidelines. All such plans will be reviewed and approved by the PIU and RHD prior to commencement of construction works. The approved C-ESMP shall be reviewed periodically (but not less than every six (6) months) and updated in a timely manner. The executing agency for the project is the Roads and Highways Division (RHD). A project implementation unit (PIU) will be established which will be headed by a full-time project manager with support from Environmental Specialist, Social Development Specialist and Health and Safety Specialist. The Environmental and Social Circle of RHD will also be supported and strengthened under the project. Environmental and social specialists will be a part of the CSC to monitor the ESMP implementation and ensure compliance with both WB and Government of Bangladesh requirements.

11.0 Grievance Redress Mechanism

35. A GRM will be established to receive, evaluate and facilitate the resolution of affected people's concerns, complaints, and grievances. The GRM aims to provide a time bound and transparent mechanism to voice out and resolve social and environmental concerns linked to the project.