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DEVELOPMENT PLAN FOR BENAPOLE-JESSORE HIGHWAY CORRIDOR

June, 2017

**Urban Development Directorate
Ministry of Housing and Public Works
Government of the People's Republic of Bangladesh**

Published by



Urban Development Directorate (UDD)
Ministry of Housing and Public Works
Government of the People's Republic of Bangladesh

First Edition

December 2017

Price

Taka 3000.00

US\$ 90.00

Printed by

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অতিরিক্ত সংখ্যা
কর্তৃপক্ষ কর্তৃক প্রকাশিত

___ বার, মে ___, ২০১৮

গণপ্রজাতন্ত্রী বাংলাদেশ সরকার
গৃহায়ন ও গণপূর্ত মন্ত্রণালয়
পরিকল্পনা শাখা-৩
প্রজ্ঞাপন

তারিখ, ___ বৈশাখ ___ বঙ্গাব্দ/___ এপ্রিল ২০১৮ খ্রিস্টাব্দ

নং গৃগম/পরি-৩/১৩/___ (অংশ-২)/___ গণপ্রজাতন্ত্রী বাংলাদেশ সরকারের Organizational Set Up, Phase-II, (Departments/Directorates and Other Organizations under them), Volume XV (Ministry of Works), Chapter VI (Urban Development Directorates, June 1983 এর Allocation of Functions এর ক্ষমতাবলে সরকার বেনাপোল-যশোর হাইওয়ে করিডোর এলাকার জন্য নতুন Master Plan এলাকা নির্ধারণ এবং অত্র এলাকাধীন প্রণীত Master Plan (Structure Plan, Urban Area Plan and Action Area Plan) যথাযথ প্রক্রিয়া অনুসরণ করিয়া অনুমোদন করিয়াছেন।

অতএব, সরকার অত্র প্রজ্ঞাপন দ্বারা বেনাপোল-যশোর হাইওয়ে করিডোর এলাকার জন্য নতুন Master Plan (Structure Plan, Urban Area Plan and Action Area Plan) এর অনুমোদনের বিষয়টি অনুমোদিত Master Plan সহ সংশ্লিষ্ট সকলের অবগতির জন্য প্রকাশ করিল।

বিশেষ দৃষ্টব্য : অনুমোদিত মাস্টার প্ল্যান ও প্রতিবেদনের কপি নগর উন্নয়ন অধিদপ্তর, ঢাকা প্রধান কার্যালয় ও খুলনা আঞ্চলিক অফিস এবং যশোর জেলা প্রশাসকের কার্যালয়ে জনসাধারণের পরিদর্শনের সুবিধার্থে সংরক্ষিত থাকিবে।

রাষ্ট্রপতির আদেশক্রমে

মোঃ নজরুল ইসলাম
সিনিয়র সহকারী প্রধান

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Abbreviations and Acronyms

ADP	: Annual Development Programme
Approx.	: Approximately
BDT	: Bangladesh Taka
BBS	: Bangladesh Bureau of Statistics
BIT	: Bangladesh Institute of Technology
BM	: Bench Mark
BNBC	: Bangladesh National Building Code
BNSB	: Bangladesh National Society for the Blind
BR	: Bangladesh Railway
BRTA	: Bangladesh Road Transport Authority
BSCIC	: Bangladesh Small and Cottage Industries Corporation
BTCL	: Bangladesh Tele-communication Company Limited
BTM	: Bangladesh Transverse Mercator
BWDB	: Bangladesh Water Development Board
CBO	: Community Based Organization
cm	: Centimeter
DAP	: Detailed Area Plan
DEM	: Digital Elevation Model
DGPS	: Differential Global Positioning System
EIA	: Environmental Impact Assessment
EPZ	: Export Processing Zone
Ft	: Foot
GCP	: Ground Control Point
GDP	: Gross Domestic Product
GNP	: Gross National Product
Ghat	: Nodal point on rivers / canals
GIS	: Geographic Information System
GOB	: Government of Bangladesh
GPS	: Global Positioning System
Ha	: Hectare
HBB	: Herring Bone Bond
HBFC	: House Building Finance Corporation
HCO ₃	: Carbonic Acid
HQ	: Headquarters
Km	: Kilometer
Lac	: Hundred Thousand
LPG	: Liquid Petroleum Gas
m ³ /s	: Cubic meter per second
mm	: Millimeter
MSIP	: Multi Sectoral Investment Plan
MSL	: Mean Sea Level
MSP	: Municipal Services Project

MT	: Metric Ton
MW	: Megawatt
NCS	: National Conservation Strategy
NEMAP	: National Environment Management Action Plan
NHA	: National Housing Authority
NGO	: Non-government Organization
NMT	: Non-Motorized Transport
NO ₂	: Nitrogen dioxide
OD	: Origin and Destination
O & M	: Operation & Maintenance
PCE	: Passenger Car Equivalent
PCU	: Passenger Car Unit
PDB	: Power Development Board
PPA	: Population Per Acre
ppb	: Parts per billion
ppm	: Parts Per million
PPP	: Public Private Partnership
ppt	: Parts Per trillion
PRSP	: Poverty Reduction Strategy Paper
PWD	: Public Works Department
RCC	: Reinforced Cement Concrete
RDMS	: Relational Database Management System
REB	: Rural Electrification Board
RHD	: Roads and Highways Department
RL	: Reduced Level
ROW	: Right of Way
RS	: Revenue Survey
RTK-GPS	: Real Time Kinematic Global Positioning System
SFYP	: Sixth Five Year Plan
SME	: Small and Medium Enterprises
SMP	: Suspended Particle Matter
SO ₂	: Sulphur dioxide
SOB	: Survey of Bangladesh
SP	: Structure Plan
SPSS	: Statistical Package for Social Science
Sq. Km.	: Square Kilometer
STOL	: Short Take Off and Landing
SW	: Solid Waste
SWARMP	: Southwest Water Resources Management Project
SWD	: Social Welfare Department
TOR	: Terms of Reference
UDD	: Urban Development Directorate
UP	: Union Parishad

GLOSSARY OF TERMS

- Ancillary Use : A subsidiary use connected to the main use of a building or piece of land.
- Bazaar : Bazaar is a Market Place almost synonym of hat with some advanced facilities in comparison to hat. Generally, in a hat, there may not be any permanent business/trading house, shops. But in a bazaar there are some permanent trading houses, shops and these shops are open every day and buyers and sellers attend the bazaar from morning till late evening.
- Buffer : A zone of user-specified distance around a point, line or area.
- Building Code : Regulations established describing design, building procedures and construction details for new homes or homes undergoing rehabilitation.
- Catchment (Drainage) Area : The area contributing surface water to a point on a drainage or river system, which may be divided in to sub-catchments.
- Climate Change : The slow variations of climatic characteristics over time at a given place. Usually refers to the change of climate which is attributed directly or indirectly to human activity that alters the composition of the global atmosphere and which is, in addition to natural climate variability, observed over comparable periods.
- Community Service : Community service covers a wide range of urban basic services, like, park, play field, eidgah, health and education services.
- Contour : The form of the land. Contour lines are map lines connecting points of the same ground elevation and are used to depict and measure slope and drainage. Spot elevations are points of a specific elevation.
- Contour Interval : Difference in elevation between two successive contour lines. The interval at which contours are drawn on a map depends on the amount of the relief depicted and the scale of the map.
- Coordinates : Pairs of numbers expressing horizontal distances along orthogonal axes, or triplets of numbers measuring horizontal and vertical distances.

- Detailed Area Plan** : Detailed Area Plan is the last tier of the present plan package (Structure Plan, Master /Urban Area Plan and Detailed Area Plan) adopted in Bangladesh which gives detailed development plan of an area at plot to plot level. It also provides a land use zoning plan superimposed on mouza map.
- A detailed area plan is prepared for approximately three to five years, that is, the plan must be implemented during this period. Because, spatial changes in urban areas, particularly, in large cities takes place very rapidly. If the DAP is not implemented within five years it would turn obsolete, and a new plan will have to be prepared to accommodate new changes. So it should be executed as soon as possible.
- A detailed area plan can be both, participatory or non-participatory. Participatory plans are those plans when it is prepared with direct participation of the local people.
- Development Control** : The process whereby a local planning authority decides whether a planning application meets the requirements of planning policy, particularly as set out in development plans.
- The prime function of the Development Control section is to determine planning applications in the public interest, in accordance with planning legislation and the local plan that has been adopted by the plan approving authority.
- Digital Elevation Model- DEM** : The representation of continuous elevation values over a topographic surface by a regular array of z-values, referenced to a common datum. DEMs are typically used to represent terrain relief
- Dispersed Urban development** : Large plots of land situated in the countryside, often Green Belt, in proximity to an urban area and occupied by land uses that are urban in character and depend upon the nearby settlement. These may form the distal or outer advance zone of a fringe belt. They may also form a detached part of an arterial ribbon.
- Drainage Basin** : The area of land that drains water to a common outlet at some point along a stream channel.
- Encroachments** : A structure that extends over the legal property line of other people or public land.
- EIA** : It is a detailed study based on Environmental Assessment (EA) to determine the type and level of effects an existing facility is having, or a proposed project would have, on its natural environment.

Façade	:	Any front of a building given architectural treatment.
Flash Flood	:	A rapid and short-lived increase in the amount of runoff water entering a stream resulting in a flood.
Geographic Information System—GIS	:	A geographic information system merges information in a computer database with spatial coordinates on a digital map.
Global Positioning System-GPS	:	System used to determine latitude, longitude, and elevation anywhere on or above the Earth's surface. This system involves the transmission of radio signals from a number of specialized satellites to a hand held receiving unit. The receiving unit uses triangulation to calculate altitude and spatial position on the Earth's surface.
Ground Water Table	:	Surface of a body of underground water below which the soil or rocks are permanently saturated with water. It also is affected by withdrawing excessive amounts of water from wells or by recharging them artificially.
Growth Centre Market	:	Hats and bazaars are the trading centers of the rural Bangladesh. Considering the importance of their economic role in national economy, government has decided to develop infrastructure facilities of some selected hats and bazaars in every upazila through LGED. The markets which are already provided with such extra infrastructure facilities are called growth center market.
Hat	:	The term 'hat' is very much known to all from time immemorial throughout the country which is a temporary rural market place. In rural Bangladesh farmers and other producers/manufactures used to sit with their surplus products in a suitable place having comparatively better communication system with surrounding villages to exchange these goods. This suitable place is called hat where generally on fixed days sellers and buyers get together and exchange goods and services. This gathering place is developed gradually by the local people at the beginning. The Hat is a rural trading center.
Hazard Area	:	A geographically identifiable area in which a specific hazard presents a potential threat to life and property.

- Hazardous Waste : A solid waste, or combination of solid wastes, which because of its quantity, concentration, or physical, chemical, or infectious characteristics may: 1. cause, or significantly contribute to, an increase in mortality or an increase in serious irreversible or incapacitating reversible serious illness, or 2. pose a substantial presence or potential hazard to human health or the environment when improperly treated, stored, transported, or disposed of, or otherwise managed
- Highway Corridor : A path through which certain types of traffic are permitted or a path enhance the flow of traffic, both commuter and commercial, along this increasingly congested highway system.
- Household : Describes group of people who live in the same house and share food from the same kitchen. Household is similar to a family, except that household members may not have blood relationship.
- Human-made Disaster : A disasters or emergency situation in which the major direct cause or causes are intentional or unintentional human actions that result in civilian populations suffering casualties, loss of property, basic services, and means of livelihood as a result of war, genocide, or civil strife.
- Land Use Zoning : Land use zoning plan can be a single plan or it can be devised as a part of master plan. In land use zoning plan the entire area under planning is sub-divided into suitable use zones according to their potentiality for that particular use. Accordingly planning permits are given to developers. Land use helps a city grow maintaining environmental sanctity ensuring livability.
- Land Hari : Local Leasing System of Land for Shrimp Cultivation.
- Land Development : Re-shaping land to make better use of it. All planned and unplanned development on land is called land development. This term is usually used for housing development in urban areas.
- Line Services : Urban services that are provided in lines, like, water, gas, electricity, drain.
- Local Level Road : Those Roads are provided at local level to give access to houses and other establishments. It is the lowest level of road hierarchy.
- Mahalla : Smallest identified area in municipalities with settlements of homogeneous group of people. For operational convenience statistical mahallas are delineated within wards.

- Master Plan : It is the 2nd tier of the three level urban plans. It is prepare for the main city and its surroundings. Its development proposals are more detailed and prepared in map and report forms. It also contains a land use zoning map.
- Mauza : Mauza is the smallest unit of Land Survey System with a unique number called Jurisdiction List Number (J.L.No).
- Mode of Transport : Four ways are included in the mode of transport. They are Roadway or Highway, Railway, Waterway, and Airway.
- Nasimon : It is a vehicle locally developed by modifying diesel motors used by low lift irrigation pumps mostly used for both passengers and goods for short distance.
- National Highway : Highway is a public road, especially a more major road connecting two or more destinations. National Highways are the primary long-distance roadways. Connect national capital with sate capital, major port towns, border areas etc. Most are maintained by the Government. Connecting the neighboring countries is also called the National Highway.
- Node : Node is a hub or centre of activity where two or more systems intersect. Transportation nodes are points where several transport systems converge.
- O-D Survey : This survey is carried out to collect factual information about desired lanes to provide the most efficient transportation system for the traffic. The purpose of this study is to get the information on the purpose, time, destination and mode of travel.
- On Street Parking : In this system vehicles are parked on the road sides, designed for this purpose. This type of parking is very convenient for the people who could find suitable place to park near the place of their business. It may lead to traffic congestion which may cause of several accidents. So adequate capacity should be needed while planning.
- Pourashava : Pourashava is the local name of the municipality. The incorporated area administered by the government as urban area under the Pourashava Ordinance 2008 is considered as the pourashava

- PCU : It stands for Passenger Car Unit. It is the method of expressing various types of vehicles having different characteristics in a common equivalent unit. Different vehicles having different vehicular and operational characteristics are also expressed in terms of standard unit is called Passenger Car Unit.
- Planning Permit : Initial permit for development given before submission of the actual building plan. This also called land use permission given to an applicant intending to develop a structure for housing or other purpose in a certain land. This permission is based on land use zoning prepared as a part of the master plan. After getting this permission the applicant can proceed for designing the structure and submit it for approval. Part of the master plan. After getting this permission the applicant can proceed for designing the structure and submit it for approval.
- Population Projection : Make future estimation of population using well established and scientifically developed formula.
- Provider to Facilitator : When town authority provides serviced land (land with services) it is a housing provider, though directly housing. But when it develops road, drain school, bazaar, etc. In any area it helps the land owners to develop their own houses. So town authority is facilitating people's housing.
- Right of Way : The entire space reserved for use of road. Initially road is developed in a part of the space, but gradually with the pace of urbanisation the entire reserved space is used for road and footpath.
- Road Hierarchy : The hierarchy of roads categorizes roads according to their functions and capacities.
- Site and Services Project : A housing project where site and services are provided. Site is the plot and services include road, drain, water supply, etc.
- Shoulder : Shoulders are strips provided on both the sides of the carriage way. It serves as parking place for vehicles which have developed some defect and need parking.
- Skyline : Outline of building, hills, etc. against the sky.
- Sluggish Economic Growth : Slow economic growth.
- Solid Waste : Non-liquid waste materials that have been discarded. It may be classified by point of origin (such as agricultural waste, industrial waste, domestic waste or construction waste) or by the kind of waste involved (such as rubbish, ashes, garbage, special waste).

- Spontaneously Developed Area : An area that develops naturally with public and community intervention. Almost all our settlements developed spontaneously. The opposite of Spontaneously Developed Area is planned developed area.
- Structure Plan : Structure Plan is the 1st tier plan of the three level plan currently prepared for urban centres in Bangladesh. It is a policy plan and not a plan in maps. Future urban development policies are written down in the plan report that serve as the framework for subsequent lower level plans, like, master plan/urban area plan and detailed area plan. Major development locations may be symbolically indicated in structure plan.
- Traffic Volume : Number of vehicles passing a particular road per unit time at a specified time is called Traffic volume.
- UNCHS : United Nations Centre for Housing and Settlement.
- Upazilla/Thana : Sub-District administrative area.
- Union : Smallest local administrative unit of rural area which is composed of Mauzas and villages.
- Urban Fringe Area : Outskirt areas of an urban center. These areas are usually being developed. They low density of population and structure and lack physical infrastructure, particularly road.
- Upper Level Plan : Upper level plan is the higher level plan, like, structure plan or master plan/urban area plan that serve as framework of the lower level plan.
- Ward : For the operational convenience, Municipalities are divided into three or more wards. The ward boundaries are specified by gazette notification.

Unit of Equivalence

1 lakh	= 1,00,000
1 million	= 10,00,000
1 crore	= 1,00,00,000
1 katha	= 0.05 bighas = 1.65 dec. = 66.9 sq.m. = 720 sq. ft.
1 bigha	= 20 kathas = 33 dec = 0.33 ac.
1 acre (ac)	= 3 bighas = 4000 sq. m. = 60.50 kathas = 100 dec
1 hectare (ha)	= 2.47 ac. = 7.5 bighas = 10,000 sq. m.
1 square metre (sq. m.)	= 1.20 sq. yards = 10.76 sq. ft.
1 square kilometre (sq. km.)	= 247.1 ac. = 100 ha.
1 square mile (sq. ml.)	= 259 ha. = 640 ac. = 2.59 sq. km.
1 yard	= 3 feet = 0.9m
1 metre	= 3.281 feet
1 kilometre	= 1000m. = 0.62 miles
1 mile	= 1760 yards = 1.61 km.
1MW	= 1000 KW = 10^6 watts
1 Nautical mile	= 1.854 mile

PREAMBLE

The Seventh Five Year Plan Bangladesh envisages an integrated development strategy for the southwest region. The economic corridor development approach is well aligned with this vision. Both of them seek to establish government and private special economic zones, hi-tech industrial parks, IT parks, and industrial estates for large, medium and small sized enterprises. Given its abundant natural resources and strategic locational advantage, Bangladesh's southwest region has strong prospects for becoming a domestic and regional industrial, trade, and investment hub.

The corridor influence area is expected to see rapid economic growth owing to industrialization. The economic growth will also lead to urbanization and expansion of existing towns. Further considering the fact that these regions are prone to natural disasters like flood, drainage congestion and cyclone, the broad principles of the corridor would be round-the-clock interrupted quality power supply, resilient to multiple disaster risks, and smart and reliable infrastructure towards self-healing grid. These development initiatives may be conceptualized along the key urban centers considered in the corridor with rapid urbanization.

On the other hand, Bangladesh has a significant advantage in term of geographical location within the South Asian region and has every possibility to become a regional hub with utilizing the opportunity through regional connectivity. It is a general argument that Bangladesh should situate the issue of Indo-Bangladesh transit in a broader regional context associated with the commitment of Bangladesh Government to the establishment of an Asian Highway and Railway. Large investment is to be needed to improve the road and rail system of Bangladesh for inducing this establishment. There will be needed massive investment not only in road, rail and riverine infrastructure but also in transit traffic if Bangladesh is to even approximate the aspirations to graduate to middle income country by 2021.

This spatial pattern of urban centers might give an impression that urban activities are located within the three centres (*Benapole, Jhikorgachha* and *Jessore*) and rest are low density and agriculture. But in reality scattered settlements distribution across the whole landscape, location of job and economic activity is the central theme for any growth centre. There is strong relation between transport network and job density. *Benapole, Navaron* and *Jhikorgachha* sprung among the crowd to be higher order of urban centre. *Sharsha, Godkhali* and *Laujani* can be in second order. It reveals that all concentrations are on highways based market – depicting as a meeting place for the economic activities. This also indicates a lack of parallel roads; as a result people concentrate of the common access point – on the highway.

Benapole Land Port, the start point of the corridor, is the largest and busiest port of the country and handles about 80% of the commercial traffics held between India and Bangladesh. Physical features of the Project area vary with locations and can be characterized as a broad deltaic plain prone to tidal flooding of the rivers existed in the region. Agricultural activities are highly developed and dependent upon Dhaka. The rivers in the South West region bear moderate slope loaded with high concentration of sediment loads. The prominent rivers of the region are *Kobadak, Betna, Nabaganga, Bhairab, Pussur*. The Highway Corridor intersects mainly *Kobadak* and the *Betna* and numerous beels and baors and khals and canals. Engineering interventions and road networks changed substantially the hydrological features of the region.

Development plan for the corridor contains Structure Plan, Urban Area Plans and Action Plans. Structure Plan zones guide development covering the whole project area for 20 years. Urban land zones in three pourashavas (*Jessore, Jhikorgachha* and *Benapole*) for duration of 10 years provide indicative spatial distribution of urban functions. Action Plans with duration of 5 years provides both regionally and locally important projects.

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EXECUTIVE SUMMARY

Objective of the project is to prepare a development plan for a total of 324 sq.km. In fact, the project area covers all the pourashavas and unions through which the corridor road (Bhatiapara-Norail-Jessore-Benapole National Highway: N706) has passed. Three pourashavas namely Jessore, Jhikorgachha and Benapole in addition to 11 unions (Arabpur, Diara, Upashahar, Jhikargachha, Chanchra, Godkhali, Panisars, Sharsha, Nabharan, Benapole and Ulashi) are included in the project area.

This highway would connect Bangladesh with some of the countries that has highest strategic importance to Bangladesh. National importance of this road cannot be neglected as well. Being a part of AH1, this corridor will also be connected with the AH41 (Myanmar-Teknaf- Dhaka-Mongla) and AH2 (Banglabandha-Dhaka-Tamabil).

Benapole, the most important land port of Bangladesh still handles about 80% of total amount of import and export goods between Bangladesh and India. Because of increasing political ties with India, some high priority projects recently initiated by the government of Bangladesh like Khulna-Mongla Railway line, Padma Bridge at Mawa Point, revitalization of Mongla sea port and Benapole Land Port, widening if the corridor road etc. are expected to create huge economic impact not only on the economy of Bangladesh but also the development paradigm of the southwestern Bangladesh. From this perspective, the current plan carries significant importance for Bangladesh.

This comprehensive plan contains structure plan, Urban and Rural Area Plan and Action Area Plan. Structure plan is prepared to provide flexibility through laying down the development strategies. This stratum of the plan is developed for the whole project area. It has a duration of 20 years. Urban area plan is developed for a duration of 10 years. Covering the three pourashavas (Jessore, Jhikorgachha and Benapole), urban area plan lays down the detailed land use proposals. Action Area Plan has duration of 05 years. This plan identified both regionally and locally important projects. Local level infrastructures are identified for the three pourashavas. On the other hand, regional infrastructures are proposed for the whole project area. It has identified priority phases of implementation.

In 2001, population of the project area was 5,41,471. In 2011, this figure rose to 5,59,938. Projected figure of the population is 6,31,434; 6,75,884 and 7,24,108 respectively for the year 2020, 2025 and 2030. Additional 10% population is added to this figure for planning purpose to address sudden growth of population.

About 67 percent land of the project area is covered by non-urban land uses (agricultural and Group of Trees or Forest). This depicts the rural characteristics of the project area. Less than 15% land is allocated for residential purpose. It is also to be mentioned here that residential density in these areas are very low.

Assuming that the average family size will be 3.9, total number of required housing units will be 204236. By the year 2030, total deficit of housing units will be (204236-126679=) **77557**. More than 93% households of the project area use deep tube-well. Higher proportion of people of Jessore pourashava (6.34%) enjoys tap water compared to others. According to the BBS (2001), about half of the households used sanitary toilet. Highest number of households of Jessore Pourashava and Upashahar enjoyed electricity connection in 2001. From these statistics, it is clear that it is not the housing supply that we need to be concerned, but the quality and availability of services portrays entirely different situation.

The project area is located at a relatively safe zone. Occasional flood and waterlogging are the prime issue of the project area. Thus, flood has been modelled and the flooded area for different return period has been identified. After analyzing the existing situation, projecting of the future and development of vision and objectives, sectoral policies are developed.

The hydrologic analysis was carried out for estimation of design flood level and involved frequency analysis with different probability distributions functions for the selected design return period. The historical data on annual peak water level are used for the purpose. The proposed Benapole-Jessore Highway Corridor runs over two rivers, namely the Kobadak and the Betna-Kholpetua. There are two water level gage stations in the corridor. The gage station of the Kobadak river is located at Jhikorgachha while the gage station of the Betna-Kholpetua is located at Navaron.

The flood hazard has been assessed from the design flood magnitude as determined from flood frequency analysis with the help of open source GIS software and DEM. The flood frequency analysis were carried out to estimate design high water levels based on the best fitted Probable Distribution Fitted curves, corresponding to 2.33-, 5-, 20-, 50- and 100-year return period floods. Flood inundation maps were generated accordingly for the 2.33-, 5-, 20-, 50- and 100-year return period floods over the Jessore-Benapole Highway Corridor and show that for the mentioned return period floods, inundation gets over 41.65%, 55.54%, 74.36%, 85.31% and 92.45% of the corridor area respectively. Policy Guidelines were formulated considering the flood hazards generated for 2.33-, 5-, 20-, 50- and 100-year return period inundation maps. The Policy Guidelines consider basic four criteria as inundation of the corridor area, up-gradation of the corridor, multipurpose uses of the corridor and protection of zones.

Extensive survey on the formal and informal economy was conducted throughout the project area. Through which, a list of growth center along with their role in local and national economy has been identified. Connectivity among these growth centers are ensured through hierarchical road network to ensure uninterrupted flow of goods and services. This is one of the major determinants of economic growth of an area.

As stated earlier the project area is still dominated by the agricultural land use. To meet the demand of the farmers and to reduce wastage couple of ministorage facilities, a cold storage (at Godkhli) and a CSD have been proposed in the project area.

Benapoe-Jessore highway corridor connects Benapole, the largest land port in Bangladesh with Jessore city hence the whole country. Being the only connector to the port, it remains busy by freight carrying vehicles. However, the vast area on either side of the highway has scattered rural settlements and small urban centres. Most of them do not have any direct regular dependency with the Benapole port but they are also dependent on this highway segment. They might be going to Jessore for their job or business or shopping. Farmers in this catchment are using this highway also to carry their seed, fertilizer and yield to markets. As a result, this highway serves many stakeholders with varying in transport mode, speed, size and behaviour. Having this in the backdrop, this project aims to develop an urban development strategic plan that keep the importance of the port connectivity but ensure smooth mobility of the catchment dwellers.

The highway is obstructed in several points, which creates traffic congestion. Moreover, ribbon development along the corridor creates access points in the corridor and decreases traffic carrying efficiency. Ongoing ribbon development along the highway corridor, loss of agriculture and wetland, lack of service in the existing growth centers are degrading quality of life in both local and national level. On the other hand, as highway alignment is on flood free land, it attracts local people to agglomerate along the highway corridor for trade and commerce. In addition, highways provides greater accessibility, which results mixture of (local) slow moving and fast moving through traffic. As a result, through traffic cannot move with high speed, which increases transport cost. In contrast, local traffic along growth centers faces traffic congestion. So, prohibiting this trend requires delineation of flood free growth centers and providing them regional connectivity that do not encourage people as well as local traffic interfere the highway. This project recommends widening of

highway with service road, provide parallel road to the highway to ensure connectivity within growth centres. In addition, for bus passengers from India and international truck rest area is proposed in secluded area.

Urban Area Plan has been prepared for the three pourashavas only. Benapole has planned to promote business and industries. Jessore, being the old district town is expected to perform its current responsibility in the years to come. Jhikorgachha, on the other hand, is planned to endorse residential environment.

Strategies of structure plan are spatially translated through the urban area plan where strategic zones are further fragmented to land use zones. Based on the projected population, requirement of different kinds of infrastructures are identified and tentative location of these infrastructures are identified.

The Development Plan for Jessore-Benapole Corridor is to be done considering the Benapole Municipality and Land Port area; Sharsha Upazila Town; Jhikorgachha Upazila Town and Jessore Municipality, where preparation of land use planning and hazard mitigation guidelines considering hydrological situation of the project area, was a part of the corridor development plan. These Policy Guidelines are suggestive concentrating on water related issues by nature for the effective development of the Jessore-Benapole Highway Corridor. So, land use zone is restricted to the development of the corridor under the Jessore-Benapole Highway and includes the following categories like flood and land zoning, agriculture, urban area, industrial area, highway corridor, industrial area, infrastructure, traffic and transport, integrated logistic hub for highway, airport and protection zone – water bodies and forest etc. The policy guidelines under various ministries denoting specific uses of land and water and permissible for different uses for planning were reviewed. Guidelines are suggestive in nature and put forward as a holistic approach for the development of Jessore-Benapole Corridor.

Table: Sectoral Strategies

Sl no.	Sector	Policy related to Water and Environment
1	<i>Water/1</i>	<i>Propose Land Zoning considering Flood inundation</i>
2	<i>Water /2</i>	<i>The provide buffer along river and other water bodies</i>
3	<i>Water /3</i>	<i>propose open space and other recreational facilities on regularly flooded land and beside water bodies</i>
4	<i>Water /4</i>	<i>Upgrade existing infrastructure above extreme flood level.</i>
5	<i>Water /5</i>	<i>Eliminate cross dams over the rivers to restore ecology.</i>
6	<i>Water /6</i>	<i>Encourage local knowledge and public participation for land and water management.</i>
7	<i>Water /7</i>	<i>Protect agriculture and rural land use.</i>
8	<i>Water /8</i>	<i>Follow rules and regulations of the building specification guideline in BNBC.</i>
9	<i>Water /9</i>	<i>Proper selection of construction materials to protect environment.</i>
10	<i>Water /10</i>	<i>Tree conservation and re-plantation in the project area.</i>
		Policy related to Transport planning
11	<i>Transport /1:</i>	<i>Upgrade Benapole Jessore Highway to ensure free traffic flow.</i>
12	<i>Transport /2</i>	<i>Establish road hierarchy that connects the economic activities and urban centers.</i>
13	<i>Transport /3</i>	<i>Provide service roads on both side of the highway to accommodate</i>

		<i>local and slow moving vehicles.</i>
14	<i>Transport /4</i>	<i>Establish Regional Connectivity and Diverted Traffic.</i>
15	<i>Transport /5</i>	<i>Enhance freight transport and integrate multimodal facilities at rail junction.</i>
16	<i>Transport /6</i>	<i>Restrict unplanned and high intensity development along the highway.</i>
17	<i>Transport /7</i>	<i>Provide parallel road to national highway.</i>
		Policies related to Demography and Population growth
18	<i>Population/1</i>	<i>To ensure equitable development for all the unions to avoid the unwanted concentration of population in any area.</i>
19	<i>Population/2</i>	<i>To promote compact urban development</i>
20	<i>Population /3</i>	<i>To develop Capacity of the migrated folks.</i>
21	<i>Population/4</i>	<i>To ensure healthy living environment for the people.</i>
22	<i>Population/5</i>	<i>To ensure development activities sensitive to the poor</i>
		Policy related to Housing and associated public utilities and
23	<i>Housing/1</i>	<i>Prepare the existing urban centers to accommodate additional pressure of population.</i>
24	<i>Housing/2</i>	<i>To ensure simple and accessible housing finance for middle and lower income groups.</i>
25	<i>Housing/3</i>	<i>Prepare the project area to facilitate commuting and the commuters.</i>
26	<i>Housing/4</i>	<i>Ensure and increase physical housing supply for the poor.</i>
27	<i>Housing/5</i>	<i>Improve living condition of the poor people.</i>
28	<i>Housing/6</i>	<i>Provide all necessary services and facilities to promote housing at private sector.</i>
29	<i>Housing/7</i>	<i>Ensure participatory residential area densification</i>
30	<i>Housing/8</i>	<i>Promoting clustered rural development</i>
		Policy related to Land Use
31	<i>Land use /1</i>	<i>Conserve the agricultural areas and water bodies.</i>
32	<i>Land use /2</i>	<i>Procure land for open space facilities as quick as possible</i>
33	<i>Land use /3</i>	<i>Develop necessary infrastructures to promote agricultural activities and increased productivity.</i>
34	<i>Land use /4</i>	<i>Restrict residential development in the waterlogged areas or flood prone areas</i>
35	<i>Land use /5</i>	<i>Restrict development activities in the designated flood plain areas.</i>
36	<i>Land use /6</i>	<i>Restrict ribbon development around the Jessore-Benapole road</i>
37	<i>Land use /7</i>	<i>Limit construction of Religious Structures on Public Land, Road Right of Way and Prevent Commercial Activities in Religious land use</i>
38	<i>Land use /8</i>	<i>Restrict Industrial development outside designated areas</i>
39	<i>Land use /9</i>	<i>Encourage multipurpose use of open spaces like playfield, eidgah etc.</i>
40	<i>Land use /10</i>	<i>Playgrounds and ponds located in the academics and government installations should be kept open for local community's use</i>

Governance and institutional arrangements		
41	Governance /1	<i>Establishment of Jessore-Benapole Highway Corridor Development Authority and Jessore Regional Office of Urban Development Directorate</i>
42	Governance /2	<i>Urban planning regulations place much emphasis on control rather than on guidance of urban development.</i>
43	Governance /3	<i>Upgrading of existing status of Jessore Pourashava</i>
44	Governance /4	<i>Strengthening urban and rural local government institutions</i>
45	Governance /5	<i>Mobilization of Resources</i>
46	Governance /6	<i>Increase quality and quantity of human resources</i>
47	Governance /7	<i>Increase People's participation in plan implementation</i>
48	Governance /8	<i>Quality of leadership is also important for Corridor Development Plan Implementation</i>
49	Governance /9	<i>Awareness building of planning activities and public participation</i>
Policy related to Economic Development and Industrialization		
50	Econ/1	<i>Provide bank loans on easy terms to attract prospective investors in the SME sector.</i>
51	Econ/2	<i>Take measures to channelize remittance to value adding productive sectors.</i>
52	Econ/3	<i>Arrange entrepreneurship training programmes for prospective investors</i>
53	Econ/4	<i>Ensure clustered development of industries in the designated areas.</i>
54	Econ/5	<i>Relocated Noxious and Hazardous Industries from the non-permitted areas to the designated industrial zones</i>
55	Econ/6	<i>Promote agro-based, agro-supporting, small and medium Industries</i>
Policy related to Utility Services		
56	Utility/1	<i>Exploration of alternative sources of water to ensure sustainable supply</i>
57	Utility/2	<i>Involve beneficiary participation in solid waste management.</i>
58	Utility/3	<i>Exploring re-use and recycling of waste materials to extract</i>
59	Utility/4	<i>Publicity on the benefits of hygienic sanitation to motivate people and enable people to have easy access to sanitary materials.</i>
60	Utility/5	<i>Protection of natural drainage system and preparation of hierarchical drainage network</i>
61	Utility/6	<i>Take initiative to popularize rain water harvesting</i>
62	Utility/7	<i>Promote community based Waste management</i>
63	Utility/8	<i>Popularize waste recycling and waste reduction process</i>

64	<i>Utility/9</i>	<i>Implement integrated WaSH programe</i>
65	<i>Utility/10</i>	<i>Ensure Health facilities for all</i>
		Policy related to Land Management Strategies
66	<i>Land/1</i>	<i>Adopt participatory land development technique for both land use management and infrastructural development</i>
67	<i>Land/2</i>	<i>To enable the local planning authorities to initiate participatory land development techniques in the project area</i>
68	<i>Land/3</i>	<i>Develop mechanism to recover the cost of windfall gain of Infrastructure Development from the Beneficiaries (Betterment Fees)</i>
69	<i>Land/4</i>	<i>Implement the Transfer of Development Rights (TDRs) for conservation of the protected areas.</i>
70	<i>Land/5</i>	<i>Execute Pre-emption (Priority Purchase Right by Government) for Transactions within the conservation areas.</i>
71	<i>Land/6</i>	<i>Implement major Infrastructural development through PPP</i>

Action Area Plan has been prepared to develop a list of bankable projects. Implementation mechanisms are identified, priorities are defined. After the action area plan, through laying down some follow up actions, this report concludes. The project proposed regional infrastructures for sake of better functioning of the corridor such as Bus passenger’s resting area, Motorist’s parking area (or Highway Resting Area), Agricultural storage facilities, local level services, rehabilitation and resettlement procedure, development financing for the corridor.

CHAPTER 1

PROJECT CONTEXT

1.1 Introduction

While planning is a systematic method of achieving optimum mix of activities to ensure livable and sustainable living environment for the people, it is often very complex. Among many reasons, some are (1) it demands sophisticated technology intensive survey and analytical methods, (2) conflict minimization among different stakeholders is often easier said than done, (3) finding environmentally sound, economically viable and pragmatic solution is tough to find.

Corridor planning is relatively less emphasized part of the development planning process of Bangladesh. In fact, this is the first ever corridor project in Bangladesh. Usually this approach of planning considers multi-modal transport system with respect to the surrounding land uses that respects and enhances our natural and human environments. The Corridor Plan usually integrates several elements to produce an integrated highway based solution. This process identifies transportation services, determines competing demands for different kinds of land uses, and integrates the findings into a common vision for the entire project area that will expedite overall development of the project area maintaining cohesiveness with the national development agenda and vision.

Preparation of Development Plan for Jessore-Benapole Corridor is even more challenging because of its importance in the national development, dichotomy in terms of current economic condition and its future prospect, depth of complexity of problems, lack of awareness of the people about physical planning, lack of coordination among the organizations involved in development activities etc.



Photograph 1.1: Jessore Road

There are so many priorities and purpose in planning corridors. Benapole-Jessore corridor will essentially boost up the economy of Bangladesh through reducing indo-Bangladesh trade imbalance. Thus the whole plan is developed keeping the newly emerged concept of “Economic Corridor” in mind. Introducing the term in 1998, Asian development Bank (ADB) defined it as important networks or connections between economic agents along a defined geography, which link the supply and demand sides of markets [Octaviano, 2014 . Economic corridors are integrated networks of infrastructure within a geographical area designed to stimulate economic development (wikipedia contributors, 2015; Developing Economic Corridors in Africa: Rationale for the Participation of the African Development Bank, 2013)].

1.2 Project Background

The Government of People's Republic of Bangladesh funded the current the project with Urban Development Directorate, under the Ministry of Housing and Public Works as the executing agency. The project is managed, monitored and evaluated by UDD at the field level. The Technical Management Committee (TMC) at organization level is responsible for looking into the technical and coordination aspects, where the Inter-ministerial Steering Committee is responsible for guiding the project towards its goal. The activities of the project were completed by June 2017.

1.3 Road and Railway connectivity of the corridor

Bhatiapara-Norail-Jessore-Benapole National Highway road project has been at the national priority list since 2007 which is to be constructed by Roads and Highways Department. Importance of this road in terms of national development and regional connectivity is immense. This road (N706) is a part of a far bigger plan. The Asian Highway network comprises over 141,000 km of roads passing through 32 member countries of UN ESCAP. The network extends from Tokyo in the east to Kapikule, Turkey in the west and from Torpynovka, Russian Federation, in the north, to Denpasar, Indonesia in the south. Asian Highway 1 (AH1) is the longest route of the Asian Highway Network (Source: <http://www.unescap.org/our-work/transport/asian-highway/about> accessed at May 31, 2016). The 20,557 kilometer long Asian Highway 1 will be started from Japan and pass through Korea, china, Hong Kong, Vietnam, Thailand, Cambodia, Myanmar; then through India it will enter into Bangladesh using this corridor (N706 Road).

Figure 1.1: Asian Highway Network



This highway will connect our country with some of the countries that has highest strategic importance to Bangladesh. National importance of this road cannot be neglected as well. Being a part of AH1, this corridor will also be connected with the AH41 (Myanmar-Teknaf-Dhaka-Mongla) and AH2 (Banglabandha-Dhaka-Tamabil). It is envisioned that these road network will together open up the door of regional connectivity for Bangladesh. Once established, freight movement will significantly increase through Bangladesh providing an economic boom. It is a challenge for the nation to cope with the sudden influence incurred by this road network. Not only at the national level, but also at the local level, the local community needs to be prepared to cope with it.

Because of the establishment of these corridors, intensity of the land use will suddenly increase. Rightly the report states “Because of commercial importance of the roads and easy access to Asian Highway via major roads, roadside developments are expected to get faster pace with the construction of the project. The expected roadside developments are industries, markets/growth centers/shops, housing areas, etc.” (Bangladesh Bridge Authority, 2010, p. 7) The report has also identified some potential negative impact e.g. (1) Loss of seasonal floodplain, (2) Deterioration in surface water quality (3) Deterioration in groundwater quality (4) Waste generation (5) Land acquisition and resettlement (6) Loss of agricultural lands and last but most importantly (7) Change in land use.



Figure 1.2: Asian Highway network

This will create external diseconomy incurring several land use conflicts. Main challenge for this plan will be to minimize this external diseconomy and propose a land use plan such that the harmony among the land uses can be maintained properly thus minimizing the negative impact.

The corridor is also very important for railway connectivity. Original rail route from India to Jessore-Khulna via Petrapole was opened in 1884, and a proper rail link established in 1923. After Partition, in 1947, the services continued, but were discontinued during the Indo-Pak conflict of 1965, and was re-started after liberation war of Bangladesh in 1972, only to shut down yet again in 1976.

Figure 1.3: Railway connectivity between Bangladesh and India



However, both the countries agreed in 1998 to reopen the old Bongaon–Jessore BG rail line. If India–Bangladesh BG rail lines connect Mongla port with Bongaon via Khulna, Bangladeshi exports can reach Delhi within 5-7 days (A container usually takes 20-25 days and occasionally even upto 60 days to move from New Delhi to Dhaka, as the maritime route is via Bombay and Singapore/ Colombo to Chittagong Port and then by rail to Dhaka).

Passenger train inaugurated on 14 April 2008, the bi-weekly Maitree Express runs between Kolkata and Dhaka via Gede/Darsana, completing the one way journey in 10.5 hours. The Southern corridor of the Trans-Asian Railway (TAR) from the East passes through Myanmar, India, Bangladesh and again India and then Pakistan, Iran and Turkey before it joins the European Railway. Railway connectivity between Bangladesh and India is illustrated at Figure 1.3.

1.4 Best corridor planning practices

No universal definition of economic corridor can be found anywhere in the scholarly literatures. This term was first coined by ADB in 1998. Corridor can be defined from many perspectives to serve many purposes. Traditionally corridors are defined for transportation planning. The concept of using transport corridors as a means to develop the regions around the corridors is known as the economic corridor concept or the development corridor concept. Economic corridors are integrated networks of infrastructure within a geographical area designed to stimulate economic development (Hans-Peter Brunner (August 2013), “What is Economic Corridor Development and What Can It Achieve in Asia’s Sub-regions?”, ADB Working Paper Series on Regional Economic Integration, no 117, Asian Development Bank, Metro Manila, Philippines). Economic corridors refer to transport networks that support and facilitate not only the movement of goods and services but also of people as well as the exchange of information. Economic corridors are not limited to hard infrastructure such as highway systems, rail lines or ports but also include soft infrastructure such as trade facilitation and trade capacity building (<http://research.bworldonline.com/popular-economics/story.php?id=350&title=Economic-corridors-boost-markets,-living-conditions>).

Economic corridors connect economic agents along a defined geography. They provide connection between economic nodes or hubs, usually centered on urban landscapes, in which large amount of economic resources and actors are concentrated. They link the supply and demand sides of markets. This term is often synonymously used for trade corridor. Although many authors use “economic corridor” and “development corridor” interchangeably, others describe development corridors as an ingredient necessary for achieving economic corridors. An economic corridor, as described by the ADB and AfDB, has the following characteristics (<http://research.bworldonline.com/popular-economics/story.php?id=350&title=Economic-corridors-boost-markets,-living-conditions>):

- covers smaller and defined geographic space, straddling a central transport artery;
- highlights bilateral rather than multilateral initiatives, mainly at border crossings between two countries; and
- stresses physical planning of the corridor and its surrounding area for focused infrastructure development that will yield maximum benefits.

Corridor planning allows the communities to work collaboratively, using accurate, updated, corridor-wide data to improve local land use planning and transportation decision-making so as to support the long term success of the region as a whole (Androscoggin Valley Council of Governments, Maine’s Best Practices for Development of Multi-Modal Corridor Management Plans, December 2007; www.hcpcme.org/transportation/./CorridorPlanningGuide121207.pdf).

The economic corridor approach looks at regional transport routes not only as a means of transporting goods and services, but also as a tool for stimulating social and economic development in the areas surrounding the route. Economic corridors accomplish this by creating industry and social facilities in conjunction with transport infrastructure. In doing so, they develop rural and border areas, increase the earnings of low-income groups, and create employment.

ADB argues that South Asia is one of the least economically integrated regions in the world, with comparatively high barriers to trade and investment. Political boundaries cease to be economic boundaries and spatial- economic regional planning takes the lead. In short, the economic corridor approach transforms transport corridors into engines of socioeconomic development. Generally characteristics of economic corridors can be summarized as (Gadzeni Mulenga, NEPAD, Regional Integration and Trade Department - No. 1. April, 2013, Developing Economic Corridors in Africa: Rationale for the Participation of the African Development Bank):

- A smaller, defined geographic space, usually the area straddling a central transport artery such as a road, a rail line, or a canal;
- Bilateral rather than multilateral initiatives focusing on strategic nodes, particularly border crossings between two countries, principally to promote a sense of ownership;
- An emphasis on physically planning the corridor and its surrounding area, to concentrate infrastructure development and maximize benefits; and
- Strong public-private partnerships, which promote sustainability.

Usually corridor development follow a sequence of stages for transformation (Gadzeni Mulenga, NEPAD, Regional Integration and Trade Department - No. 1. April, 2013, Developing Economic Corridors in Africa: Rationale for the Participation of the African Development Bank). These sequences provide essential insight for this plan. These stages are summarized below:

- First stage (Physical development): Priority of this phase is development of physical facilities needed for efficient and effective transportation and trade by establishing and revamping transport links; improving the quality of infrastructure, increasing carrying capacity, and dealing with related safety issues; upgrading infrastructure associated with priorities such as rural agriculture, agroindustry, and tourism; encouraging multimodal structures; and upgrading border areas.
- Second stage (Logistics development): At the second phase logistical support is provided to harmonize corridor policies, regulations and institutions, moving people and goods more efficiently and facilitating storage, warehousing, trucking, insurance and freight management, and related services. It is also important to implement cross-border trade agreements; simplifying, standardizing and harmonizing immigration and quarantine procedures; promoting information and communication technologies; and establishing a logistics center.
- Third Stage (Economic and social development): This stage promotes investments in areas such as agroindustry and manufacturing, natural resource-based enterprises, small-scale industries, trade, schooling, and health facilities, all located near the corridor.
- Fourth Stage (Integration of crosscutting issues): This stage addresses environmental and institutional capacity concerns and other social issues.

A good corridor plan should have following characteristics:

- Comprehensive, based on a full understanding of the dynamics of transportation and all interacting influences within the corridor;
- Proactive, seeking to identify and address transportation-related problems before they arise, rather than after they have grown to the point of being intolerable;
- Visionary in nature, meaning that the recommended strategies for the corridor arise from a shared vision for the corridor established by local communities and state agencies with jurisdiction over the corridor; and
- Collaborative, meaning those transportation agencies, local governments, stakeholders and the national government.

As stated earlier, most of the corridor plans concentrate primarily on the transport network. Then land use plan is reoriented to minimize conflict. For example, Cache Valley South Corridor Development Plan has been developed to (1) create a transportation system which produces an efficient flow of goods, services, and travelers while sustaining business and industry; (2) Provide opportunities for the full participation of all government entities within the corridor to manage future growth along the corridor; and (3) Direct new growth in a manner that is consistent with the principles of the Envision Cache Valley process and which identifies future land uses, roadways, and vehicular access points. The plan also laid down some challenges and proposals. Some of these issues are stated below:

- Limiting development to “clustered nodes” at existing and future intersections.
- Establishing 300’ and 500’ open space buffers along both sides of the highway, depending on the proximity to the clustered nodes.
- Prohibiting new residential uses within the open space buffers, helping eliminate the need for sound walls, berms and other obtrusive buffering techniques.
- Encouraging residential, commercial, mixed-use and industrial uses within the existing cities
- Prohibiting strip development along the highway.
- Encouraging better property maintenance and upkeep.
- Prohibiting commercial advertising signs along the highway.
- Adjusting of land earmarked for commercial uses to match realistic market projections.

1.5 Objectives of the Assignments

Comprehensive planning approach is a hierarchical approach where structure plan acts as a policy plan providing flexibility to the plan, Master Plan is a rigid plan developed following the policies of the structure plan and Detailed Area Plan (DAP) acts as the local level plan detailing the policies of structure plan and Master Plan. Action Area Plan (AAP) basically deals with the development projects on priority basis.

Corridor plan usually do not deal with this kinds of planning approach. Instead it usually develops a single tier of plan where transport plan and relevant strategies gets highest priority. In a nutshell, primary purpose of a corridor plan is to make traffic circulation as smooth as possible and use the benefit of increased economic activities for development. The perseverance of the Benapole- Jessore Corridor Development Plan is to formulate a framework for the physical development. The plan is intended to guide future growth and development in the corridor for next 20 years. One of the key functions of this plan is to strike a balance between growing traffic and highway expansion, and the preservation of those qualities that make the corridor unique. To fulfill this purpose, following objectives need to be achieved:

- Creating a transportation system, that will ensure an efficient flow of goods, services, and travelers while ensuring healthy and sustainable living environment;
- Propose land use that will be compatible for the proposed transportation system.
- Allocate space for different kinds of services and facilities required to serve the people for the next 05 (five) years.
- Directing new growth that is consistent with the future land uses, future roadways, and vehicular access points.
- Identify anticipated impact of the Jessore-Benapole corridor
- Find out potential ways to harness the potentials and minimize the negative impact of the corridor and manifest the solutions on space.
- Providing clarity and security with regard to future development for inhabitants and investors,
- Providing guideline for development considering the opportunity and constraints of future development through Govt. Private and Non Govt. Initiatives,
- Providing planned development to ensure sustainable environment.

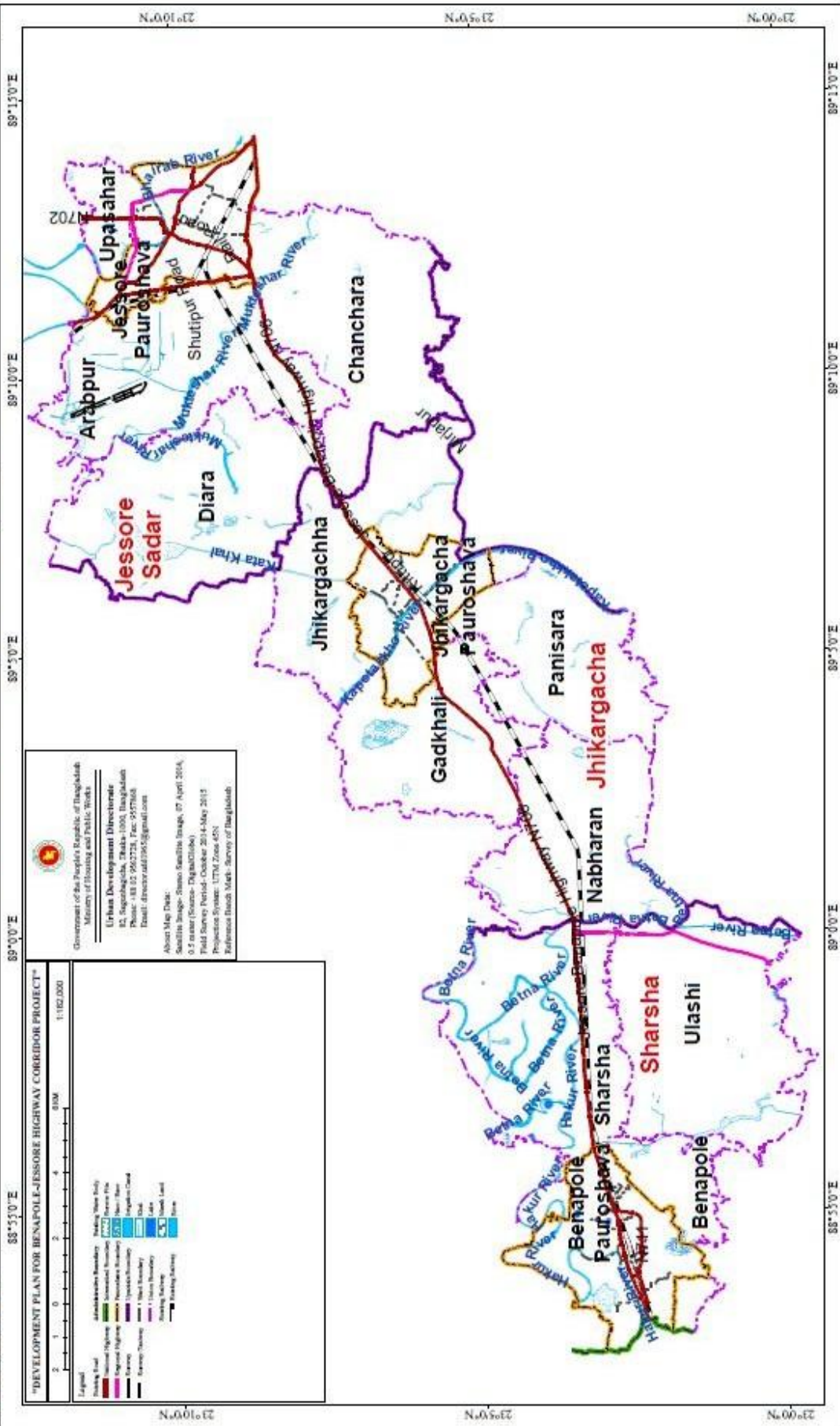
1.6 Understanding of Scope of Services

The scope of the Development Plan is to formulate land use development proposal in such details as appropriate to the policies of the Structure Plan (SP).

- Land use plan has to be developed for different scale.
- The proposed plan is expected to comprise of an integrated package of amenities and other uses like development of water bodies, open spaces, playgrounds, recreational and community services.
- Allocating the zones where public utilities, institutions and civic services will be established. Moreover zones of urban deferred areas, for future development, expanded areas and areas for new development have to be considered.
- To establish and integrated development plan for primary, secondary and tertiary roads. To design traffic circulation pattern, utilities and services network etc.
- To ensure planning principles/ standards, gross/ net densities, guideline for future development and development control.
- To exercise control over architectural features, elevations, frontage of building and structures including zoning regulations to regulate locations, preservation of heritage, floor area ratio (FAR) and type of buildings within each zone along with allowable deviations.
- To prepare environmental impact analysis for the component of all AAP proposal

Map No.: 1.1

Administrative Boundary of the Study Project



1.7 Description of the Planning Area

According to Study Proposal total area of the project is about **324 sq. km.** connecting from Benapole Land Port to Jessore District Town where the areas of urban and rural parts are 130 sq.km and 194 sq.km respectively. The project area is composed of twelve unions under three different Upazila named as Sharsha, Jhikorgachha and Jessore Sadar. The details of the administrative units are given below in the following tables

Table-1.1: Geo-Political Units within the Planning Area

Sl no,	Thana Name	Union Name	Area (ac.)	Area (Ha.)	Area(s)
1	Sharsha	Sharsha	7631.82	3088.50	30.89
2	Sharsha	Benapole	7399.96	2994.67	29.95
3	Sharsha	Ulashi	8782.44	3554.14	35.54
Subtotal: 3 administration units of Sharsha Upazila			23814.22	9637.31	96.37
4	Kotwali	Arabpur	5691.60	2303.32	23.03
5	Kotwali	Diara	8405.64	3401.66	34.02
6	Kotwali	Jessore	6129.07	2480.36	24.80
7	Kotwali	Upasahar	1337.88	541.42	5.41
8	Kotwali	Chanchra	7285.86	2948.49	29.48
Subtotal: 5 administration units of Jessore Sadar Upazila			28850.05	11675.25	116.75
9	Jhikorgachha	Jhikorgachha	7946.84	3215.98	32.16
10	Jhikorgachha	Gadkhali	6455.76	2612.57	26.13
11	Jhikorgachha	Panisara	6738.35	2726.93	27.27
12	Jhikorgachha	Nabharan	6289.08	2545.11	25.45
Subtotal: 4 administration units of Jhikorgachha Upazila			27430.03	11100.59	111.01
Grand total: 12 administration units of Project area			80094.30	32413.14	324.13

Source: Study Proposal: Development Plan For Benapole- Jessore Highway Corridor, 2013

The Study Proposal has further divided the whole project area into three tiers: Structure Planning Level, Urban Area Planning Level and Action Plan. In general, structure planning approach is a hierarchical approach where the structure plan plays the most vital role. It is usually developed for about 20 years. It is a policy plan developed for the whole project area. Master plan (for this planning package, it is called Urban Area Plan) is the second tier which is very rigid in nature. Master plan only covers the urbanized part and may also include the urban expansion zone. Detailed Area Plan and Action Area Plan are local level plan.

PART 1
STRUCTURE PLAN

CHAPTER 2

CONTENT OF THE STRUCTURE PLAN

2.1 Introduction

The ToR of project titled “Preparation of Development plan for Beanpole-Jessore Highway Corridor” indicated the stratum of the plan. The ToR proposed to follow the typical structure planning approach for the said plan. Accordingly, planning report contains three parts, (i) Structure plan, (ii) Urban and Rural Area Plan, and (iii) Action Area Plan. In other words, the plan has followed the typical “Rational Comprehensive Planning” Approach.

This planning report is formed following a series of activities, which were designed to ensure stakeholder’s participation to an optimum level (preceding chapter briefs about stakeholder’s participation). This report is accompanied by the maps showing land use and different services proposal.

Before producing this report, each of the individual consultants produced a series of working papers and the survey consultant conducted through survey of the project site and submitted the survey report. At least one PRA session was conducted for each of the wards of Paurashavas and unions. Each of the consultants visited the project site repeatedly. After getting a clear picture of the project area, planning activities started.

Structure Plan (SP) is the highest stratum of the planning package. It lays down sectoral policies keeping the future development agenda in mind. Through these policies, it ensures flexibility to other strata of the plan.

Following the ToR, although all the strata of plan is prepared, but SP and the Urban Area Plan (UAP) have been prepared with extra priority. Because typically the corridor development plan emphasizes on these two plans combined within one volume.

Following the increasing friendly political ties with India, it is expected that the bilateral trade, economic activities of the project area, industrialization and cross-border activities will increase significantly. This will create tremendous impact on the project area. Among many expected impacts, following can be easily comprehended:

- per capita income will increase,
- new employment opportunities will be created,
- migration pressure will emerge,
- rapid land use change along the major roads coupled with environmental deterioration will be very rampant,
- intensity of the land use will suddenly increase
- pressure on the existing utilities and services will become quite severe,
- traffic congestion and traffic related causality and pollution may increase and most importantly
- the current inhabitants of the project area may find it difficult to cope with sudden change.

Not many studies can be found on the negative impact of the future corridor development. However, the EIA report of the Padma Bridge rightly states, “Because of commercial importance of the roads and easy access to Asian Highway via major roads, roadside developments are expected to get faster pace with the construction of the project. The expected roadside developments are industries, markets/growth centers/shops, housing areas, etc.” (Bangladesh Bridge Authority, 2010 p.7). The report has also identified some potential negative impact e.g.: (1) Loss of seasonal floodplain, (2) Deterioration in surface water quality (3) Deterioration in groundwater quality (4)Waste generation (5) Land acquisition and resettlement (6) Loss of agricultural lands and last but most importantly (7) Change in land use.

All these changes will create external diseconomy incurring several land use conflicts. One of the main challenges for this plan will be to minimize this external diseconomy and propose a land use plan such that the harmony among the land uses can be maintained properly thus minimizing the negative impact. Another challenge of this plan is to prepare the area so that it can cope with the rapid change to be incurred by the increased corridor activities. To face these challenges, the Structure Plan envisioned to make the corridor livable and economically vibrant for the years to come. Structure Plan will help achieving this objective through:

- Transformation of National policies for the project area.
- Formulation and Integration of different sectoral strategies.
- Spatial interpretation of sectoral strategies.

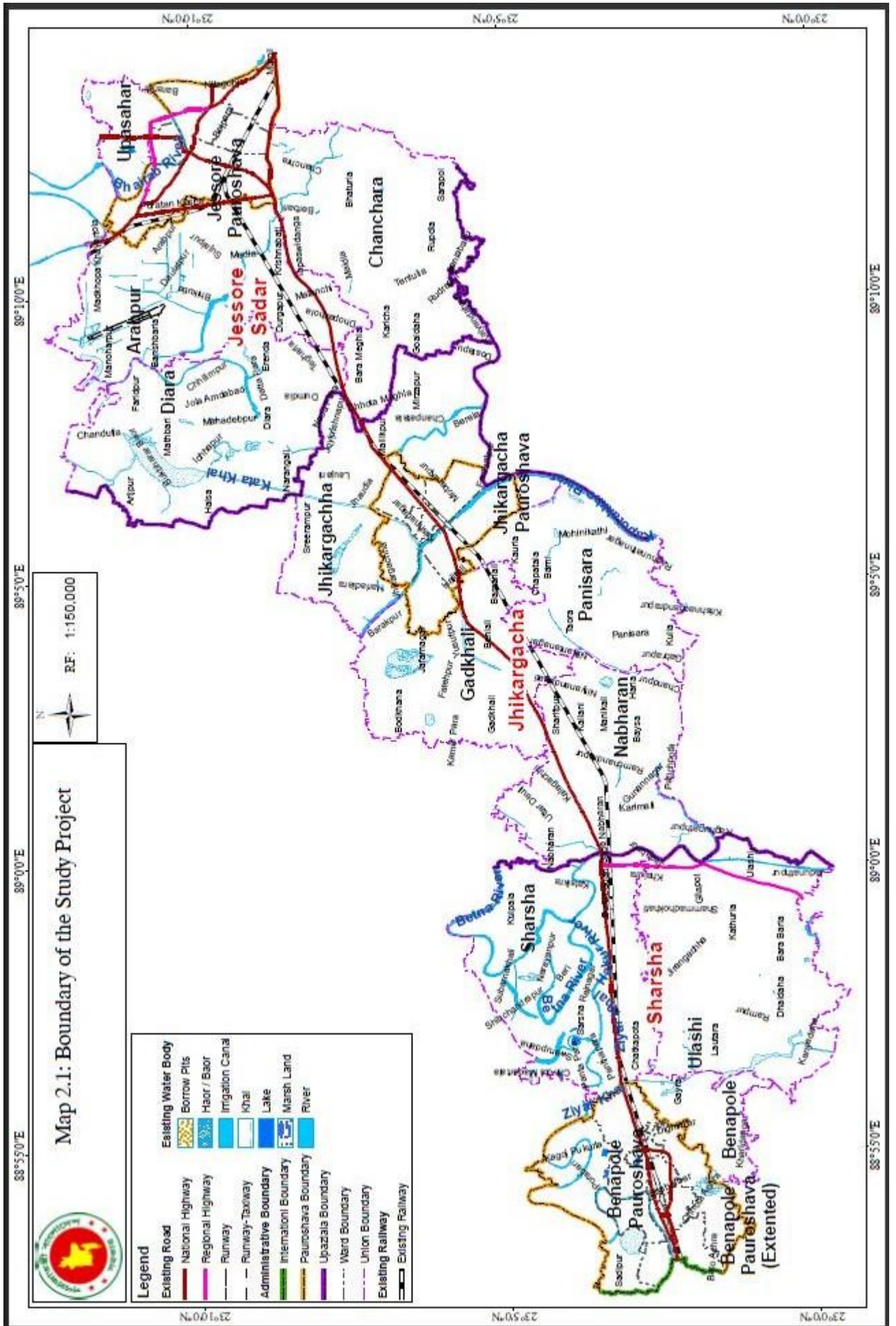
2.2 Objective and Purpose of Structure Plan

Plan is always prepared for the future. However, future is not certain, and therefore, it is not possible to predict the future circumstances of a city with any degree of precision beyond short to medium-term. Thus, the uncertainties can best be reflected through strategy rather than in a plan as uncertain future cannot be given an appropriate physical form. Because of the same reason, structure plan only concentrates on the fundamental and immediate need of the project area and leaves detailed treatment for the other components of the planning package (urban and rural area plan, detailed area plan etc.)

Primary objective of structure plan is to lay down sector-wise policy guidelines. It is accompanied by a number of maps, and a composite map illustrating various plan proposals. It is to be mentioned here that the map of the structure plan is indicative in nature. Meaning, the exact alignment of each of the infrastructures will be finalized at the next stages of the planning package. Objective of the Structure Plan are as follows:

- a) interpret and elaborate national strategies and policies for the project area;
- b) develop inter-sectoral policies and general proposals for spatial and economic development;
- c) identify development potentials and constraints to ensure maximum benefit to the people;
- d) provide framework for the next hierarchy of plans,
- e) ensure that the main planning issues and decisions are brought before the people.

The Structure Plan defines the overall development objective, direction, and extent of growth over a period of next 20 years and defines a set of policy guidelines with an aim to achieve the overall objectives of the Structure Plan. The rigidity problem of the typical master plan is solved through these policies of the structure plan.



2.3 Area coverage of the Structure Plan

According to study proposal, total area of the project is about **324 sq. km.** connecting from Benapole Land Port to Jessore District Town where the areas of urban and rural parts are 130 sq.km and 194 sq.km respectively. The project area is composed of twelve unions under three different Upazila named as Sharsha, Jhikorgachha and Jessore Sadar. The detailed of the administrative units are given below in the table 1.1.

2.4 Duration and Amendment of the Structure Plan

The Structure Plan will remain valid for 20 years from the time of the approval of the same that is upto 2037. Structure Plan can be amended at every fifth year. Meaning Structure Plan can be amended thrice during its lifetime. However, after each of the amendment, Structure Plan must be approved by the Authority. Each of the amendment should be followed by the public hearing for at least two weeks.

2.5 Format of the Structure plan

The structure plan contains the written document and indicative or symbolic major development locations presented in the maps and diagrams as a part of the map. The map showing the strategic land use zones is also included in the structure plan.

CHAPTER 3

CRITICAL PLANNING ISSUES

3.1 Introduction

Main purpose of the structure plan is not only to prepare the corridor for the future but also to provide policy direction to resolve the existing problems. Sole purpose of this chapter is to critically review the existing situation so that the challenges for the planning can be identified and addressed through different strata of the plan.

3.2 Demography and population growth

In 2001, population of the project area was 5,41,471. In 2011, this figure rose to 5,59,938. Using the data of 2001 and 2011, population of the whole corridor is projected for the year 2015, 2020, 2025 and 2030 (Please see Appendix 01). According to the population projection, the project area has total population of 5,90,440 (for the year 2015). This figure is 6,31,434; 6,75,884 and 7,24,108 for the year 2020, 2025 and 2030 respectively. Current distribution of population distribution is shown in Map 3.1.

It is to be noted here that 10 (ten) percent additional population has been added with the projected population. This is because sudden growth of population cannot be comprehended by the typical linear projection. Moreover, in case such sudden growth of population is observed, the project area will be prepared for the same. If it doesn't happen, planning intervention will be such that the resource will not be wasted or underutilized.

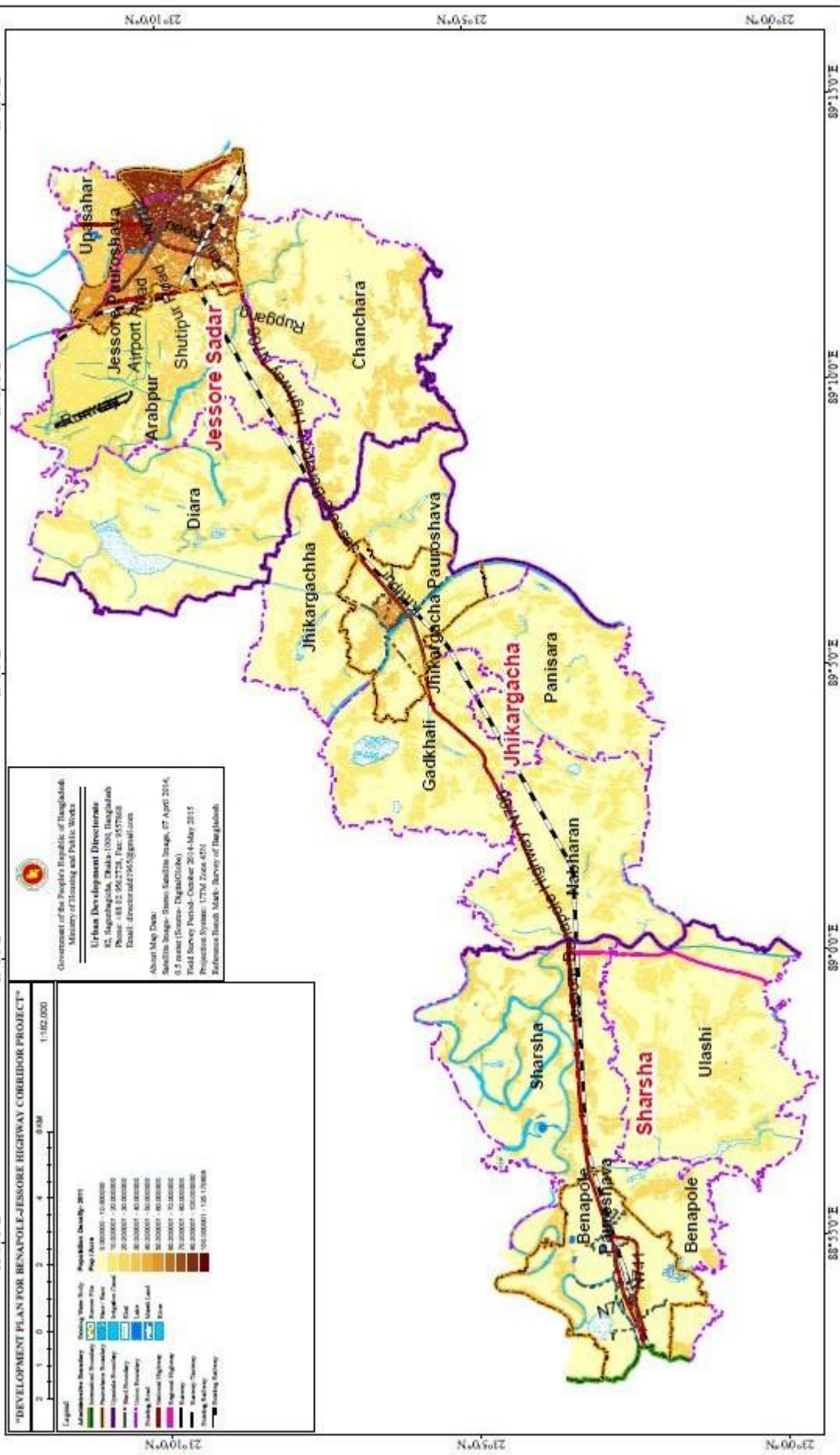
As usual, Jessore being the biggest urban center of the project area, it contains the highest number of households, which is followed by Sharsha and Chanchara. Contrary to this situation, Jessore upashahar has the highest density of households (2987 households/sq.km.) followed by Arabpur, Jessore paurashava, Chanchara and Sharsha. Benapole, Ulashi and panisara unions has the lowest population density.

It is noticeable that the household size of Jessore Paurashava is 4.1. Field survey reveals that 52% households of Jessore Paurashava has less than four (04) family members. According to the Census data (2011), household size is usually smaller for more urbanized and affluent areas. Jessore paurashava has the lowest average household size. For Upashar, jhikargacha Union, Ulashi Union, Nabharon Union, Gadkhi Union this figure is 4.1. For relatively less developed areas, this figure increases until 4.3. From this situation, it can be clearly concluded that the average household size will continue reducing with the economic development of the project area. Increase of population size and decrease of household size will certainly create pressure on the supply of housing units.

The field survey reveals that about 87.9% of the households are permanent residents of the project area. Rests of the households are staying in the project area as tenants for employment purpose. However, after gaining full functionality of the Benapole Land port, economic activity of the project area will gain significant momentum. This will lead to increase of commuting. Percentage of temporary population will also increase significantly in this area.

Map No.:3.1

Existing Population Density Map of Benapole-Jessore Highway Corridor



3.3 Land Use Pattern

Land use dynamics is one of the most important information for urban planners. Land use dynamics provides necessary information related to trend of land use change. However, from the survey report it is difficult to extract any information related to the same. Land use composition of the project area is portrayed in Table 3.1. Evidently, the project area is dominated non-urban land uses (agricultural and Group of Trees or Forest). About 67 percent land of the project area is dedicated for these land uses. This depicts the rural characteristics of the project area. Please see Map 4.2 that depicts the distribution of agricultural and non-agricultural land uses in the project area. More specifically Map 4.3 shows the distribution of existing agricultural land use.

Only 1.82% land existing land is for circulation network and transport/communication, meaning the area lack in communication facilities. This is one of the major hindrances of development. Perhaps because of lack of communication facilities, employment generating activities are also not playing expected role. Only 0.59% land is used for industrial purpose.

Less than 15% land is allocated for residential purpose (Map 3.5 for distribution of residential land use). It is also to be mentioned here that residential density in these areas are very low. With the increase of economic activities of the corridor, more and more people will migrate to the project area. Consequently, land use intensity will increase significantly, residential area will expand and density will increase, more demand for commercial and manufacturing activities will be created, more and more residential land use will be converted to mixed and commercial land use. These changes will be coupled with the increase environmental pollution, increased congestion and deteriorating living environment. It is also expected that the situation will not be constant for all the project area. Change will be drastic in the existing urban centers and the process will be slower in the rural areas.

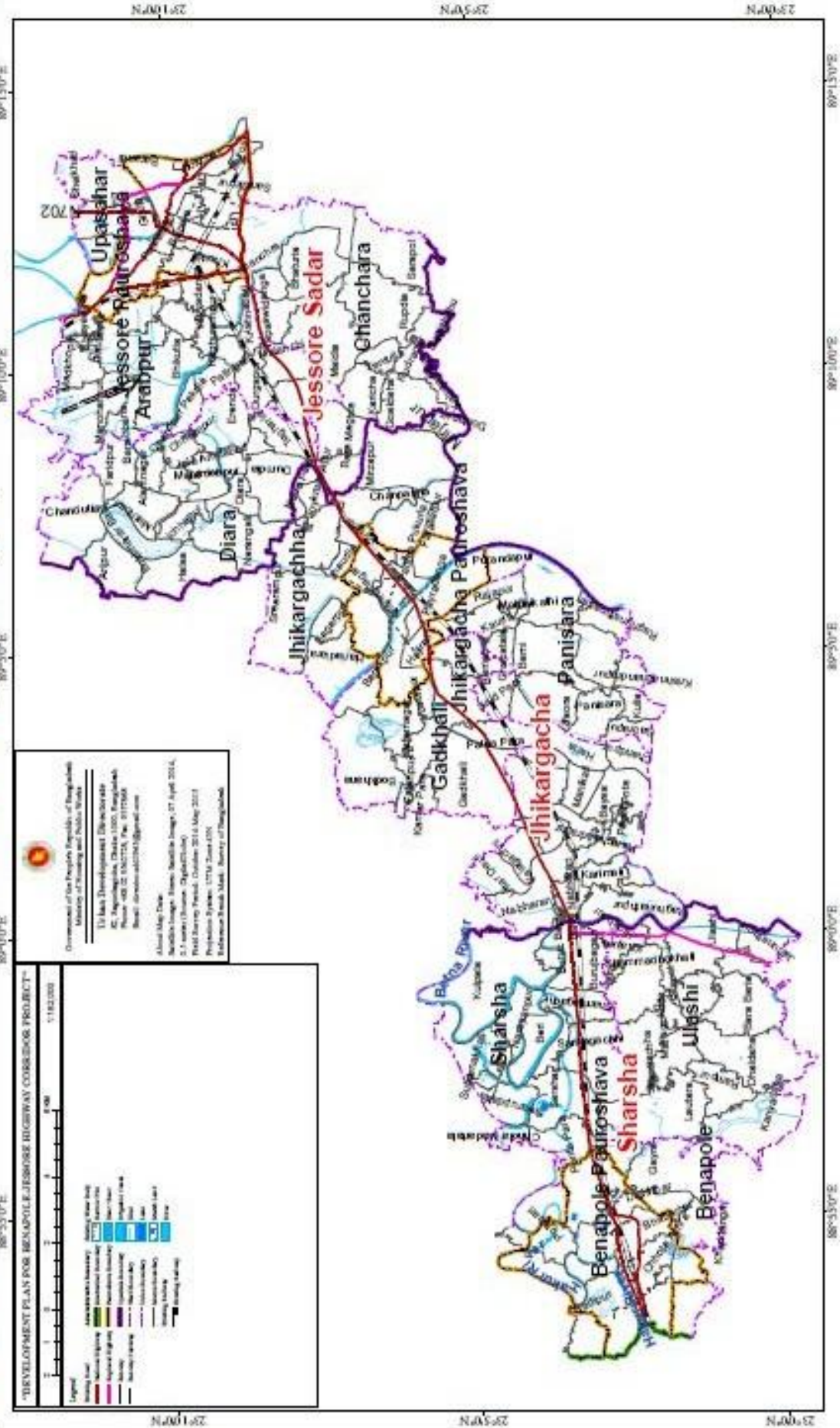
Table 2.1: Land Use Pattern of the Project Area

Sl. No.	Land use Type	Area (Sq. Km.)	Percentage
1	Agriculture	187.08	56.81
2	Circulation Network	5.86	1.78
3	Commercial	0.85	0.26
4	Community Service	0.01	0.00
5	Education and Research	1.11	0.34
6	Government Services	1.86	0.57
7	Group of Trees / Forest	39.70	12.05
8	Health Services	0.07	0.02
9	Manufacturing and Processing Activities	1.94	0.59
10	Miscellaneous	0.01	0.00
11	Mixed Use	2.93	0.89
12	Non-Governmental Services	0.04	0.01
13	Recreational Facilities	0.21	0.06
14	Religious	0.19	0.06
15	Residential	48.20	14.64
16	Restricted Area	7.75	2.35
17	Service Activity	0.06	0.02
18	Transport and Communication	0.14	0.04
19	Vacant Land	0.37	0.11
20	Water Body	30.95	9.40
21	Total	329.34	100.00

Source: GIS Database, Development Plan for Benapole-Jessore Highway Corridor (2017-37)

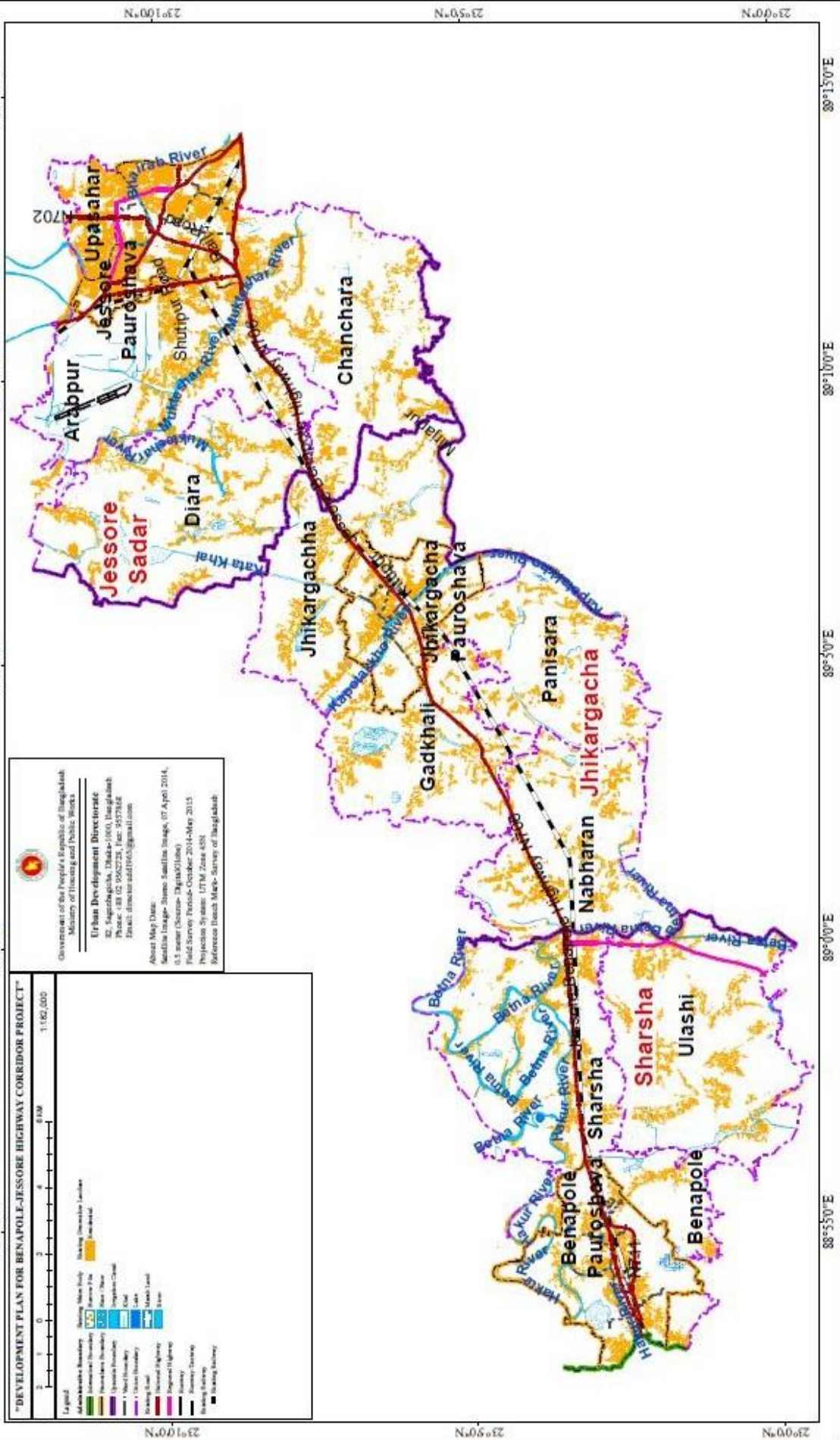
Map No.: 3.2

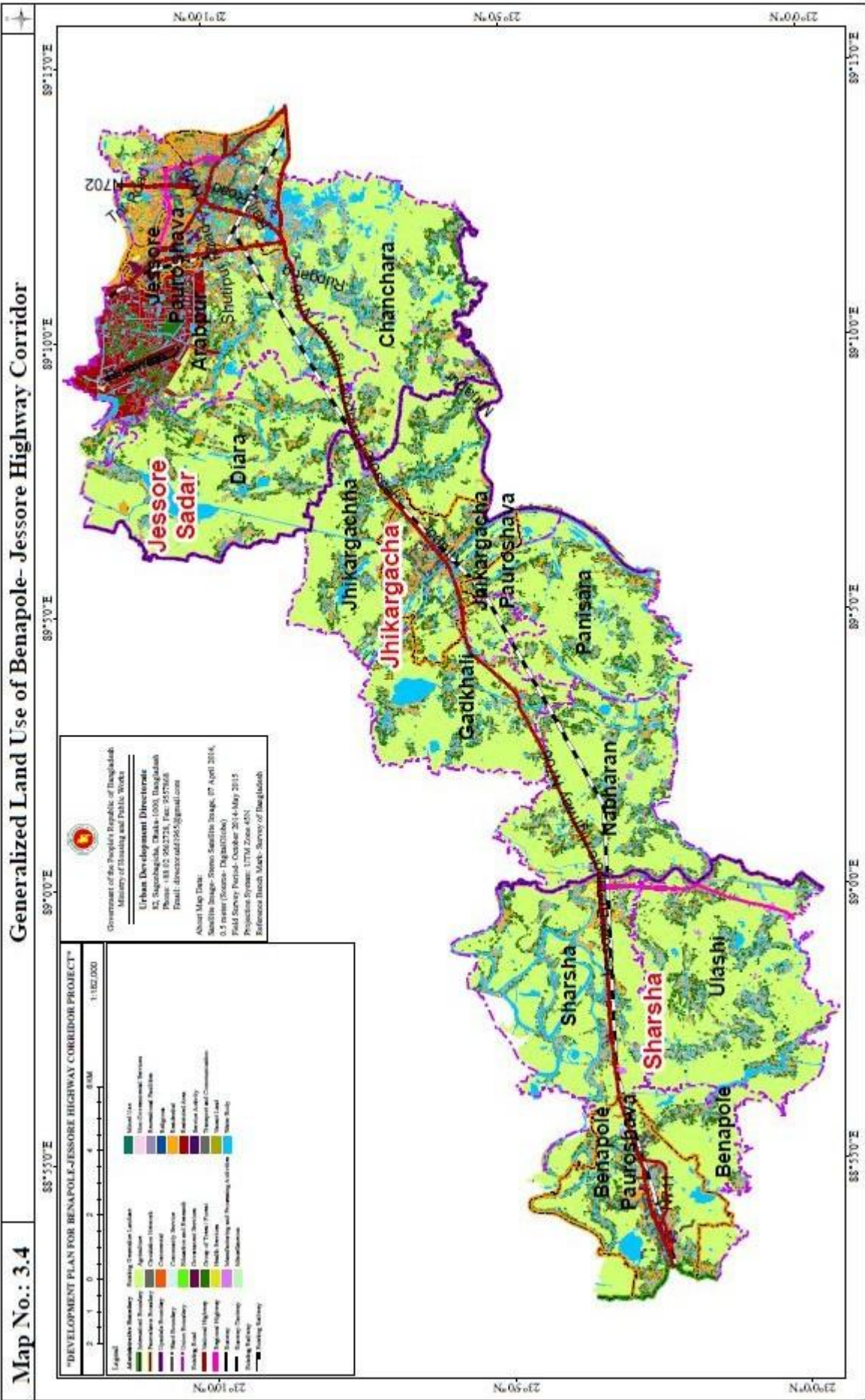
Mouza Index Map of the Study Project



Map No.: 3.3

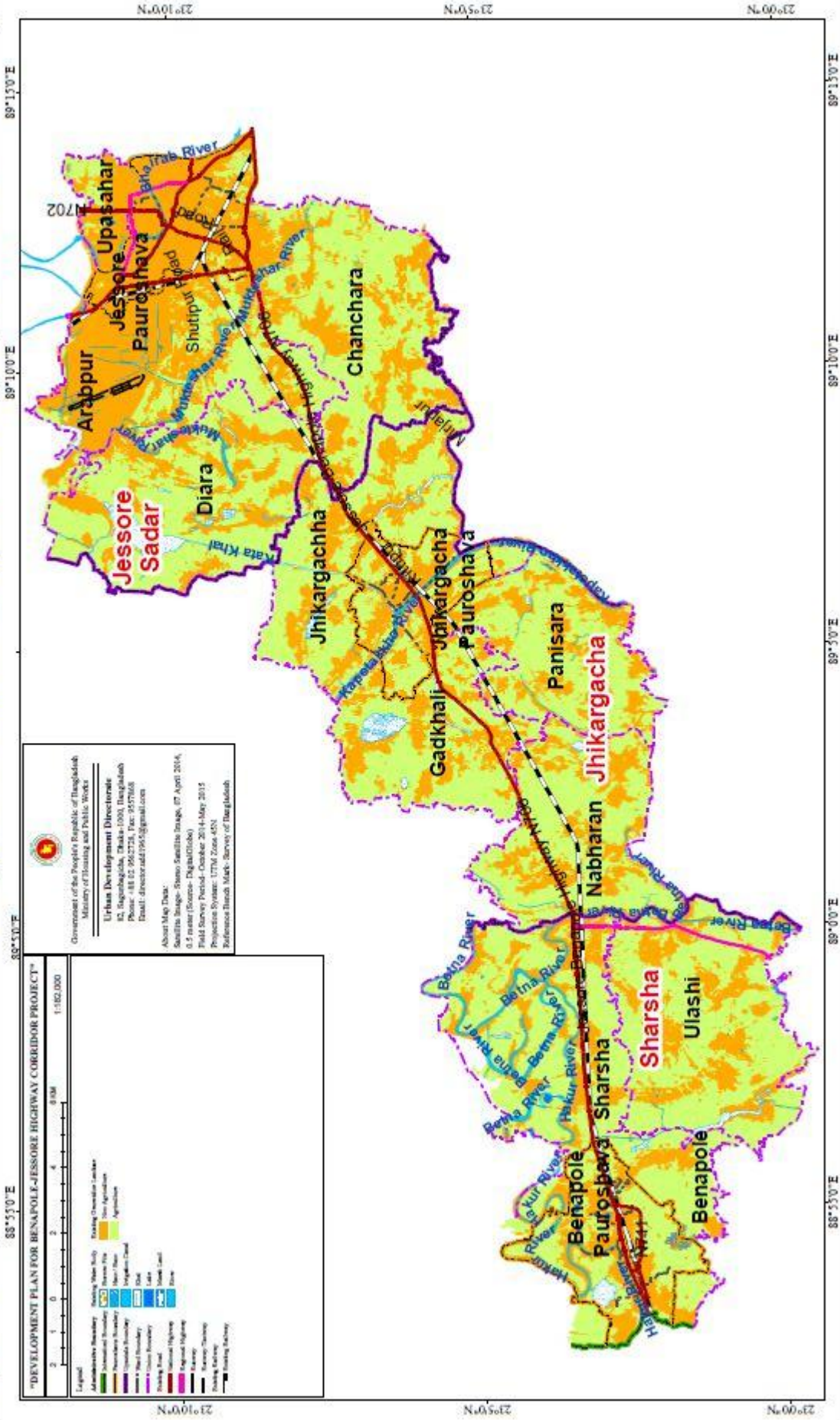
Distribution of Residential Land Use in Benapole- Jessore Highway Corridor





Map No.: 3.5

Non-Agricultural Land use of Benapole-Jessore Highway Corridor



3.4 Transportation and other infrastructures

Benapoe-Jessore highway (N706) corridor connects Benapole, the largest land port in Bangladesh with Jessore city hence the whole country. Therefore, its importance is spread to the whole nation. Being the only connector to the port, N706 remains busy by freight carrying vehicles. However, the vast area on either side of the highway has scattered rural settlements and small urban centers. Most of them do not have any direct regular dependency with the Benapole port but they are also dependent on this highway segment. As a result, this highway serves many stakeholders with varying in transport mode, speed, size and behavior.

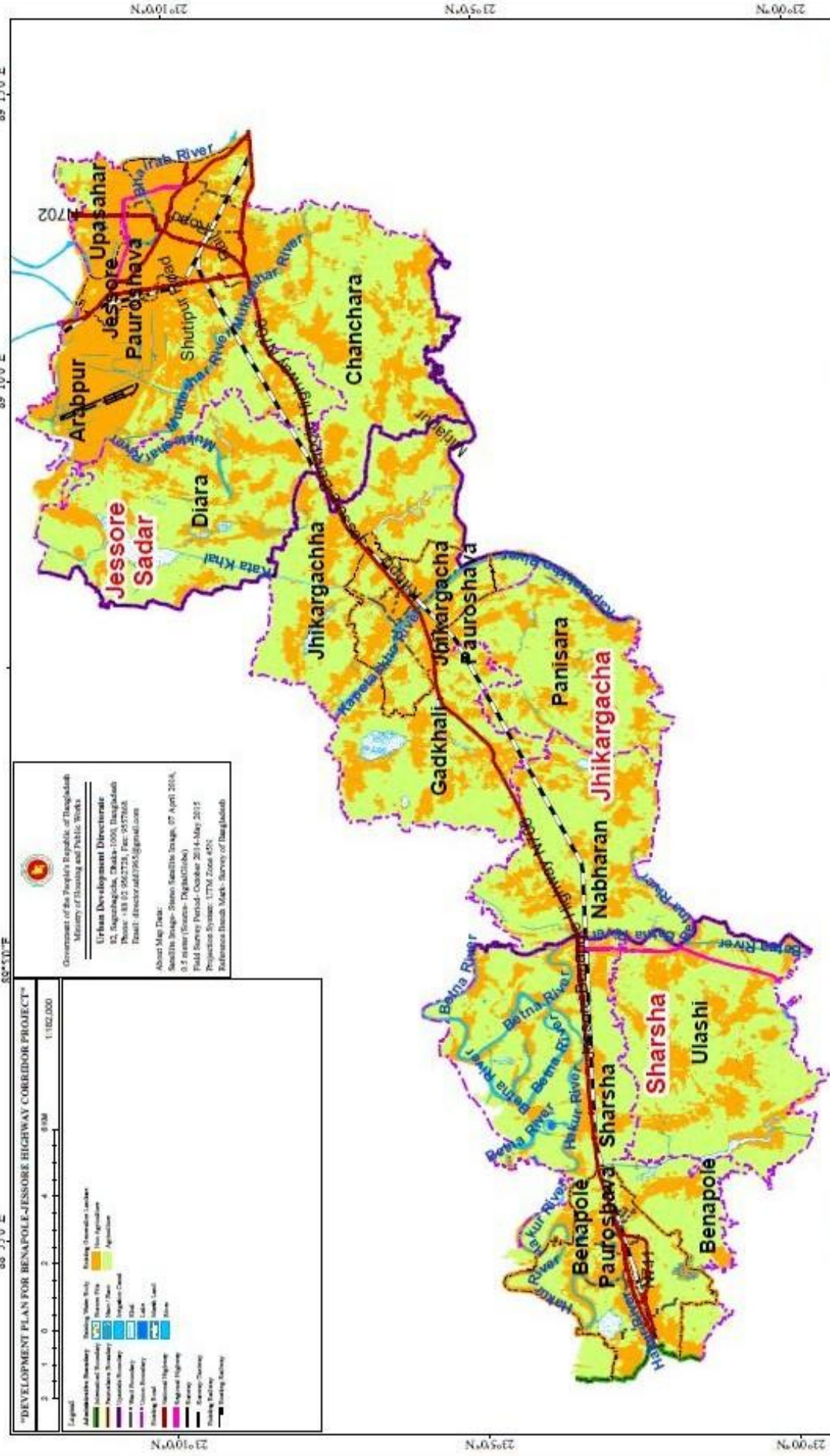
The upcoming increasing port utilization requires increase in highway capacity. To address this demand, RHD has planned to improve the highway to a four-lane by 2021 (RHD Master Plan 2009). It is to recognize that although the port utilization is going high, the non-port user of the highway are significant in number, which needs to address in the plan.

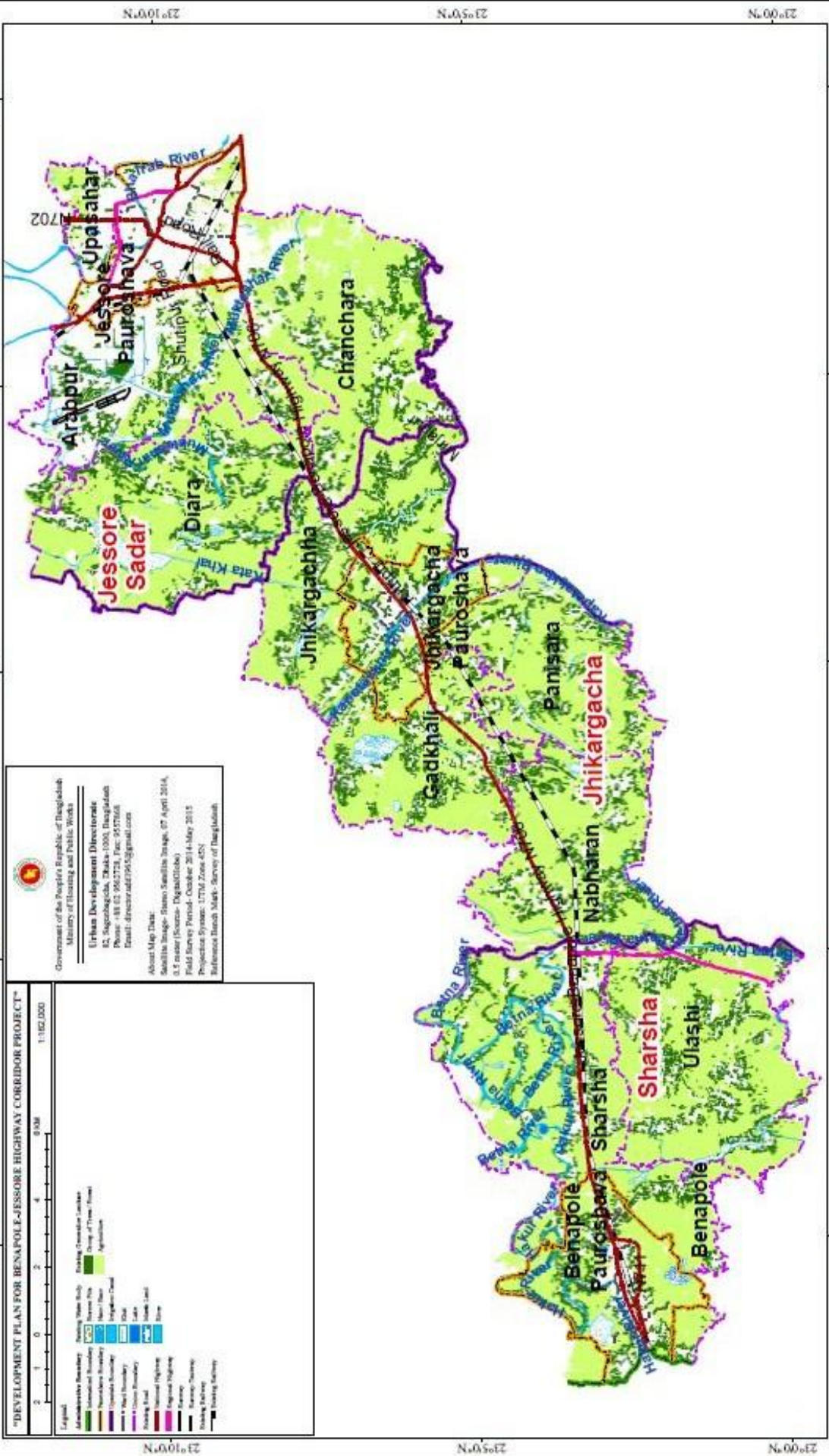
For local agriculture commodity transport generally smaller truck, sometimes even locally made vehicles are used. On the contrary, export-import items from port used heavy-duty large truck. Again, there is a heterogeneous mix of passengers' vehicles including NMT. All these traffic mix creates a slow flow on the road. **Map 3.5** clearly shows that most settlements are clustered beside the road, which is a common scenario for any unplanned area. The same trend can be used as a guiding principle for area development. It is found that without much development control a road can be a good trigger for development. Development refers here construction of buildings for residential or commercial purposes. Therefore, it is suggested that zoning must be defined as a corner stone of urban development strategy for this area. These zones are then connected to each other and a hierarchy of transport network is established.

Every day, about 120 trips are made by public buses between Jessore and Benapole with an interval of 07 minutes. Fare is 1.25 BDT/km. There are 14 stoppages in this route. Public transport connecting Benapole-Jessore highway is vulnerable in terms of public facility. However, it is functional with attributes like delays, irregular, crowded etc. Improvement of the facility will enhance its share by many folds. Visitors to India are important traveller. So that needs to maintain when any improvement plan is made. For example, travellers do carry baggage. The current buses do not have comfortable arrangement for such. The boarding time is generally high that accumulates to a delay in stop. So, improvement in infrastructure and management can improve this boarding time significantly. At the same time, other smaller modes like Mohindra and Auto-Rickshaw are operating on this road. They are sometimes also operating as paratransit and serving the middle and low income who cannot afford private vehicle. Separate management guideline is required for their operation specially to improve their safety issue. In places, management plans are required to ensure that these public transports do not make obstacle on the major roads and flow of freight and passenger carrying vehicles.

Map No.: 3.8

Non-Agricultural Land use of Benapole-Jessore Highway Corridor 89°00' E





3.5 Housing and associated public utilities and services

House is not only a place to sleep. It is a place where all sorts of services and facilities are readily available to make our living comfortable. A house should have source of safe drinking water, electricity connection, healthy toilet facilities, and all other amenities.

Typically, tenancy is also related to the level of urban agglomeration. Higher level of urban agglomeration lead to higher proportion of rented households. BBS (2011) also proves this argument. Highest percentage of rented households can be seen in Jessore Paurashava and Upashahar. Other unions are mainly dominated by the self-owned house. About 19 percent households of Benapole Union do not pay anything as house rent. It can be assumed that these households live on either government properties or properties of some sorts of institutions (in other wards in slums and squatters). Percentage of rent-free households is not that different in other unions.

Currently lowest average household size is 4.0. Family size will continue reducing responding to the socio-economic change. But this change takes a long time to manifest its impact. Assuming that the average family size will be 3.9, total number of required housing units will be **204236**. By the year 2030, total deficit of housing units will be (**204236-126679=**) 77557. This many housing units will need to be created mostly in the already urbanized areas. Fortunately, most of the residential areas of the project area have very low density. Meaning the existing residential areas would be able to consume more people in the next couple of years providing enough time to be prepared for the future.

In terms of drinking water, more than 93% households of the project area use deep tube well. Very insignificant amount of people have access to tap water. Comparatively higher proportion of people of Jessore paurashava (6.34%) enjoy tap water. Other sources contribute very insignificant portion. Evidently too much dependence on the ground water will create tremendous pressure on the same lowering the ground water table risking the drinking water security. The situation didn't improve even after 10 years. BBS (2011) shows that significant portion of the households are still dependent on the tube wells. Percentage of households enjoying tap water did not increase that much compared to 2001. Seems that other than Jessore paurashava and upashahar, tap water is not available anywhere.

According to the BBS (2001), about half of the households used sanitary toilet. A significant portion of the households (15.62%) do not have any access in any kind of toilet facilities. About 33 percent households have access to unhygienic toilet facilities. Households of Jessore paurashava enjoys better toilet facilities compared to other unions followed by chanchara and Nabharan Unions. Households of all these areas have relatively higher or better access to sanitary toilet facilities. Contrary to this situation Ulashi and Panisara Unions have relatively higher percentage of households who doesn't have access to any kind of toilet facilities. Comparison between the situations of 2001 and 2011 using BBS data is almost impossible. Because the latrine type is reclassified in 2011. However, according to BBS (2011), in terms of usages of water-sealed sanitary toilet facilities Jessore Pourashava and Upashahar are at a better condition followed by Arabpur, Diara, Benapole and Nabharon Unions. Non-water-sealed sanitary toilet facilities are very popular in Benapole, Arabpur, Diara and Nabharon Unions.

Highest number of households of Jessore Paurashava and Upashahar enjoyed electricity connection in 2001. Sharsha, Benapole, Arabpur, Diara, Chancra and Gadkhali unions were at the same level in terms of accessibility to electricity. All other unions were at a marginal condition. However, the condition significantly improved in 2011 compared to 2001. In some of the unions, household's access to electricity increased significantly. Foreexample, in Panisara union 33.34% more households ensured their access in electricity between 2001 to 2011. This figure is 28.66%, 28.71%, 25.57%, 24.66% respectively for Sharsha, Ulashi, Arabpur and Chanchara Unions.

3.6 Environment, Drainage and Disaster management

3.6.1 Earthquake

Bangladesh lies in a region with low to high seismic hazard that increases in the northern and eastern parts of the country. Major clustering of seismicity has been observed around the Dauki Fault and scattering of other events along other major fault systems of Bangladesh. However, based on intensity (Mercalli intensity scale) of earthquake, Department of Disaster Management of the Ministry of Disaster Management and Relief has divided Bangladesh into three zones. The project area is located in the southern part of the country, the least active region, where the maximum intensity is not likely to exceed VII (maximum scale is XII), is in the Zone-III (with 0.04g Bask co-efficient).

The project area is located in the Bengal Foredeep (precisely in Faridpur Trough). This Trough is bounded by the Barisal Gravity High in the east and southeast and a hinge zone in the west. In the northeast it finds its continuation in the Sylhet Trough. The Faridpur Trough is characterized by a general gravity low trending northeast. The basement is deeply buried here (about 8 to 10 Km. below mean sea level). Historically majority of the earthquakes are shallow depth in Bangladesh. Therefore, probability of earthquake incidence in the project area is comparatively lower.

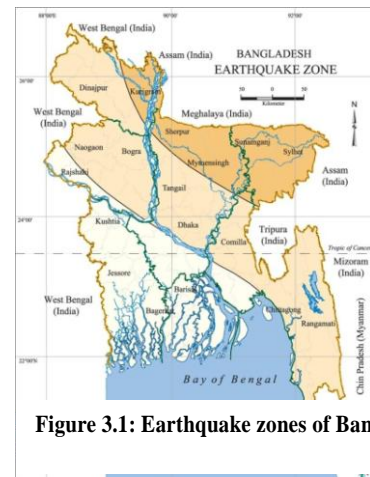


Figure 3.1: Earthquake zones of Bangladesh

3.6.2 Cyclone and water logging

Squalls and cyclonic storms sometimes pass over the area in the months of May-June and September-October and the worst of the type is accompanied by the tidal bore. In recent years low atmospheric pressure in the Bay of Bengal led to frequent storms causing large scale damage all over the coastal area.

Jessore is located in the south west region of Bangladesh. India is on its western part, Shatkhira and Khulna to the south: Jhenaidoh and Magura to the north and Narail to the east. River Bhairab, River Kabodak, River Chitra are the major rivers in this district. This region has a typical tropical monsoon climate regime. River flow varies greatly by season, with water flow in the peak monsoon season between 10 to 15 times greater than in the lean season.

Water logging is the most pressing problem in Keshabpur. Almost 8 months in a year most of the area is inundated. Gradual siltation on the riverbed of Kabodak, triggered by inadequate runoffs in the south reach caused by Coastal Embankment Project (CEP), is the main source of the problem. A series of embankments and polders were constructed as a part of the CEP during the height of green revolution in the early 1960s. The goal of the project was to protect the cropland and homes of the coastal people from saline intrusion, tidal surges and cyclones.

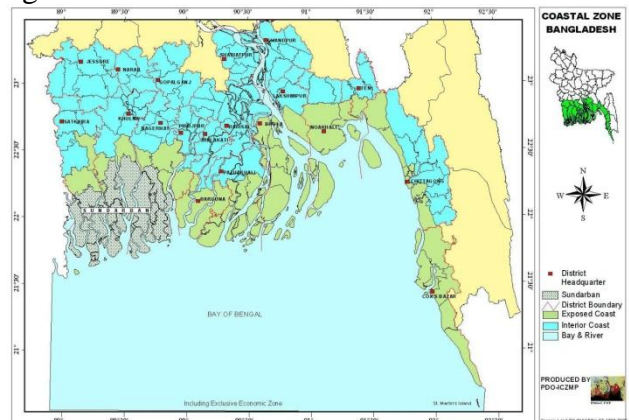


Figure 3.2: Coastal zones of Bangladesh

The project has had some positive effects, with rice production increasing initially 2 to 3 times. However, the project has caused a number of problems including: the siltation of river beds, increased saline intrusion (due to poorly located and/or maintained sluice gates), the narrowing of river estuaries and changes in the normal morphological process of river. Biodiversity is threatened and cultivable land has shrunk. The result is a congested drainage system and a large area of southwest districts (especially, Keshabpur and Manirampur in Jessore) is water logged.

In Keshabpur Upazila, the participants have found the following five general climatic hazards in their locality: (a) excessive rainfall episodes, (b) water logging, (c) salinity intrusion, (d) tornado, and (e) hail storms. Women are of the opinion that often water logging is aggravated due to excessive rainfall episodes in the peak monsoon. The Figure-16 explains the priority of hydro-geophysical vulnerability found from the perception of the women in Keshabpur Upazila. It appears clear that water logging is judged as the key concerns of vulnerability in Keshabpur.

In areas which have been waterlogged most frequently, such as Keshabpur and Manirampur in Jessore, children are reported to be growing up without even the opportunity of going to school. Such instances are illustrative of the ‘dissipation’, rather than the formation of human capital. While the rich can afford to send their children to school elsewhere (e.g., urban centres, safe from flooding), the poor do not have such options. It is in this varied sense that women and children, particularly from the poorest social groups, constitute the most vulnerable segment of the population.

Trees are regarded as assets for the poor people in rural Bangladesh. However, under water logged conditions, poor households lose their assets quite quickly. Most of the common species cannot withstand year-long water logged condition and perish easily. It is ironical that Jessore appears to be the most successful District in terms of vegetation cover, the water logged parts of Jessore is becoming devoid of standing trees.

In waterlogging prone areas, coping for women is the other meaning of survival. They cope with permanent water logging all the time. Women are generally given the responsibility to safeguard virtually everything valuable as well as perishable in moist conditions. They take care of themselves, maintain household physical security, maintain the wellbeing of the children and elderly people, nurse young children, prepare food and still do everything psychologically possible to maintain household harmony. In Jessore, where the prevailing water logging condition is continuing for years, they ‘live through the water world’ amid otherwise hopeless circumstances, even when their male counterparts are in pursuit of earning money and avoiding the water world during the peak water logged conditions.

The experience of development and subsequent management of the tidal basin for the rehabilitation of the choked drainage system in the Khulna-Jessore area, under the Khulna-Jessore Drainage Rehabilitation Project (KJDRP), is a positive example of how to approach adaptation in low lying areas that will be subject to tidal inundation and water logging – the anticipated biophysical effects of sea level rise along the coastal zones. The Tidal River Management (TRM) approach appears to be highly acceptable among the key stakeholders and the cost of implementation is rather low compared to many other coastal development projects (EGIS, 2002). It will be worthwhile to promote such an adaptation only if the early experience yields satisfactory results towards solving the emerging problems along the coastal Zones of the country. (Climate Change Adaptation Research, Climate Change, Gender and Vulnerable Groups in, Bangladesh, December 2008, Climate Change Cell, Department of Environment (DoE), Ministry of Environment and Forests, Component 4B, Comprehensive Disaster Management Program (CDMP), Ministry of Food and Disaster Management)

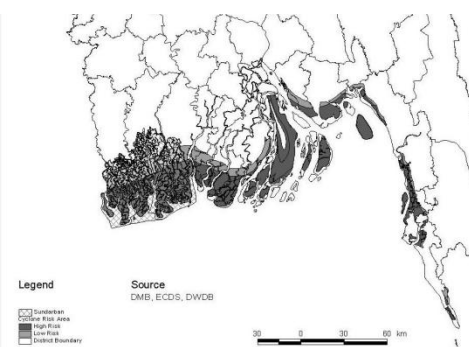


Figure 3.3: Cyclone Risk Zonation of Bangladesh

3.6.3 Water Resources System

The rivers in the South West region bear moderate slope loaded with high concentration of sediment loads. The prominent rivers of the region are the Kobadak, the Betna, the Nabaganga, Bhairab, Pussur, etc. The Jessore Benapole National Highway Corridor intersects mainly the Kobadak and the Betna and numerous beels and baors and khals and canals. Engineering interventions and road networks changed substantially the hydrological features of the region. The development of Jessore - Benapole National Highway Corridor is supposed to take into consideration of the present hydrological condition and accordingly predict hydrological hazards anticipated to be arisen as a result of the corridor development.

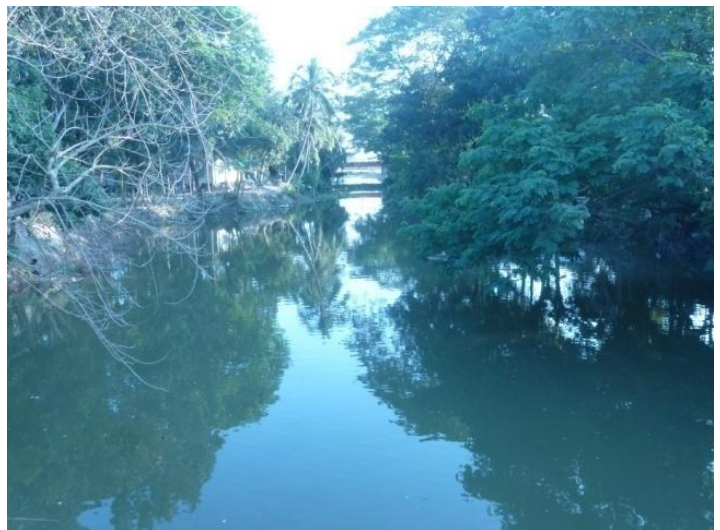
As per topographic setting and based on elevation, the Jessore-Benapole Corridor passes through the middle part of the southwestern part of the delta. The corridor can be characterized by two distinct features. The elevated area at the northwestern tip has a higher gradient and mainly consists of the Ganges floodplain, as shown in profile of section SW-1. Next to this unit, there is a southwest to northeast aligned stretch of low lying area having minimum elevation below MSL, which is classified as the Gopalganj-Khulna Beels, located in between Haparkhali and Nunda Utra rivers in section SW-2 (Figure 3.4).

3.6.4 Historical Development

The region is a complex of inter-linked ecosystems in the delta of the Ganges-Brahmaputra Rivers. Delta progradation or delta building process is the most eminent feature of this region which is influenced by tectonic and seismic activities. The sediment generated by 1950 Assam earthquake is considered to have immense effect on this delta building process, especially on the topography of the estuary (Brammer, 2004). Moreover, erosion of the Himalayas, highland boundaries, avulsion of Brahmaputra has influenced the process. This active delta building process has impact on accelerating the dynamics of rivers and Meghna estuary of this region (Sarker M. A., 2013). The overall river system of this region was flowing eastward previously. But the rivers are now flowing westward due to the adjustment with the delta building process (Figure 3.5).

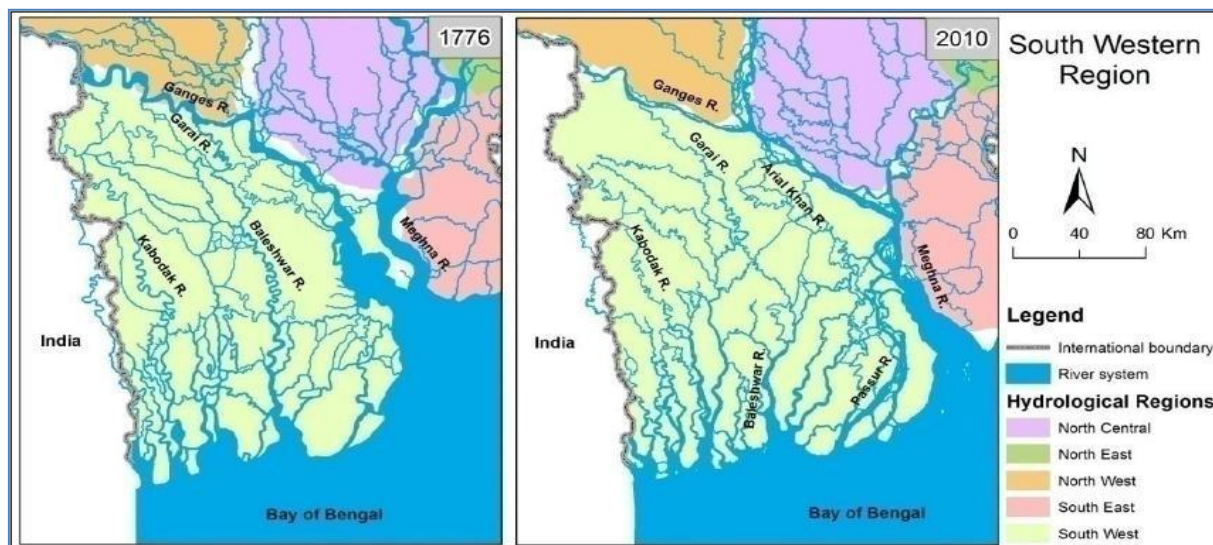


Photograph 3.1: The water regulator structure - fish by pass and sediment trap (British design) at the mouth of Kata Khal joining the Kobadak at Jhikargacha.



Photograph 3.2: Ziyar Khal near Benapole to pass flow from the Hakur River to various beels and vice versa at Benapole Municipality.

Figure 3.4: Historical evolution of rivers in South-West and South-Central regions



3.6.5 Sub regional water resources system and drainage network

The Jessore-Benapole Corridor passes through several water resources system and river (drainage) network which are shown in Figure 5.4. The prominent rivers cross through the corridor are the Mukteshari, the Kapotakhha, the Betna and the Hakur at the border of the Benapole Municipality. There is also one existing Ziyar Khal in the Benapole Municipality area. There are numerous existing haors, baors and beels around the corridor, which function as water storage reservoir for the corridor and play vital role in maintaining ecological and environmental health of the region. The famous of these water bodies are Bukbhora Beel, Srirampur Beel, Bodhkhana Beel along the corridor. There is one big baor created as a result of the Betna river meandering and it is close to Benapole Municipality. Now all these water bodies are turned into precious water resources for capture fish as well as for capture fisheries.



Figure 3.5: Rivers in the South-West Region

The Jessore-Benapole Highway Corridor exists since long time ago and developments of the corridor have undergone various stages after centuries of interventions. As a result, the drainage system through the corridor has reached to a mature stage and usually functioned well except the historical unusual event of 2000 flood.

Table 3.1: Statistics of water bodies

Type	Total	Area	%
Baor/Haor		807.91	10.67
Borrow pits	3	1.91	0.03
Ditch	1436	415.71	5.49
Gher (only fish)	971	589.47	7.79
Irrigation canal	5	3.14	0.04
Khal	30	394.44	5.21
Lake	22	67.23	0.89
Marsh land	13	67.35	0.89
Pond	9865	3677.12	48.57
River	5	1547.26	20.44
Total	12421	7571.23	100.00

It is to be noted that almost every prominent rivers, secondary rivers and parts of water bodies' are intervened by construction of cross dams by local power groups where fish cultures practiced. Cross dams over the water bodies turn the area virtually dead water entities and eco- hydrological regimes are changed totally.

Healthy water ecology has been missing and mono fish culture has led to extinction of other eco-system services. As a result, the region has been suffering from social, biological, ecological, environmental degradations.

To restore the vibrant eco-system services, such cross dams together with other unhealthy practices should be stopped and eliminated through integrated developmental activities.



Photograph 3.3: The newly constructed regulator (BWDB design) close to water structure (British design) at the mouth of Kata Khal joining the Kobadak River at Jhikargacha.

3.6.6 Impact of Climate Change on Water Level

In the backdrop of climate change, it is important to assess whether the anticipated climate change will have any impacts on design water level and discharge. This stems from the present common understanding that the effect of climate change would be to increase the sea level rise and monsoon rainfall which in turn are likely to have an impact on design water level and discharge, respectively. The proposed bridge site is located in a tidal area and therefore the location is considered to be influenced by the impact of climate change in terms of both sea level rise and monsoon rainfall.

According to the Fourth Assessment Report (AR4), IPCC (2007), the average rate of sea level rise was 0.18 ± 0.005 m/yr from 1961 to 2003. Figure 5.17 shows sea level rise based on 23 tidal gauge records around the world from 1880 to 2000 and satellite altimetry data from 1990 to 2000. Trends of rise of sea level at three coastal stations of Bangladesh have been presented in Table 5.13. Using last 22 years historical tidal data, trends of rise of sea level are 4.0 mm/year at Hiron Point, 6.0 mm/year at Char Changa and 7.0 mm/year at Cox's Bazar. Hence the mean sea level rise over the Bangladesh coast is around 4mm/year or 0.4m/100 years.

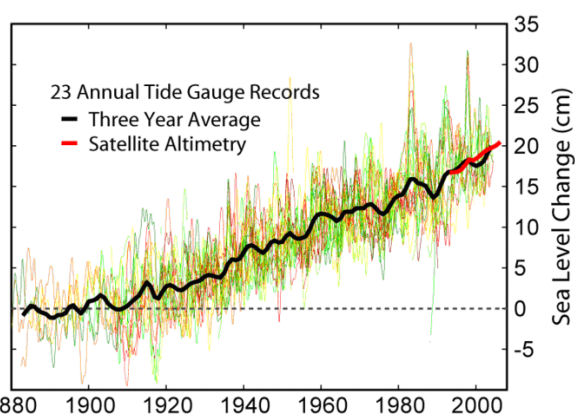


Figure 3.7: Rise of sea level based on 23 tidal gauge records and satellite altimetry. The thick dark line is a three-year moving average of the instrumental records. The recent annually averaged satellite altimetry data are shown in red (Douglas, 1997).

Table 3.2: Trend of tidal in three coastal stations

Tidal Station	Region	Latitude (N)	Longitude (E)	Datum (m)	Trend (mm/year)
Hiron Point	Western	21°48'	89°28'	3.784	4
Char Changa	Central	22°08'	91°06'	4.996	6
Cox's Bazar	Eastern	21°26'	91°59'	4.836	7.8

Source: MoEF, 2005

Based on the predictions of various global climate models data, sea level has been projected for different climate change emission scenarios known as SRES scenarios. According to AR4 report, sea level is projected to rise between the present (1980–1999) and the end of this century (2090–2099) under the SRES B1 scenario by 0.18 to 0.38 m, B2 by 0.20 to 0.43 m, A1B by 0.21 to 0.48 m, A1T by 0.20 to 0.45 m, A2 by 0.23 to 0.51 m, and A1FI by 0.26 to 0.59 m. Figure 3.18 shows projected sea level for various SRES scenarios. In all scenarios, the average rate of rise during the 21st century very likely exceeds the 1961 to 2003 average rate (0.18 ± 0.005 m/yr). During 2090 to 2099 under A1B, the central estimate of the rate of rise is 0.38 m/yr. For an average model, the scenario spread in sea level rise is only 0.02m by the middle of the century, and by the end of the century it is 0.15m

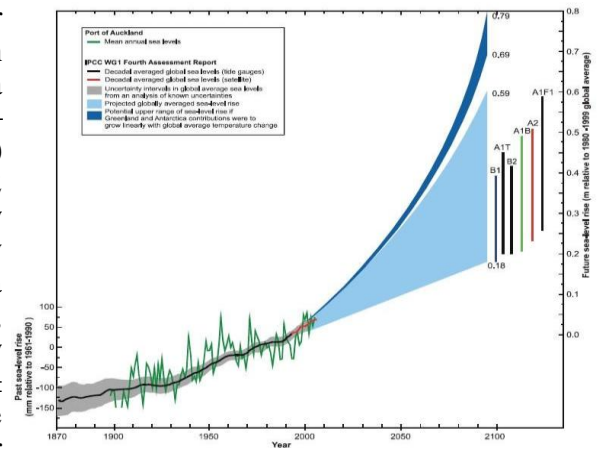


Figure 3.8: Predicted Sea Level rise (IPCC, 2001)

According to the IPCC, mean rise of sea level based on the SRES A1B scenarios will be 0.35m (range 0.21m-0.48m) at 2090-2099 relative to baseline years 1980-1999. Hence, mean change of seal level in the next 20 years will be 0.07m. Given the uncertainties in the projection of the sea level rise and the fact that the proposed corridor location is far away from the coast line, the effect of sea level rise due to climate change on design water level is not considered in subsequent analysis.

3.6.7 Estimation of Flood Inundation

Two rivers, namely the Kobadak and the Betna-Kholpetua cross the Jessore-Benapole Highway Corridor and are responsible for flood hazards over the corridor as well as the adjacent areas. Estimation of different water levels on the Jessore-Benapole Highway Corridor has been discussed in the Chapter Four.

The flood hazard has been assessed from the design flood magnitude as determined from flood frequency analysis with the help of open source GIS software and DEM. The flood frequency analysis were carried out to estimate design high water levels based on the best fitted Probable Distribution Fitted curves, corresponding to 2.33-, 5-, 20-, 50- and 100-year return period floods. Flood inundation maps were generated accordingly for the 2.33-, 5-, 20-, 50- and 100-year return period floods over the Jessore-Benapole Highway Corridor.

Flood analysis results of the Jessore-Benapole Highway Corridor showing return period in yr, water level in m PWD and inundated area in m2 and % are shown in Table 6.1. Flood inundation map showing all the return periods (2.33-, 5-, 20-, 50- and 100-year) in one map is shown Figure 6.3, while in Figures 5.4 to 5.8 they are shown individually for each flood corresponding to each return period respectively. They show that existing development areas, settlements, infrastructures, the total corridor etc. are supposed to be under floodwater creating many kinds of hazards which need to be taken into consideration for planning and development purposes.

Table 3.2: Flood analysis of the Jessore-Benapole Highway Corridor

Return period (year)	2.33	5	20	50	100
Water Level (m PWD) at Jhikorgachha	4.77	5.25	5.91	6.27	6.53
(%) of area inundated	41.65	55.54	74.36	85.31	92.45

Source: GIS Database, Development Plan for Benapole-Jessore Highway Corridor (2017-37)

CHAPTER 4

BENAPOLE-JESSORE TRANSPORT CORRIDOR

4.1 Introduction

With an aim to strengthen regional cooperation for economic development, the Asian Highway project was conceived by UN-ECAFE (United Nations Economic Commission for Asia and the Far East) in 1959 among the main land countries of Asia, based on road transport linkages. This name was subsequently changed to UN-ESCAP (United Nations Economic and Social Commission for Asia and the Pacific) in 1974. The Asian Highway network is now 141,000 km long and across 32 Asian countries with linkages to Europe. The Asian Highway is now one of the three pillars of Asian Land Transport Infrastructure Development (ALTID) project comprising the Asian Highway, the Trans-Asian Railway and facilitation measures for border crossing. 1,761 kms of Bangladesh national highways are included in the Asian Highway network. Two major routes of the Asian Highway, AH-1 and AH-2 cross Bangladesh. Route AH-1 enters Bangladesh at Tamabil in the East and passes through Sylhet-Dhaka-Padma Bridge-Narail- Jessore –Benapole. Having this background of national and international importance, the Road and Highway Department (RHD) has planned to upgrade the Benapole Jessore highway to a 4-lane highway. The construction of the Padma bridge has enhance the feasibility of the highway widening. The only bottleneck is Kalna ferry on Modhumoti at Bhatiapara, Magura; which is recently bought under attention to be constructed by 2020. These developments along with increasing trade through Benapole border will enlighten the Benapole-Jessore Corridor and its development.

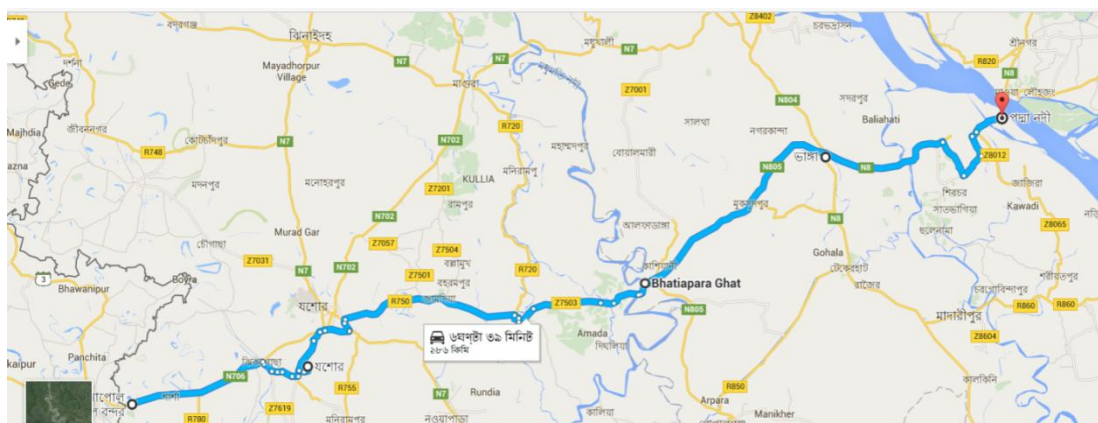


Figure 4.1: Alignment of Benapole to Padma Bridge Highway (part of AH1)

This potential connection link between Benapole to Padma bridge is currently taking nearly 7 hours (Figure 4.1). With the improvement of Benapole-Jessore highway to a 4-lane, it would be reachable by 3 hours for a vehicle travelling at a speed of 60 Km/Hr.

Benapole-Jessore highway (N706) corridor connects Benapole, the largest land port in Bangladesh with Jessore city hence the whole country. So, its importance is spread to the whole nation. Being the only connector to the port, N706 remains busy by freight carrying vehicles. However, the vast area on either side of the highway has scattered rural settlements and small urban centers. Most of them do not have any direct regular dependency with the Benapole port but they are also dependent on this highway segment. They might be going to Jessore for their job or business or shopping. Farmers in this catchment are using this highway also to carry their seed, fertilizer and yield to markets. As a result, this highway serves many stakeholders with varying in transport mode, speed, size and behavior. Having this in the backdrop, this project aims to develop an urban development strategic plan that keep the importance of the port connectivity but ensure smooth mobility of the catchment dwellers.

The upcoming increasing port utilization requires increase in highway capacity. To address this demand, RHD has planned to improve the highway to a four-lane by 2021 (RHD Road Master Plan 2009). It is to recognize that although the port utilization is going high, the non-port user of the highway are significant in number which needs to address in the plan.

4.2 Location and Role

Bangladesh has a significant advantage in term of geographical location within the South Asian region and has every possibility to become a regional hub with utilizing the opportunity through regional connectivity. It is a general argument that Bangladesh should situate the issue of Indo-Bangladesh transit in a broader regional context associated with the commitment of Bangladesh Government to the establishment of an Asian Highway and Railway. Large investment is to be needed to improve the road and rail system of Bangladesh for inducing this establishment. There will be needed massive investment not only in road, rail and riverine infrastructure but also in transit traffic if Bangladesh is to even approximate her aspirations to graduate to middle income country by 2021.

Benapole is located in Jessore district, one of oldest district in Bangladesh. Jessore Pourashava is the largest hub of trade and commerce in this region. Land Port at Beanpole with appropriate transit services, transport and rail facilities alone with the development of existing road and rail infrastructure up to Jessore having modern river-port facility at Jhikorgachha will be a first step to accomplish its vision 2021 as a middle income nation. Port facility development projects must be consistent with national development plans and relevant local development plans. In general, development requires a significant period of time and influences significant areas of the country. Regional transport networks and socio-economic activities must be taken into consideration when developing the facilities.

4.3 Existing Conditions of Transportation

Beanpole and Jessore is connected both by rail and road. Several local markets along this highway route have become hub for business. The north and southern connections from this highway ensure access to scattered settlements across the whole landscape. From travel behavior analysis it becomes evident that people from all corners of this corridor depend on this highway or its segment to commute to work or to travel to education institutes. Along with this, this corridor is the sole transport link to connect Benapole land port with the rest of the country. As a result, the highway (N706) is busy for the significant portion of the day. This highway (N706) is connected to several local roads causing numerous intersections on it which often hamper its efficiency to act as a major export-import corridor.

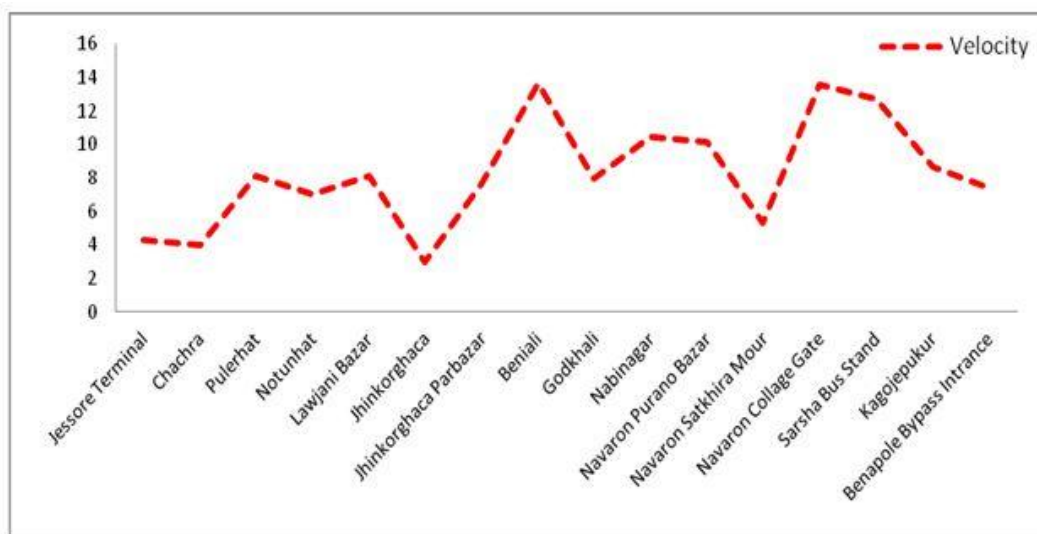


Figure 4.2: Velocity (m/s) of Public Bus from Jessore to Benapole

Several transport modes are plying on this highway. Among passenger vehicles bus, minibus, tempo, easy bike all are in operation on this highway. For freight transport container carrier and heavy trucks are prevailing modes. It was found that among passengers to travel between Benapole and Jessore bus is a dominating mode (12%) to travel in this route. Though Auto rickshaw accounts for 30% of total vehicle plying on this highway, those are mainly for shorter trips and mostly originates and ends inside the corridor.

For freight, container carrier and large-small trucks are operating. Among passenger vehicles bus, minibus, tempo, easy bike all are in operation on this highway. It was found that among passenger carrying modes bus is a dominating mode (12%) to travel in this route. Though Auto rickshaw accounts for 30% of total vehicle plying on this highway, those are mainly for shorter trip. Public bus operating on this route starts Jessore Bus Terminal and travels through fourteen stoppage before they reach to Beanpole Stoppage. A GPS tracking on this bus shows that average speed of those buses are below 15 Km/Hr. Frequent stoppage, congestion around stoppage, slow vehicle on the same lane are some of the causes for such slow movement.

4.4 Land use Transport Interaction and Trend of Traffic

Land use and transport has a well-recognized reciprocal relationship. Nature of traffic on a road largely depends on the land use and its intensity of the places it connects and its surrounding land use that have access to it. Along with port-city connection, this highway connects several growth centers. This results movement of raw materials to farms and yields to market through it. For local agriculture commodity transport generally smaller truck, sometimes even locally made vehicles are used. On the contrary, export-import items from port used heavy duty large truck. Again, there is a heterogeneous mix of passengers' vehicles including NMT. All these traffic mix creates a slow flow on the road.

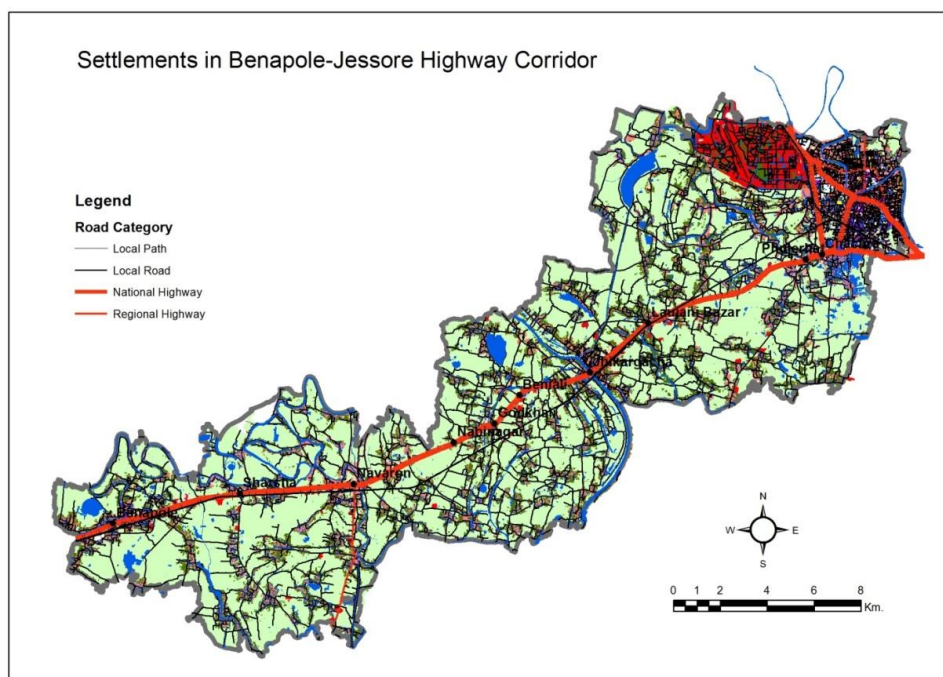


Figure 4.3: Settlement Pattern in Benapole-Jessore Corridor

Figure 4.3 shows that most settlements are clustered beside the road which is a common scenario for any unplanned area. The same trend can be used as a guiding principle for area development. It is found that without much development control a road can be a good trigger for development. Development refers here construction of buildings for residential or commercial purposes. So it is suggested that zoning must be defined as a corner stone of urban development strategy for this area. These zones are then connected to each other and a hierarchy of transport network is established.

4.5 Issues to Address

Existing two lane highway is insufficient for current traffic. As Several growth centers are located near roads and cause congestion. In addition movement of heterogeneous traffic on same lane makes it overall slow and inefficient. Public transport service is poor; in term of service quality, reliability, safety and comfort. Moreover, Lack of bus-bay or stoppage facility. Local roads are directly connected to the national highway with many opening. On the other hand there is no effective road hierarchy. As a result, uncontrolled traffic movement, Lane violation, driving speed, overtaking, and stop on lane creates congestion on important intersection.

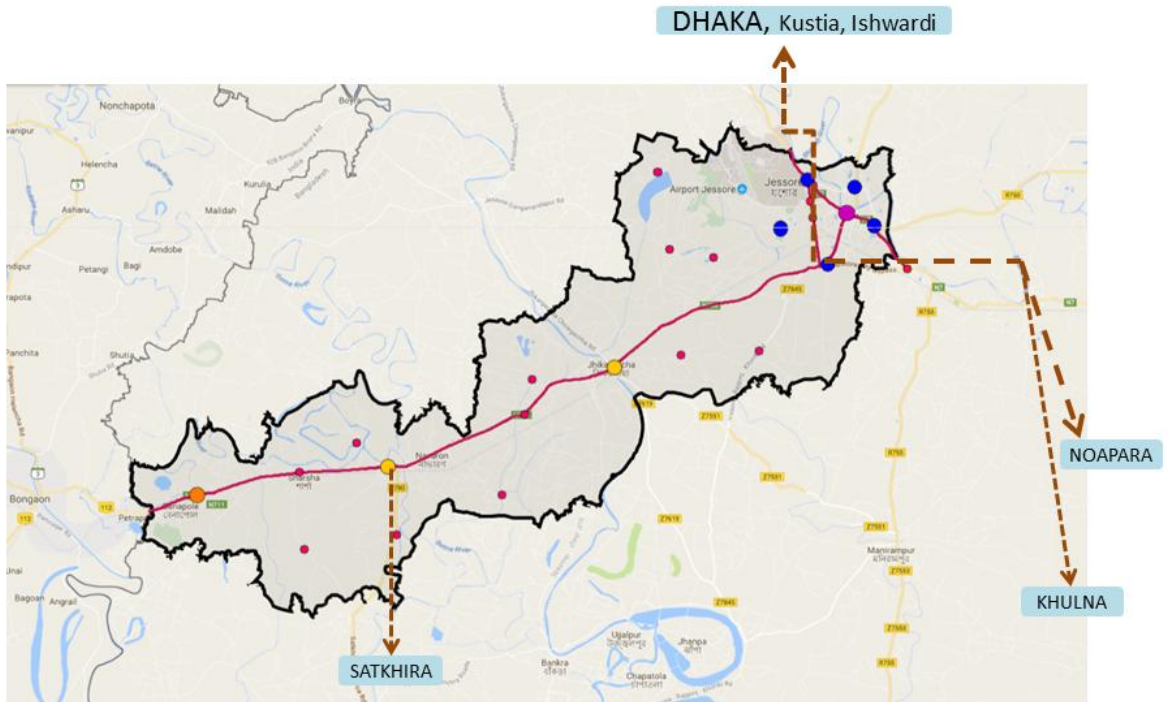


Figure 4.5: Connectivity of Benapole-Jessore Highway

While bearing on the above mentioned issues in mind, this project aims to ensure efficient, safe and environmentally sustainable movement of freight and passenger along this corridor, to ensuring access for local habitat to employment, schools / colleges, community facilities. It aims provide access to market for agriculture practices and to reduce dependency of local residents on the N706 for local purpose (school, shopping etc)

4.6 Strategies to address Objectives

The Government of Bangladesh has taken several initiatives to enhance connectivity around Benapole land port. ADB's technical assistance for Benapole-Jessore highway's feasibility study and detailed design for a planned upgrade of the whole 38-kilometer is one of them. It is set to inject more than BDT 3.29 billion (\$42.05 million) to fund the Indo-Bangladesh transport corridor improvement to facilitate trade and connectivity (SASEC, 2016).

According to the plan, the highway will be upgraded following international standards to better accommodate heavy vehicles. The project is set to be completed by December 2019. The plan has been submitted to the Bangladesh Ministry of Road Transport and Bridges for approval. The highway is central to several regional connectivity initiatives, including the Bangladesh-Bhutan-India-Nepal Motor Vehicle Agreement, BIMSTEC road corridors, SAARC highway corridors, and SASEC road corridors.

Map No.: 4.2

Proposed Connectivity of Benapole-Jessore Highway Corridor

"DEVELOPMENT PLAN FOR BENAPOLE-JESSORE HIGHWAY CORRIDOR PROJECT"

Legend

Administrative Boundary	Railway
District Boundary	Canal
Upazila Boundary	Lake
Water Canal	River
Road	Canal
Canal	Canal
Road	Canal
Canal	Canal
Canal	Canal
Canal	Canal

Scale

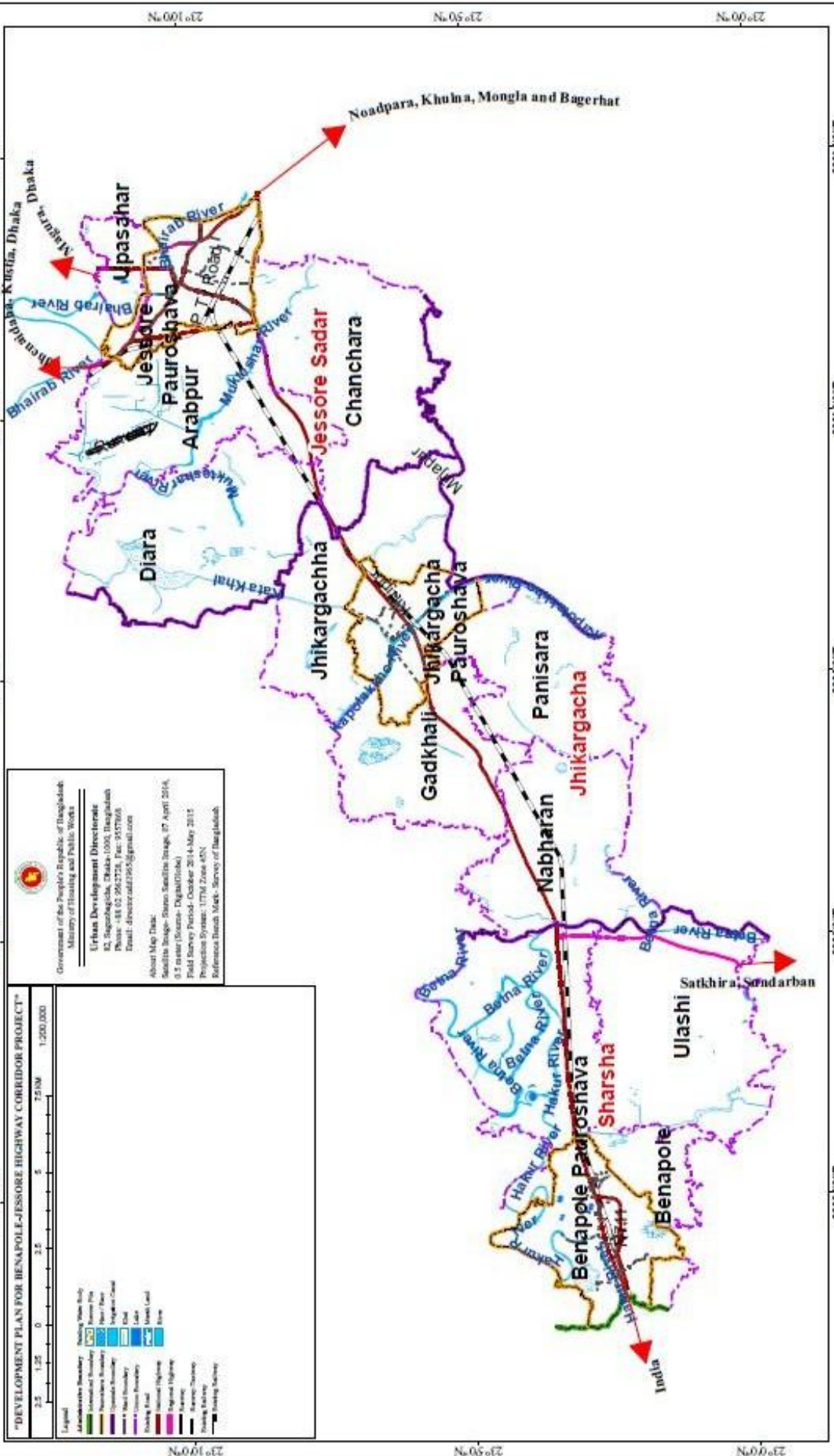
0 2.5 5 7.5 10 12.5 15 17.5 20 22.5 25 27.5 30 32.5 35 37.5 40 42.5 45 47.5 50 52.5 55 57.5 60 62.5 65 67.5 70 72.5 75 77.5 80 82.5 85 87.5 90 92.5 95 97.5 100

Scale: 1:250,000


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About Map Data:
Satellite Image: Stereo Satellite Image, 07 April 2016,
0.2 meter (Source: DigitalGlobe)
Field Survey Period: October 2014-May 2015
Projection System: UTM Zone 45N
Reference Bench Mark: Survey of Bangladesh





Photograph 4.1: Queue of freight lorry

Almost 90% of total goods imported to Bangladesh from India pass through the land port on the border of Benapole, Bangladesh, and Petrapole, India. Only 80 kilometers from the Petrapole-Benapole border is Kolkata, a major commercial hub in India. The incoming freight and passengers are distributed to regional markets and national market.

At the same time, there is a culturally rich and agriculture wise important landscape is spread on the either side of the corridor. Since, urban services (school, college, shopping, hospital etc) are low in number; they are located on the both side of the highway. This has created enormous cross-highway small trip causing disruption to long distance freight. These settlements are low in density and dispersed all around. Having this background, the main strategy is taken to ensure free flow of traffic and freight without causing any negative impact on people's life and living. Key strategies and mode of implementations are:

- Ensure free flow on Benapole-Jessore Highway (N706).
- Widening the highway to six lane
- Provision of service road at intersection
- Provision of separate lane for light vehicle at grade
- Traffic management
- Provide local major road for local mobility (parallel and loop) by widening existing road and new road in case it is needed to complete the loop.
- Ensure access to distant locality to allow development to penetrate.
- Provide micro link and enhance links in the city to enhance connectivity

4.7 Future Plan

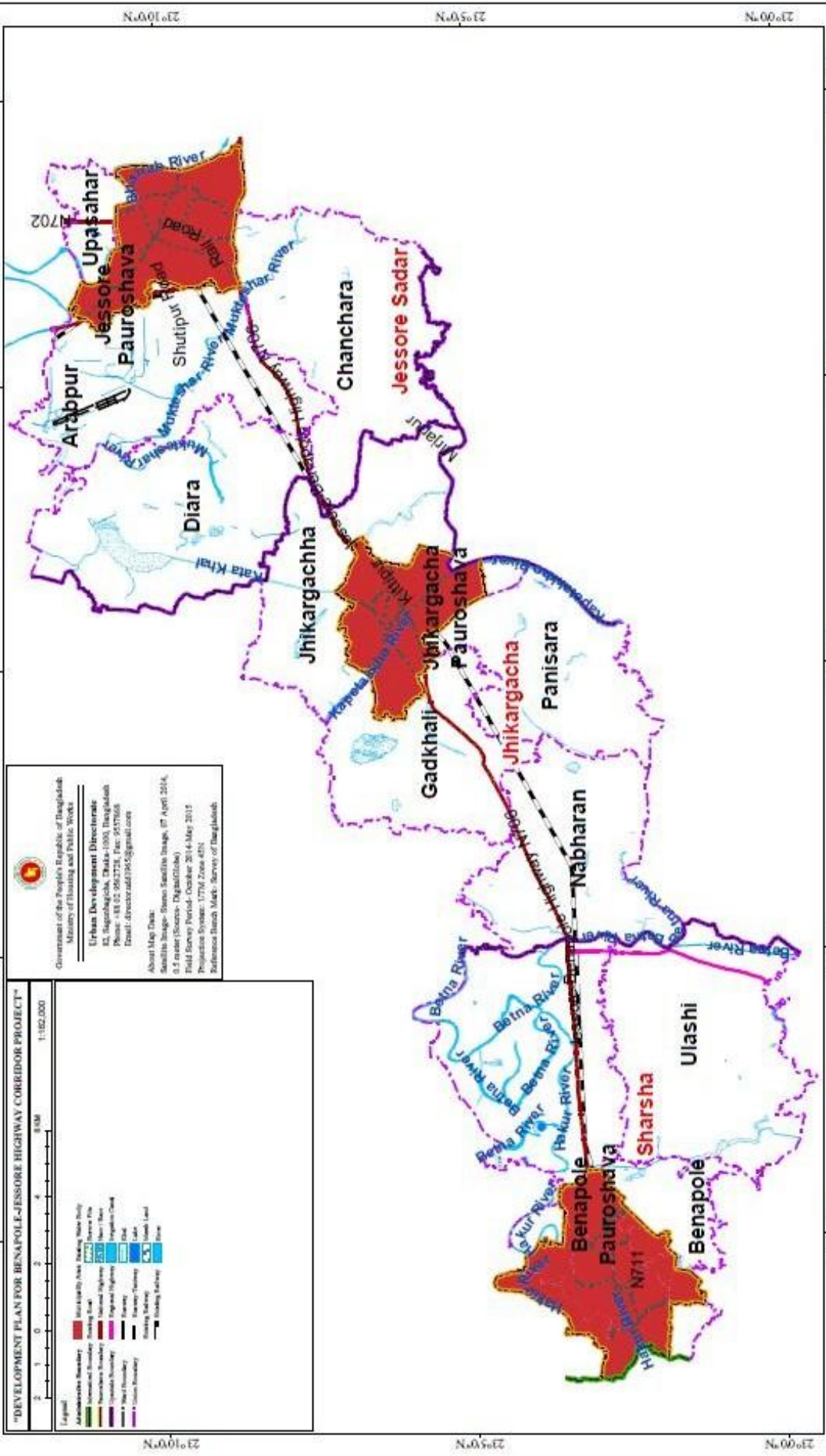
Future plan of this area must be a coordinated effort among urban development, infrastructure development, growth centers, land use and nature of economic activities.

Strategic Connectivity: The strategic importance of this corridor reach to a wider geography of Bangladesh. It is an evident that business and activities around beanpole will increase, hence traffic. One of the challenges for the planners to divert this traffic to its destination through Jessore.

The construction of Padma bridge, Kalna bridge and widening of Jessore-Narail Highway (R75) will divert Dhaka bound traffic from N7 to R705. Moreover Jessore City Bypass is already saturated to accommodate the increasing traffic. To address this issue, south part of Jessore City bypass (from Chachra bazar more to Muroli more) is recommended for widening and a new wide road is proposed for construction to connect Muroli more to R750 through Baliadanga (Figure 11). This will save Jessore city from having Dhaka and Khulna bound traffic. However, Kustia and Ishwardi bound traffic will be using N7 and Jessore City Bypass.

Map No.:4.3

Municipal Areas within Benapole-Jessore Highway Corridor



There are three municipal areas located within this corridor. Jessore being the oldest urban center of Bangladesh draw significant attention to national economic activities. Being the gateway to Benapole port, the largest land port in Bangladesh Jessore has importance to regional connectivity. Beanpole and Jhikorgacha are two municipal areas. Benapole is important for having Benapole port and Jhikorgacha is traditionally a center place for trade and commerce in the region. It is assumed and also reflected in surveys that these urban centers have their own hinterland for economic activities and they also have external links. These links are explored and appropriate roads are enhanced to minimize their cost for Benapole port bound traffic.

This spatial pattern of urban centers might give an impression that urban activities are located within these three centers and rest are low density and agriculture. But in reality we can see scattered settlements distribution across the whole landscape (Figure 4.4). Location of job and economic activity is the central theme for any growth centre. Figure 4.4 also demonstrates the relation of transport network and job density. Benapole, Navaron and Jhikargacha sprung among the crowd to be higher order of urban centre. Sharsha, Godkhali and Laujani can be in second order. It reveals that all concentrations are on highways based market – depicting as a meeting place for the economic activities. This also indicates a lack of parallel roads; as a results people concentrate of the common access point – that is on highway.

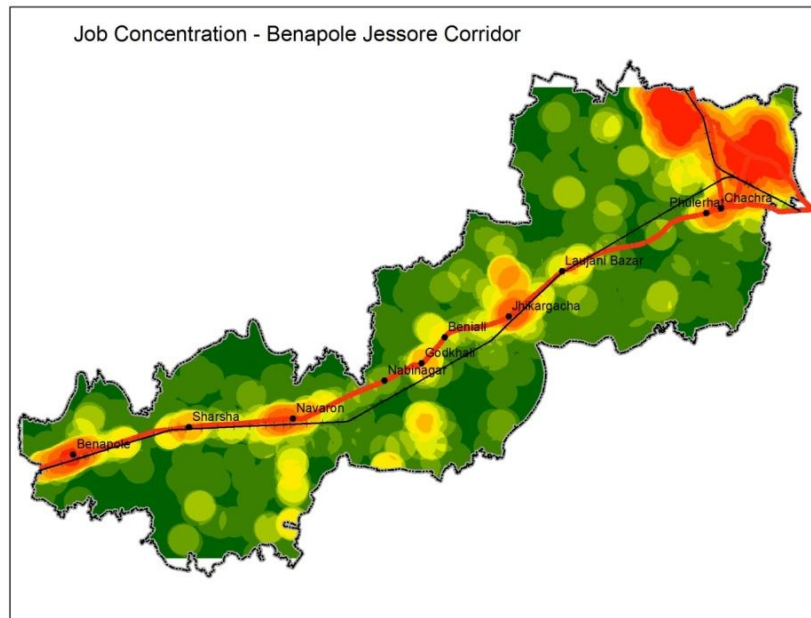


Figure 4.6: Concentration of economic activities

Figure 4.8 present an urban development strategy for the corridor. A significant portion of Benapole, Sharsha, Navaran and Jhikorgachha is built-up area. This can be defined as urban Agglomeration and development of this area can be densified with investment in infrastructure and control in other areas, which will eventually attract development in this area. Godkhali, Laujani Bazar and north and south of Benapole port having very low density of development can be of Urban Promotion area. On the other hand, a vast area on north and south of Jhikargacha can be preserved for agriculture based rural settlements.

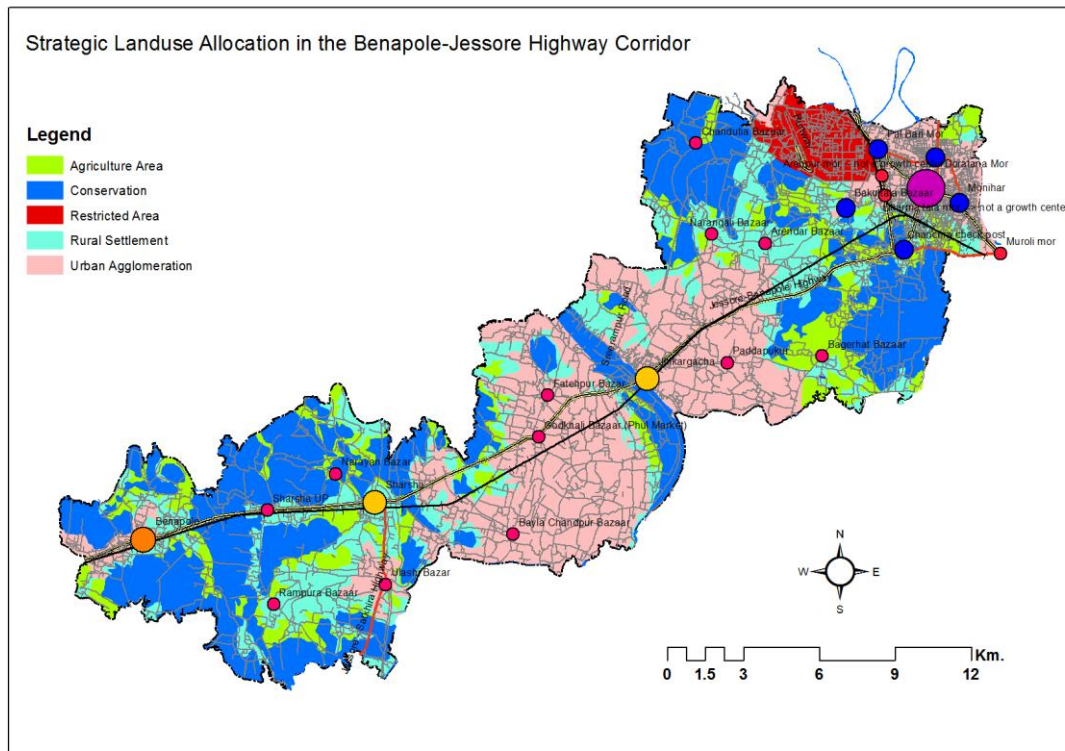


Figure 4.7: Strategic Land Use Allocation in Benapole-Jessore Highway Corridor

Road connectivity of these zones will be required at varying scale and certainly of different densities. For example, rural settlements will require a lesser road density but a firm connectivity with main roads/highways. But urban agglomeration will require more roads to ensure the use of all area of the zones without creating much pressure on roadside land.

To promote urban agglomeration, accessibility is to ensure and local roads network is to complete. It is an idea to connect an urban growth centre with a major road (level 1) which can ensure quick access. However, land acquisition for such wide road can be a major hindrance and expensive to implement. In that case, those roads can be selected which has wide right of way (ROW) to expand. Figure 4.9 identifies are road alignment that can be improved. Existence roads are considered with highest degree of importance and in few cases new roads are proposed realizing the challenges for land acquisition.

4.7.1 Railway: So far there are only few trains coming to Benapole in a single day. Since it is of parallel to highway and slow in operation, it is not attracting much passengers. The train service is not popular for passenger travel. However, it can be a potential mode of freight transport specially when connection with Mongla port is complete. It requires huge investment to modify freight handling infrastructure in station. The recent declaration of having direct train from Bangladesh to Kolkata is a promise for the improvement of the corridor. It involves development of train track and rolling stock on the both side of the border. The under construction rail toward Mongla is another indicator that this line is going to be a busy freight channel. It will be prudent to have multimodal integration facilities at present rail junction.

- 4.7.2 Transport Management Plan:** Transport management of this corridor has components:
- To ensure easy movement for freight and passenger from and to port
 - Connecting small, local settlement to provide access to education, business, health and other urban services
 - Facilitate local economic activities (mostly agriculture based).
 - It is suggested that spatial zoning is made to demark area for future urban development.

Facilities and services will be located in those zones and other areas are expected to experience no urban development. These require strong presence of urban governance and implementation of physical plans.

Road Hierarchy: At first, a road hierarchy is to establish followed by an urban hierarchy. In proposed hierarchy:

- Level-I roads will connect growth centres on highway with clusters of business and settlements
- Only level I roads will connects the highway
- Level II roads will make connection between two level I road or connect level I with cluster of economic activities and settlements
- Local roads will be connected to level I and level II roads (preferable).
- Service road along the highway will be provided in places where level I intersects with highway. This is to ensure that congestion created at intersection does not impact of the flow of traffic on main roads.

Traffic Management: Managing traffic is a challenging issue in all roads in Bangladesh. However, without proper management practices no plan can do any good. Few proposed traffic management suggestions are:

- Having dedicated lane for large freight vehicle and passenger bus
- Demarcated shoulder for NMT vehicles
- Penalty for violation of traffic laws
- Managing public transport stoppage
- Prohibited on-street parking

Public Transport: Public bus is a major mode of passenger transport for people of following group:

- People working in Benapole port and its related business but living in Jessore city or its surrounding area.
- People living in those urban center or villages are working or studying in Jessore
- For travellers to India, peak hour of bus travel is morning (from 6 am)
- From Jessore bus terminal to Chachra more bus literally do not move, they basically pick passenger from street and authorized stoppage.
- Due to frequent stoppage and congestion the average speed of the public bus stays below 15 Km/Hr
- Bus stoppages do not have passenger waiting facility.

Implementation Strategy: This corridor required planning and development intervention both from urban planning and transportation perspectives. Major strategies could be:

- Road widening – 6 laning of highway and improvement of level I roads that connected important growth centre.
- Urban Hierarchy – on the outset of any physical development, urban hierarchy of the area needs to establish. Area for urban agglomeration and zones for rural containment need to define. This will assist in providing urban services in a more effective way.
- Road Hierarchy – defining urban centres will trigger the need for a road hierarchy. The geometry of such road will be appropriate for the type of centres it will connect.
- Growth centre connection – as part of urban hierarchy, growth centres need to identify and connection are made accordingly.
- Service Road – to stop too many access points service roads could be introduced at important intersection where local roads will directly connect to service roads instead of highway. This will allow the through traffic.
- Traffic Management Plan – along with these physical development a traffic management plan need to initiate which includes reinforcing traffic rules.

Benapole-Jessore Highway: It has been spelled out in several government documents that Benapole-Jessore is going to be a 4 to 6 lane highway (Figure 4.12). It has been proved that excluding NMT from highway will be impractical and inhuman to local communities. Separate lane has been proposed for NMT and light vehicles like Easybike.

Benapole Jessore Highway: 100 feet right of way (ROW) - SECTION

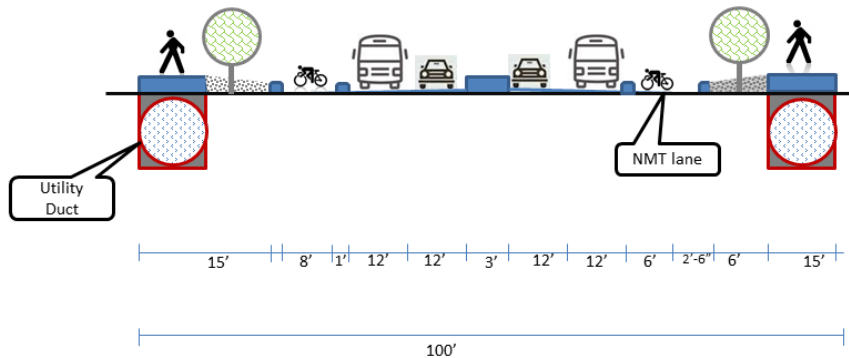


Figure 4.8: Conceptual planning of Benapole-Jessore Highway

It will be practical to have provision for a utility duct through which communication and utility infrastructure can be laid. At the same time, provision of bus bays are to install.

Benapole Jessore Highway: 100 feet right of way (ROW) - PLAN

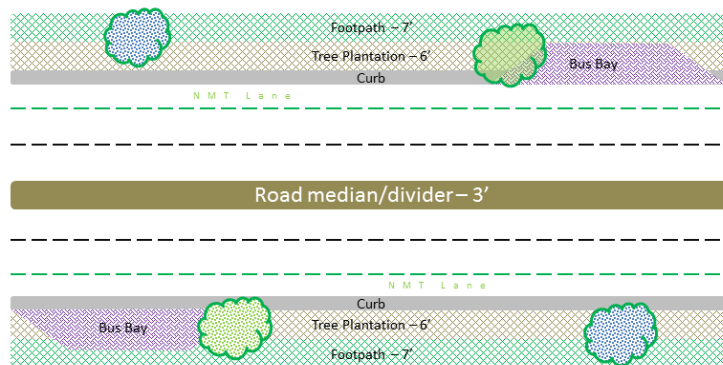


Figure 4.9: Plan of the proposed Highway

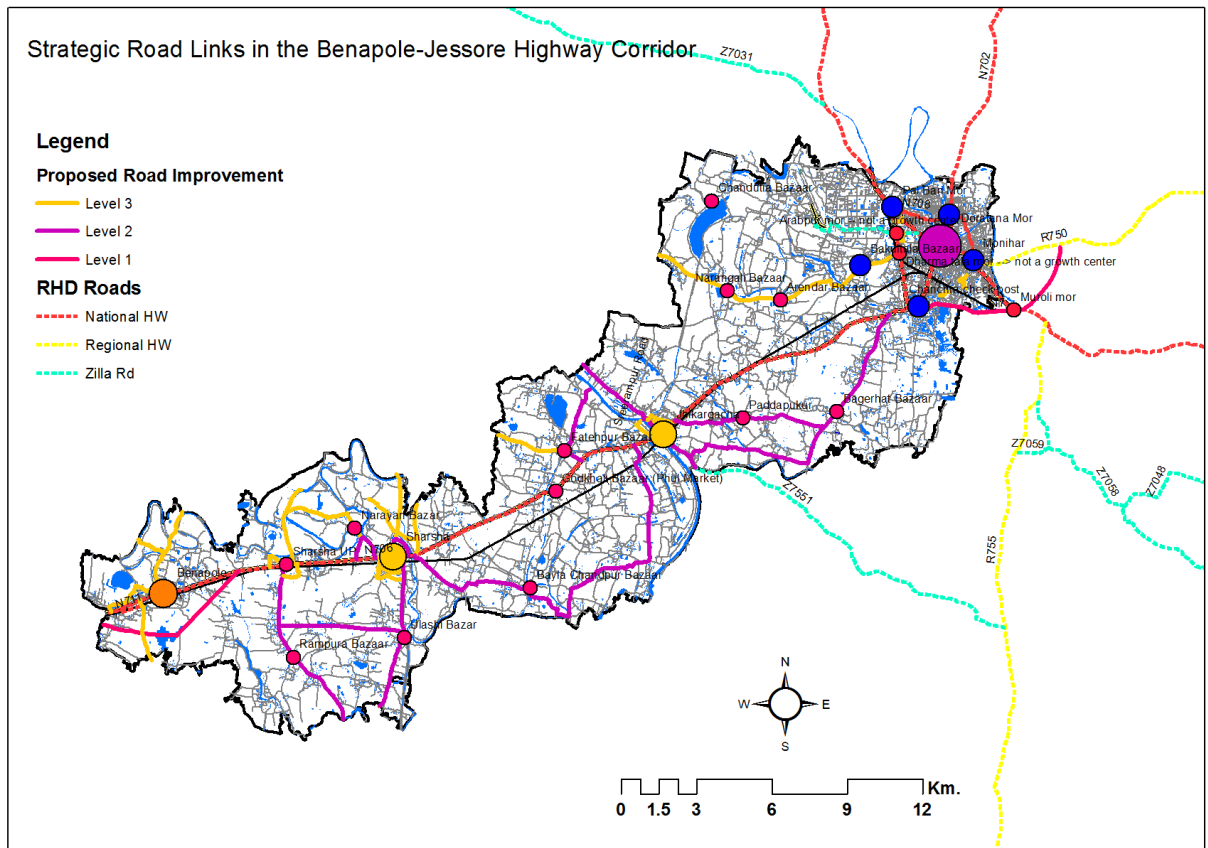


Figure 4.10: Proposed road hierarchy

Link for External Destination: Widening of Khulna bypass from *Chachra mor* to *Muroli mor* has been proposed with the same highway geometry (100 feet). At the same time, a new highway link is recommended for construction (Figure 4.12).

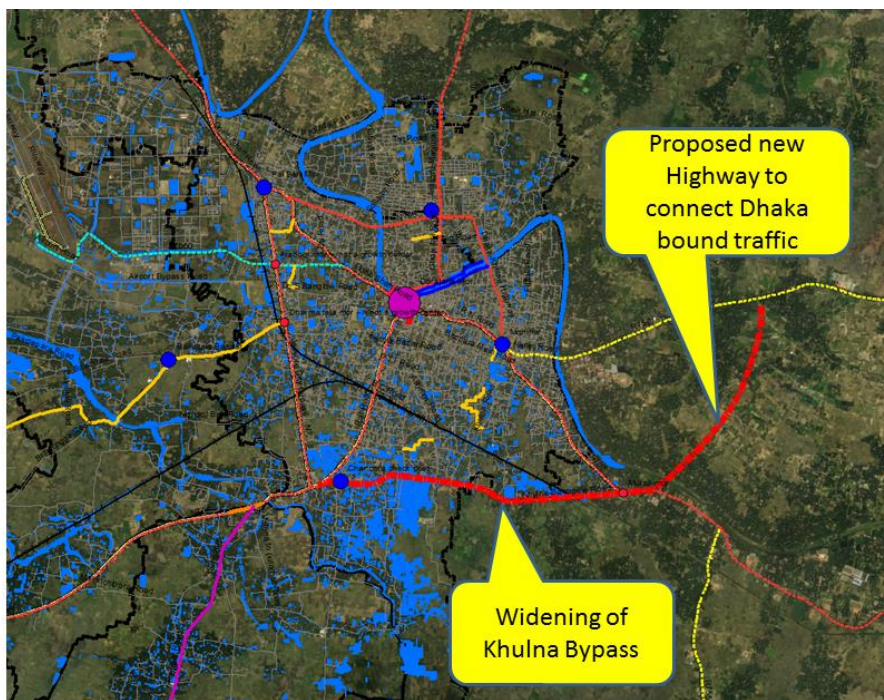


Figure 4.11: Proposed improvement of external links

Major Roads / Loop / Parallel Roads: It is found that except the Benapole-Jessore highway all other roads are local road without any hierarchy. Several major roads are recommended with varying width. Basic idea is that local traffic can avoid national highway (N706) as much as they can do and more economic activities that serves the local community can be moved and located off the highway. Importance has been given to those roads which has market connectivity. Several roads are recommended parallel to national highway and loops are created as development can be contained within this loop.

Service Road: Service road has been proposed at important intersection of the highway corridor. It is to facilitate local markers on the highway and keep it refrain from causing congestion for the through traffic.

Street Signage and Furniture: The following street signage and furniture are recommended for the beanpole-Jessore Highway:

- Traffic movement direction indicators
- Lane specific vehicle indication (left lane for slow and battery vehicles)
- Speed limit indication
- Bus bay



Figure 4.12: Bus bay

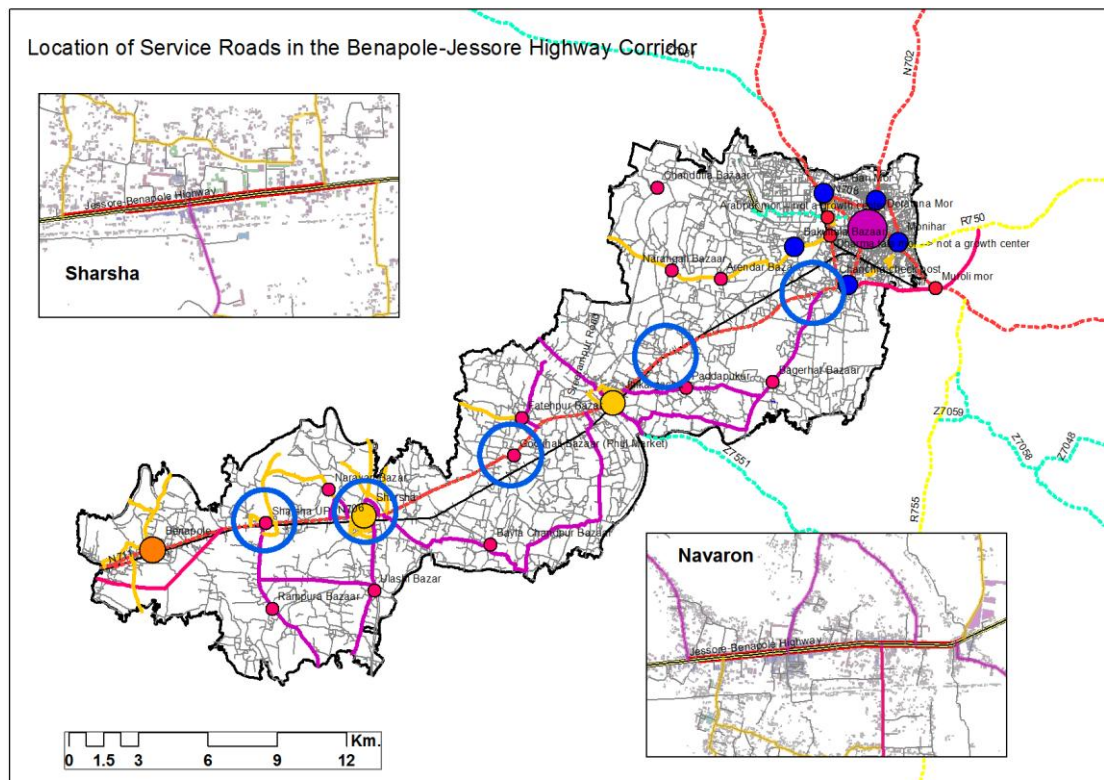


Figure 4.13: Service Road

4.8 Conclusion

National Highway N806 is the most important link for cross border business and economic progress for Bangladesh. The level of service (LOS) of this highway is far away below the expected standard. This has caused by insufficient lane, mix used of vehicle, and lack of traffic management and uncontrolled activities on road space. Along this 35 kilometer many local roads are connected to it. These little junctions and congestion around it cause delay to traffic moving on this national highway. Public transport connecting Benapole-Jessore highway is vulnerable in term of public facility. However, it is functional with attributes like delays, irregularity, poor ticketing, crowded etc. Improvement of the facility will enhance its share by many folds. Visitors to India are important travelers. So that needs to maintain when any improvement plan is made. For example, travelers do carry baggage. The current buses do not have comfortable arrangement for such. The boarding time is generally high that accumulates to a delay in stop. So, improvement in infrastructure and management can improve this boarding time significantly. This will improve the attractiveness of public transport hence contribute towards sustainability. At the same time, other smaller modes like Mohindar and Auto-Rickshaw are operating on this road. They are sometimes also operating as paratransit and serving the middle and low income who cannot afford private vehicle. Separate management guidelines are required for their operation specially to improve their safety issue. In places, management plans are required to ensure that these public transport do not make obstacle on the major roads and flow of freight and passenger carrying vehicles.

This highway needs to upgrade to a 4 to 6-lane which has also been addressed in the highway master plan. And other roads connecting to it should be controlled based on urban hierarchy it connects. With all these road expansion, hierarchy management and traffic management this highway corridor can be a line of inspiration for economic growth. It is to note that freight traveling through this highway is a major concern but local inhabitants who and their ancestors lived here for decades needs to serve as well. Urban hierarchy and associated road hierarchy need to establish as local business and villagers do get benefit from the improvement of this corridor.

CHAPTER 5 ECONOMY AND EMPLOYMENT

5.1 Indo-Bangladesh Trade

After its emergence, Bangladesh signed “Treaty of Friendship, Cooperation and Peace” with India on March 19, 1972 for 25 years. Afterwards, Bangladesh signed many agreements with India that determines the depth and dimension of Indo-Bangladesh Trade largely. The economic relations between the two countries have been multifaceted, embracing trade transactions, credit arrangements, joint ventures, transit facilities and transport development.

Bangladesh, Bhutan, India and Nepal (BBIN) Motor Vehicle Agreement signed at June 2015 has taken this economic tie one step further. This agreement is to promote safe, economical efficient and environmentally sound road transport in the sub-region and will further help each country in creating an institutional mechanism for regional integration. BBIN countries will be benefited by mutual cross border movement of passenger and goods for overall economic development of the region (<http://pib.nic.in/newsite/PrintRelease.aspx?relid=122416>, accessed at December 15, 2015). This treaty will incur tremendous impact on Benapole land port and also Benapole-Jessore corridor.

According to Bangladesh Bureau of Statistics (2013), India is one of the most important trading partners of Bangladesh. However, trade between these two countries is heavily tilted in favor of India. In 2011-12, India’s total exports to Bangladesh reached the level of 5.84 billion dollars. If illegal trade is considered, this volume would be between 14 to 15 billion dollar per annum. On the contrary Bangladesh exports a marginal percentage to India. The percentages in 2007-08 and 2008-09 were 8.8 and 9.11 respectively. Fortunately, this percentage is increasing slowly. In the year 2011-12, Bangladesh’s exports to India reached the level of 584.64 million dollars. Yet trade deficit between these two countries was remarkably high (3.2 billion dollars per annum) in favor of India in 2011-13.

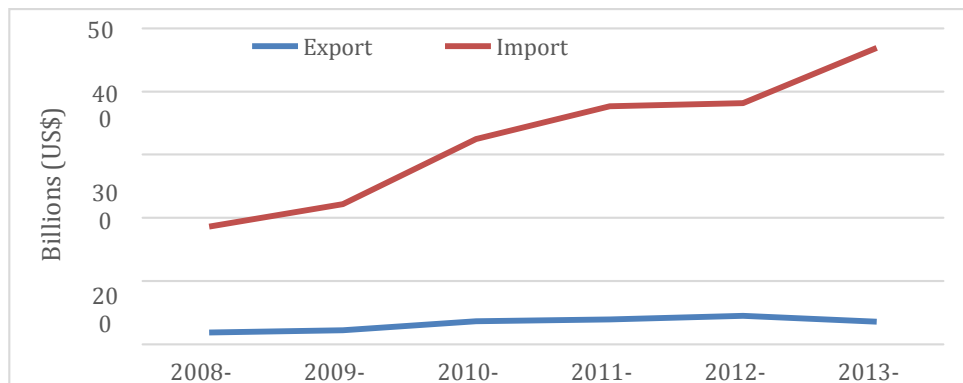


Figure 5.1: Trend of bilateral trade between India and Bangladesh

In terms of foreign direct investment, being a neighbor, India’s performance is not up to the mark. Slowly but steadily, India’s investment in Bangladesh is increasing. Table 5.1 shows the trend of FDI of different countries in Bangladesh. If the proposals laid out in this plan are implemented, it is expected that the inflow of FDI from India will increase significantly

Table 5.1: Trend of FDI in Bangladesh

Country	2010-11	2011-12	2012-13
Saudi Arabia	0.14	0.07	0.00
America	16.55	0.23	4.39
Thailand	1.91	5.76	1.94
India	1.33	5.65	77.18
South Korea	64.07	70.03	0.28
Malaysia	2.68	0.31	0.24
The Netherlands	2.22	3.92	0.10
Singapore	2.60	2.64	0.27
Hong Kong	0.88	0.46	0.89
German	1.64	0.76	0.00

5.2 Trend of Bangladeshi Economy

5.2.1 *Economic transformation:* Slowly but steadily Bangladesh's economic performance is improving. Seventh FYP has identified that the sixth five-year plan period was the most successful period in the history of Bangladesh in terms of economic performance. This is the first time when Bangladesh's average GDP growth rate touched the mark of 6.3% per annum. All other economic indicators were also very healthy.

Table 5.2: Achievements in 5-Year Plan Periods

Specific Plan	Plan Periods (FY)	Average GDP Growth Rate		Per Capita GDP growth	Per Capita GNI**	Life** Expectancy	Forex Reserve	Headcount Poverty Ratio***
		Plan (%)	Actual (%)	(%)	USD	Years	Million USD*	(%)
First Plan	1973-1978	5.5	4.0	1.3	111	53.07	-	82.1
Second Plan	1980-1985	5.4	3.8	1.5	145	55.10	395	69.9
Third Plan	1985-1990	5.4	3.8	1.6	204	56.10	520	56.6
Fourth Plan	1990-1995	5.0	4.2	2.4	253	58.70	3070	50.1
Fifth Plan	1997-2002	7.1	5.1	3.5	431	64.90	1583	48.9
Sixth Plan	2011-2015	7.3	6.3	4.9	1314	70.70	24141	24.8

Source: Seventh FYP, p. 2

The Sixth Five Year Plan emphasized mainly on (1) the production side (the strategy was to strengthen the economic transformation of Bangladesh from an agrarian economy towards a more manufacturing and modern service economy) and (2) the rural-urban divide, the strategy was to diversify and strengthen the economic activity base of the rural economy. **Table 5.2** shows the performance of the sixth five year. Apparently, the plan succeeded partially to achieve its objective.

Table 5.3: Shift of economic structure of Bangladesh

Structure of the Economy	FY2010	FY2015
Agriculture	17.81	15.59
Industry	26.14	27.98
-of which Manufacturing	16.89	20.17
Services	56.05	56.42

In Bangladesh, the industrial sector currently accounts for 30 per cent of value-added as against 20 per cent in 1990, with the level of urbanization at about 35 per cent (World Cities Report 2016; UN-Habitat).

Accordingly, the manufacturing sector grew much faster than agriculture. Growing at an average pace of 9.4 percent per year, this was a record average growth over any previous 5-year period. Expanding at an average rate of 6 percent, the services sector also performed well. Although Seventh Five Year plan argued that, some progress is made in rural economic transformation (conversion from agrarian rural economy to non-firm economy). But the plan couldn't present any precise data.

The Seventh Five Year plan has envisioned implementing the following strategies or goals:

- Break out of the sphere of 6% growth and raise the average annual growth rate to 7.4%
- Growth will be inclusive, pro-poor, and environmentally sustainable
- By the end of the 7thFYP, extreme poverty will be around 8.9%
- All the additional labour force will be employed, including much of the under-employed

5.2.2 *Blue economy:* The recent verdict given by the International Tribunal for the Law of the Sea (ITLOS) and International Arbitration Tribunal over dispute of maritime boundary with Myanmar and India legitimately settles the EEZ of Bangladesh up to 200 nautical miles from the baseline comprising 118,813 sq. km of maritime waters. The newly opened development window of Blue Economy can significantly contribute in the socioeconomic development of Bangladesh as a growth driver during 7th Plan.

Blue Economy comprises of activities that directly or indirectly takes place in the seas, oceans and coasts using oceanic resources and eventually contributing to sustainable, inclusive economic growth, employment, well-being, while preserving the health of ocean. It includes activities such as exploration and development of marine resources, appropriate use of ocean and coastal space, use of ocean products, provision of goods and services to support ocean activities and protection of ocean environment. The Blue economy approach emphasized that ideas, principles, norms of Blue Economy lend significant contribution towards eradication of poverty, contributing to food and nutrition security, mitigation and adaptation of climate change and generation of sustainable and inclusive livelihoods.

The Seventh Five Year Plan has set forth some strategies to harness the potentiality of blue economy:

- Substantially increasing fisheries production and export earnings through improved aquaculture and introduction of mariculture,
- Creating a competitive tourism industry, including ecotourism and marine cruises,
- Further increasing revenue from shipping and commerce by the expansion of domestic fleet and destinations, transshipment and transit provisions, linking neighboring states to the sea-ports, etc.

5.3 Importance of Benapole land port

Responding to higher trade volume with the neighboring nations through land routes, the government of Bangladesh established Bangladesh Land Port Authority under the Ministry of Shipping in 2001. There are 23 land ports of Bangladesh. 10 of which is now functional. Among these 10 ports, 05 are directly controlled by the BLPA (Bangladesh Land Port Authority). BLPA is the central administrative body controlling all the land ports of Bangladesh. It mainly controls eight land ports of Bangladesh, namely, Benapole Land Port, Sonamosjid Land Port, Hilli Land Port, Burimari Land Port, Akhaura Land Port, Bibirbazar Land Port, Banglabandha Land Port, Teknaf Land Port, Bhomra Land Port. Among these land ports, Akhura and Benapole land ports are the most important ones in terms of both import and export. Benapole was declared as a land port at January 12, 2002.

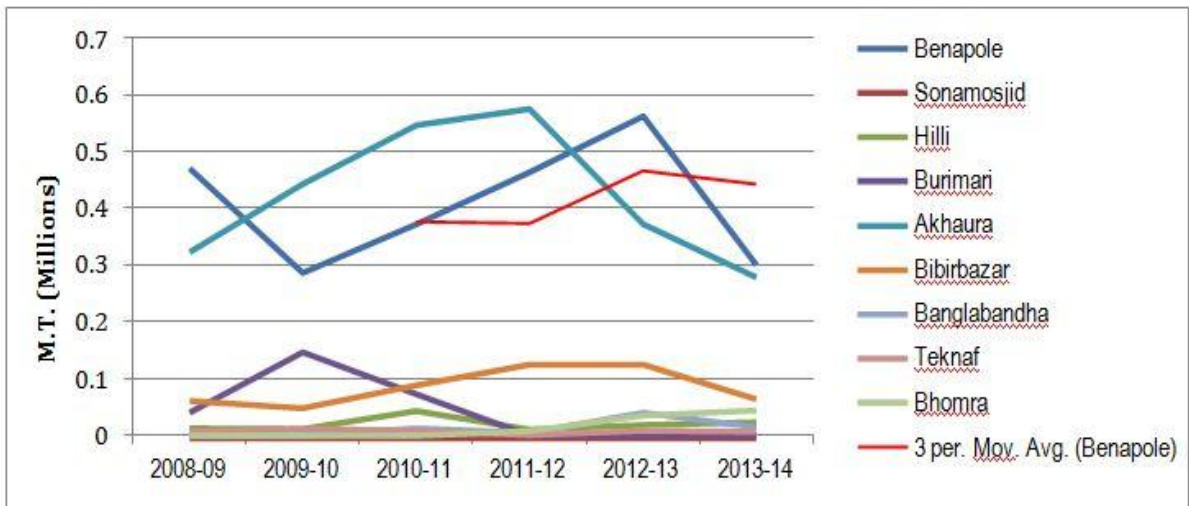
Benapole Land Port is the largest land port of Bangladesh. It handles more than 80% of cross-border trade with India. About 90% of the imported Indian goods enter Bangladesh through this port. It handles around 1.4 million ton of goods a year which brings about BDT 15 billion (USD 223.5 million) in revenue for the government annually. The port reportedly registered an increase of 15- 20% import goods yearly (Bangladesh: Port and Logistics Efficiency Improvement, Project Number: 39460 (13th July 2011) Prepared by Global Maritimes and Port Services Pte Ltd in association with Drewry Maritime Services (Asia) Private Limited, Singapore; IDRG Consultancy Services, India and Institute of Water Modelling, Bangladesh; Asian Development Bank). In 2009-2010 financial year, the port handled about 1.5 million ton of goods and earned BDT 2511.10 crore. At the same time, the port earned BDT 10 crore revenue from its customs house.

Over the years, importance of Benapole land port is increasing day by day. Although the port has seen many ups and down in its lifecycle, the port's importance in the national economy of Bangladesh and India is increasing day by day. In 2009-10 financial year, total export using Benapole land port was 4,70,332 M.T. This value for 2013-14 was 3,00,274 M.T. This figure may be deceptive. To get a clear idea about the trend of export from Bangladesh using Benapole Land Port a curve of three year's moving average shows the upward trend of export using Benapole Land port.

It is really difficult to accurately project the export from Bangladesh using Benapole Land Port. However, based on the agreements signed by both the countries it can be easily said that the economic ties between India and Bangladesh will become stronger day by day. Additionally BBIN agreement will also foster the activities of the Benapole land port.

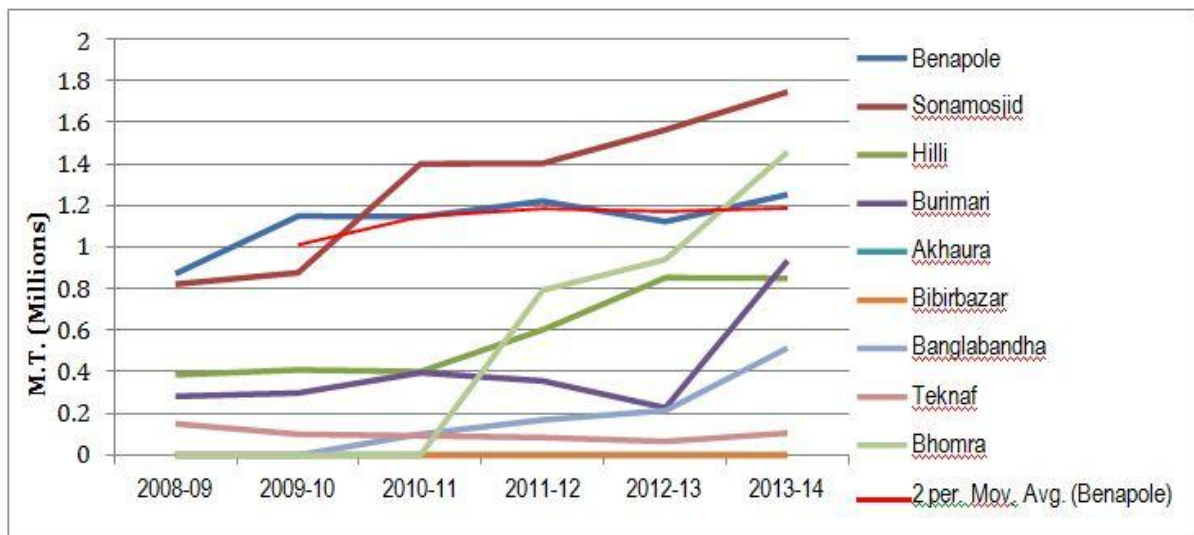
In terms of import, importance of Benapole land port is worth mentioning. Although Sonamasjid and Bhomra land ports are the getting more importance. Two year's moving average also shows an upward trend in this regard (Figure 5.2). From total volume of trade's point of view, Benapole still holds its significant position (Appendix 01).

Figure 5.2: Export through Land Port under Bangladesh Land Port Authority (in M.T.)



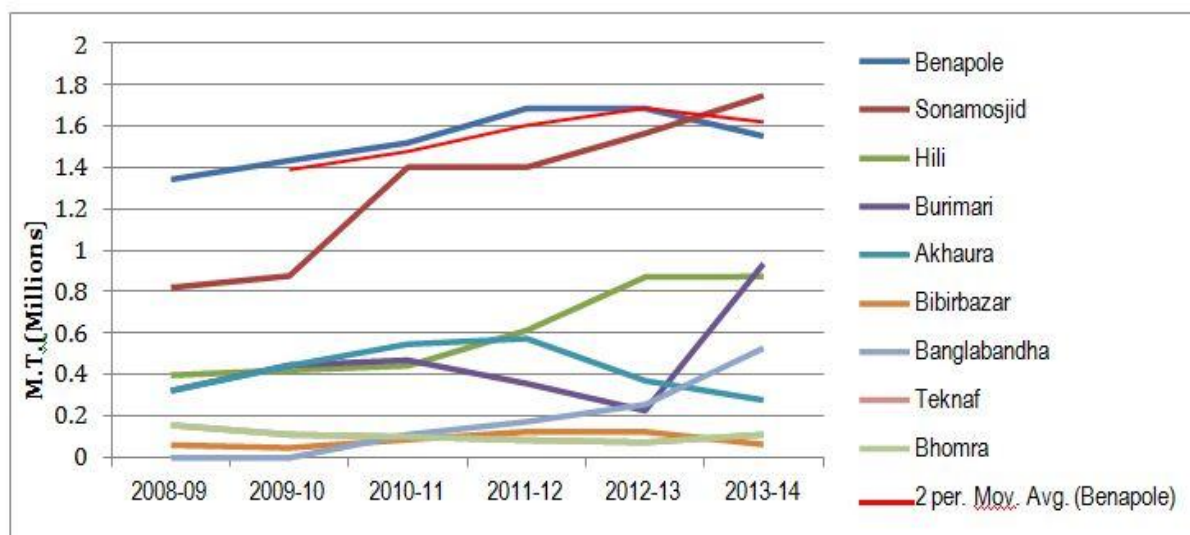
Source: Bangladesh Land Port Authority, 2015

Figure 5.3: Import through Land Port under Bangladesh Land Port Authority (in M.T.)



Source: Bangladesh Land Port Authority, 2015

Figure 5.4: Total volume of Import and Export through Land Port under Bangladesh Land Port Authority



Source: Bangladesh Land Port Authority, 2015

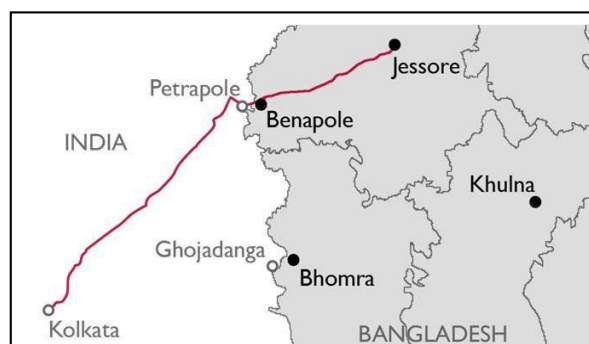
5.4 Future prospect of the corridor and Benapole Land port

Because of geographic location of Bangladesh, both Kolkata and Chittagong are the gateway ports for South Asia, under the South Asia Sub-regional Economic Cooperation (SASEC), includes only North-east Indian states plus the states directly connected to them: Nepal, Bangladesh, Bhutan, Uttar Pradesh, Bihar, and West Bengal (Asian Development Bank Institute, 2014). Indian goods originating from the Kolkata region could reach the Southeast region by land through Bangladesh or through the Chicken Neck (Siliguri Corridor, a narrow strip of Indian Territory connecting the northeastern states to the rest of India) and the Assam highway. The comparative distances are:

- Kolkata to the Myanmar border, Moreh BCP, through Bangladesh, 1,112 km (through Benapole, Dhaka, and Argatala); and
- Kolkata to the Myanmar border, Moreh BCP, through the Chicken Neck/Assam highway, 1,558 km through Siliguri, Guwahati, Shillong, and Silchar, and 1,713 km through Siliguri, Nagaon, and Silchar.

Again, the distance by road from Dhaka to Kolkata is 494 kilometers (km); 413 km (84%) from Dhaka to the Benapole border area; and 81 km (16%) from the Indian border city of Petrapole to Kolkata in West Bengal, India. This is the major road corridor between Bangladesh and India (Map 5. 2). An alternative to the previous option is more southerly road corridor linking Dhaka and Kolkata through the customs posts of Bhomra (Bangladesh) and Ghojadanga (India). This corridor is 536 km long, 40 km longer than via Benapole-Petrapole. Moreover, the roads on either side of the Benapole - Petrapole are in far better condition. Additionally, a weak bridge in India leads to transshipment of goods onto smaller trucks instead of bigger trucks carrying 40 MT.

Increased flow of goods largely dependent on the political will of the ruling parties of both India and Bangladesh, and improvement in both road infrastructure and trade facilitation. Among other factors Customs clearance processes, legal constraints on cross-border trucking, logistical shortcomings, and testing for standards enforcement are important ones.



Map 5.5: Road between Jessore and Kolkata

5.4.1 Existing condition of Benapole Land Port

Benapole is the major land port adjacent to and international border crossing with India and facilities occupy an area of approximately 24.36 hectares (60.2 acres) to the west of Benapole Municipality. The facilities have been developed since the inception in 1978. The Benapole Land Port area is approximately 1200 m long and varies from 250 m to 100 m in width. The port has two Import Truck Terminals (ITT) with parking capacity for 1000 trucks and one Export Truck Terminal (ETT) with parking capacity for 150 vehicles. There are 45 warehouses and 4 open stacking yards a transshipment yard. The total storage capacity at any time is about 40,000 tons.

The existing main Jessore to Kolkata road outside the Benapole Land Port yards encounters severe traffic congestion caused by high numbers of vehicles approaching the Benapole Land Port yards and the border. This frequently results in complete blockage of the west bound (southern side) of the roads. There are also conflicting pedestrian and non-motorized transport (NMT) movements. There are numerous intersections of the main Jessore to Kolkata road with other smaller feeder roads and tracks (some narrow, some wide) and there are several entrances that lead in to the land port yards. Roadside trading is quite common in the area.

A project titled ‘Modernization of Benapole Land Port (1st phase)’ for infrastructural development and extension is being implemented at a cost of TK 24.43 crore. The infrastructural development work includes construction of four warehouses, open stack yards, export and passenger terminals and acquisition of 6 acres of land including development. After the completion of the project, the warehousing capacity of Benapole Land Port will increase from 27,000 MT to 28,600 MT.

Moreover, steps have been taken to automate the Benapole Land Port for efficient and transparent port operation. It has been decided by the Government that all ports except Benapole Land Port will be operated through private port operators on BOT (Build, Operate and Transfer) basis. Improvement of land ports will result in increased volume of trade, prevention of smuggling and reduction of evasion of customs duty. It would also promote and expand the area of co- operation between government and private sector in different areas of development. Private investment in the peripheral area of the country will increase which will also augment government revenue income.

5.5.1 Problems of beanpole Land port

Benapole Land Port, being one of the major source of revenue, is still facing tremendous problems. USAID has identified couple of issues related to inefficiencies of Benapole land port:

- Cross-border freight is rarely containerized. Containers are more efficient than bulk shipping because customs in one country can affix a seal that border officials in another should not have to break.
- Many Bangladeshi trucks headed to the border travel empty because of the trade imbalance between the two countries.

USAID has summarized the problems of Benapole land port and their subsequent way-out.

Table 5.4: Current problems of Benapole Land port and relevant interventions identified by USAID

CURRENT SITUATION	INTERVENTION
	ROADS
Traffic congestion at land borders without evidence that would allow for the proposal of viable solutions.	Document the length of processes at the borders to establish the causal factors that generate waste and inefficiencies.
Overloaded trucks damage the roads and bridges on the two corridors between Kolkata and Dhaka.	Develop practical protocols to conduct a risk-managed sample of trucks weighed at various points along the corridor and enforce fines and offloading of surplus cargo.
Road-side corruption on the Bangladeshi and Indian sides of the border leads to excess road transportation costs and time delays.	Work with the Ministry of Communication, truckers' associations and export traders to document the frequency and financial impact of roadside hassles and corruption.
	CUSTOMS
ADB is undertaking a project at Benapole to improve the efficiency of port and customs procedures. But it is not funding work at Petrapole, on the Indian side of the border.	Facilitate a replication of the efficient parts of the ADB project at Bhomra- Ghojadanga. Support work (via donors in India) in Petrapole and Ghojadanga to expedite border clearance procedures affecting priority Bangladeshi exports from the SSW.
Limited border opening hours contribute to traffic congestion, especially trucks loaded with export goods.	Analyze the costs and benefits of extending the opening hours at border posts, including a 24/7 schedule.
	STANDARDS
Absence of mutual recognition of SPS certification with India applied efficiently to facilitate swift border crossing.	Facilitate the negotiation of an SPS agreement to accelerate exports of agricultural products, particularly from Bangladesh to India.
Lack of targeting of large shipments of fresh agricultural products to high-value world markets from the SSW	Identify companies in the SSW that might competitively supply developed-economy supermarkets with fresh produce. Design a program to facilitate their entry into these markets, possibly in collaboration with PRAN.

5.5.2 Traffic flow to and from Benapole Land Port

Traditionally different ports of Bangladesh are used for transshipment of different kinds of goods. Benapole border is mainly used for shipment of white fish and cleaning products made from coir. Approximately 250 trucks transit from India to Bangladesh along the Petrapole- Benapole corridor each day and approximately 90% of the total imports from India arrive through Benapole. On the contrary, only about 125 trucks move in the opposite direction. Most of the trucks officially carry 10–15 MT, whereas the international norm is a tractor-trailer carrying 40 MT. The corridor lacks systematic and effective checks to weigh trucks traveling on its roads.

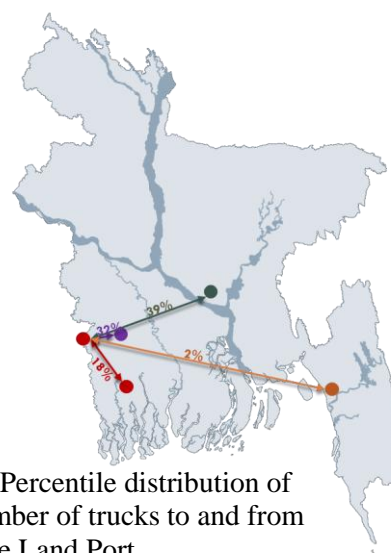


Figure 5.5: Percentile distribution of the total number of trucks to and from the Benapole Land Port

The under construction Padma multi-purpose bridge at Mawa point will reduce the distance between Kolkata and Dhaka by about 200 km. Additionally, the Government of Bangladesh has declared that all national highways will be widened to 04 (four) lanes. After signing Bangladesh, Bhutan, India and Nepal (BBIN) Motor Vehicle Agreement at June 2015, motor vehicles of both countries now can cross border without much hassle to deliver exports to a destination in the other country. Previously trucks carrying exports stop at the border and transfer their contents onto a truck from the other country for onward shipment. Among the export trucks arriving and departing from Benapole, more than 39% trucks originated from Dhaka, 32% from Jessore, 18% from Khulna and 11% from rest of the country. It is really difficult to forecast the use of BLP (Benapole Land Port). It is totally dependent on the bilateral political relationship between Bangladesh and India. Additionally, economic growth (or GDP) and transformation of economic structure will play the role of determining factor. The report forecasts that BLP will maintain 90% market share of the total Bangladesh land border cross border trade. The same report also forecasts that by the year 2040, BLP will handle 5.41 million ton cargo. By the end of this plan period (2036), BLP is forecasted to handle 4.61-million-ton cargo. Details of forecasting is provided in **table 5.5**. About 400-600 goods truck (about 400 Indian truck and 200 Bangladeshi Truck) and about 2000 passengers (mainly from Bangladesh to India) cross the border daily.

Table 5.5: Forecast of Bangladesh throughput (Unit: Tonnage and TEU), 2010-2040 Base case

Year	GDP	GDP %	Total tonnage	Growth %	Containerized tonnage	Containerization ratio	TEU	Growth %
2010	3,680	5.38	33,545,524	4.40	13,442,228	40.07	1,267,162	7.19
2011	3,896	5.88	35,399,770	5.53	14,702,602	41.53	1,374,079	8.44
2012	4,130	6.00	37,403,756	5.66	16,064,758	42.95	1,489,631	8.41
2013	4,378	6.00	39,527,981	5.68	17,508,644	44.29	1,612,115	8.22
2014	4,640	6.00	41,779,660	5.70	19,039,162	45.57	1,741,949	8.05
2015	4,926	6.15	44,227,700	5.86	20,703,152	46.81	1,883,105	8.10
2016	5,211	5.79	46,674,164	5.53	22,366,070	47.92	2,024,170	7.49
2017	5,513	5.79	49,262,363	5.55	24,125,330	48.97	2,173,407	7.37
2018	5,832	5.79	52,000,509	5.56	25,986,512	49.97	2,331,291	7.26
2019	6,170	5.79	54,897,290	5.57	27,955,521	50.92	2,498,321	7.16
2020	6,528	5.79	57,961,896	5.58	30,038,606	51.82	2,675,029	7.07
2021	6,906	5.79	61,201,966	5.59	32,186,114	52.59	2,862,014	6.99
2022	7,307	5.79	64,629,276	5.60	34,486,182	53.36	3,060,065	6.92
2023	7,730	5.79	68,254,978	5.61	36,946,420	54.13	3,269,679	6.85
2024	8,178	5.79	72,077,257	5.62	39,577,622	54.91	3,491,364	6.78
2025	8,651	5.79	76,163,022	5.63	42,410,335	55.68	3,724,520	6.71
2026	9,152	5.79	80,458,616	5.64	45,274,063	56.27	3,972,573	6.66
2027	9,682	5.79	85,004,528	5.65	48,333,575	56.86	4,235,160	6.61
2028	10,243	5.79	89,807,284	5.65	51,603,265	57.46	4,512,987	6.56
2029	10,836	5.79	94,890,376	5.66	55,083,863	58.05	4,806,782	6.51
2030	11,464	5.79	100,283,906	5.67	58,805,863	58.64	5,115,349	6.46
2031	12,128	5.79	105,970,003	5.67	62,617,675	59.09	5,443,754	6.42
2032	12,831	5.79	111,989,100	5.68	66,678,310	59.54	5,791,610	6.39
2033	13,574	5.79	118,361,279	5.69	71,016,768	60.00	6,159,378	6.35
2034	14,360	5.79	125,096,036	5.69	75,620,554	60.45	6,548,034	6.31
2035	15,193	5.79	132,249,901	5.70	80,533,894	60.90	6,958,532	6.28
2036	16,073	5.79	139,788,145	5.70	85,606,260	61.24	7,393,440	6.25
2037	17,004	5.79	147,770,048	5.71	90,996,796	61.58	7,854,052	6.23
2038	17,989	5.79	156,207,718	5.71	96,739,440	61.93	8,341,003	6.20
2039	19,031	5.79	165,127,179	5.71	102,824,694	62.27	8,855,643	6.17
2040	20,135	5.79	174,612,560	5.72	109,328,782	62.61	9,401,196	6.15
CA GR	5.83%				7.24%		6.91%	

Figure 5.6: Import-export process through Benapole Land Port

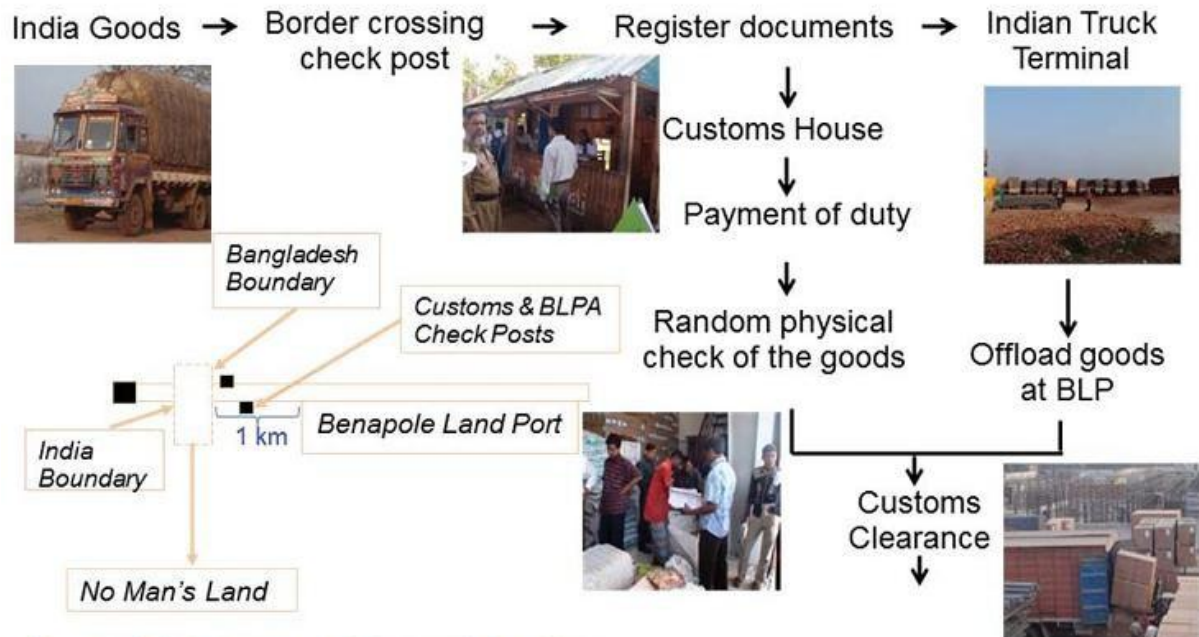


Diagram 2: Import process in Benapole Land Port
Source: GMAPS Consortium

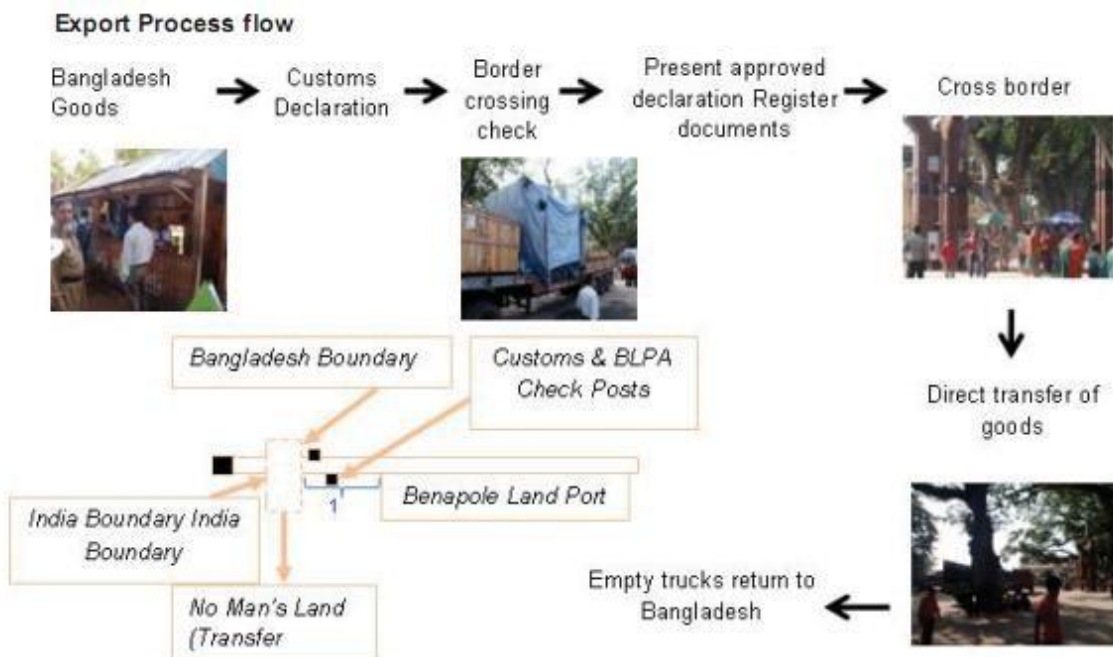


Diagram 3: Export process in Benapole Land Port
Source: GMAPS Consortium

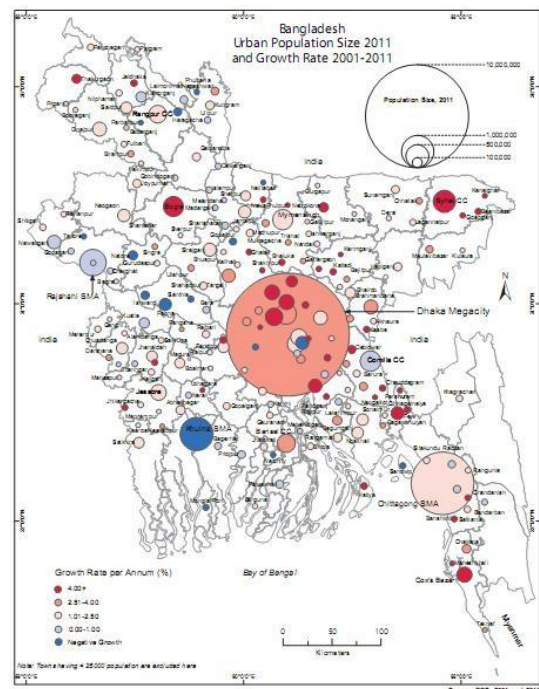
5.6 Regional Investment Climate

Development of the corridor is largely dependent on the regional issues. These sections of the chapter elucidate the regional issues that are / will be influencing the development paradigm of the corridor for the years to come. The Government of the people's republic of Bangladesh has been implementing couple of nationally important projects in the southwestern part of Bangladesh where the corridor is located. All these projects will also have impacts on the development scenario of the corridor.

5.6.1 Urbanization rate

Bangladesh is experiencing relatively faster rate of urbanization in recent years compared to other south Asian countries. Between 2000 and 2010, urban population increased at a rate of 1.69 percent per annum. Urbanization rate is slower in the southwestern part of Bangladesh. Map 5. Shows the size and growth rate of urban population. Although, sixth FYP partially achieved its objective of economic revitalization, Khulna, being the third largest metropolitan city of the country shows negative growth rate. This is because of poor socio-economic conditions, decline of jute industries etc. After the liberation war, Khulna region lost connectivity with Kolkata and other economic hubs of India.

Figure 5.7: Urbanization Rate in Bangladesh



This is identified as one of the contributing factors of declining growth of this region by UNFPA in a report entitled “Urbanization and Migration of Bangladesh, 2016” (available at <http://unfpabgd.org/index.php?option=page&id=142&view=publications&Itemid=999>). Nonetheless, the situation is expected to change after construction of Padma Bridge at Mawa point, construction of Khulna Mongla railway line, revitalization of Mongla sea port and Benapole Land Port etc.

5.6.2 Poverty and urbanization

In 2010, 21.3 percent of Bangladesh's urban population lived below the national poverty line, while, in 2009, almost 62 percent of the urban population lived in slums. Relationship between urbanization and poverty is often poorly conceived. However, **Figure 5.8** shows that the relationship between poverty rate and level of urbanization is negatively correlated, meaning with the increase of urbanization, poverty rate declines. With the economic progress and agglomeration of economies, poverty situation will improve in the corridor. This assumption is very important for this plan. With the economic improvement, pressure of local traffic will increase, more waste will be generated, consumption pattern will be changed, more and more population will be gathered in the corridor

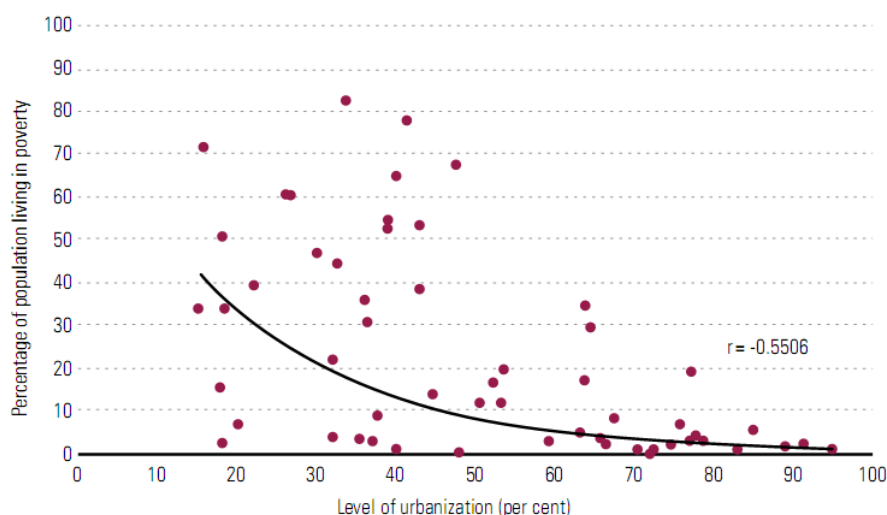


Figure 5.8: Relationship between level of urbanization and poverty rate

5.6.3 Revitalization of Mongla Sea Port

Mongla Sea Port is located at the southern part of Bangladesh close to the Sundarbans, the largest tract of mangrove forest of the world. After Chittagong, Mongla is the most important sea port of Bangladesh. Because of poor communication system, most of the importers and exporters avoided Mongla Port and used Chittagong. After the construction of the Padma Bridge at Mawa point, distance between Dhaka and Mongla port will be reduced significantly. Moreover, the road infrastructures are in the process of improvement at this moment. This has started attracting lots of importers and exporters to use Mongla sea port. Their interest is also manifested through the revenue income and expenditure of the port (Table 5.6).

Table 5.6: Revenue Income and Expenditure of Mongla Sea Port

Financial year	(Figure in Lac Taka)		
	Revenue Income	Revenue Expenditure	Profit/Loss
2002-03	5588.50	5080.31	508.19
2003-04	5198.35	4736.21	462.14
2004-05	4547.99	4603.94	-55.95
2005-06	4724.52	4501.19	223.33
2006-07	4341.47	4640.00	-298.53
2007-08	4027.68	4290.85	-263.17
2009-2010	6649.01	6421.52	227.49
2010-2011	8551.53	6368.54	2182.99
2011-2012	10580.72	7166.38	3414.34
2012-2013	13807.96	9412.64	4395.32
2013-2014 (Provisional)	14529.34	9719.84	4809.50

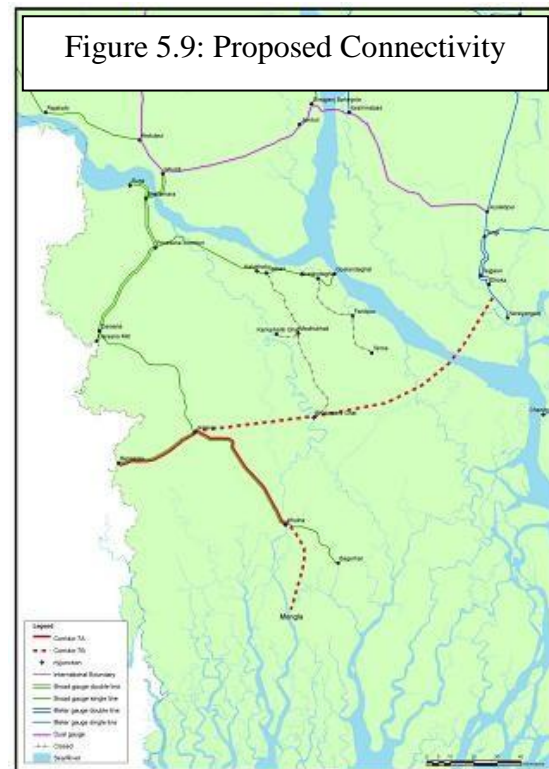
Source: <http://www.mpa.gov.bd/revenue>

5.6.4 Improved Railway connectivity

The Bangladesh Railway was originally connected with the Indian BG system at Benapole, Darsana, Rohanpur and Chilahati and the MG system at Birol, Burimari, Mogolhat and Shahbazpur. At present only three BG rail corridors are active, through Benapole, Darsana and Rohanpur. The BG link from Chilahati to Haldibari and the MG connections from Burimari-Chengrabandha and Mogalhat-Gitaldaha have been disconnected, while Shahbazpur-Mahishasan (MG) is not presently in operation. On the other hand, Birol-Radhikapur portion has been converted into BG in India, while Bangladesh connection to Birol is still MG.

The main route from Dhaka-Kolkata uses the Darsana-Gede crossing point. Loaded Indian wagons enter Bangladesh and are pulled a short distance to transshipment points inside the country by Bangladeshi locomotives. Goods are transshipped into MG wagons at Shantaher, to trucks at Ullapara or to barges/trucks at Noapara (located between Jessore and Khulna). Only about 25% of cases, the whole rake move towards a single destination. Benapole is an alternative entry point for trains from Kolkata. The inadequate holding line capacity of BR adversely affects the movement of goods between India and Bangladesh.

Passenger services have been running between India and Bangladesh (entitled the Maitry Express ('Friendship Express') on the 117km stretch between Sealdah and Bongobandhu East in Bangladesh. Prior to this, there have never been any scheduled passenger services between these two countries. Recently passenger and freight services have been proposed between Sealdah / Kolkata terminal (Chitpore) to Joydebpur / Dhaka in Bangladesh, and some trial runs have been made. The proposal is for a 10-coach daily train to run from Gede on the Indian side to Joydebpur across the border, and then on to Dhaka (~330km). Goods trains run regularly between the countries.



The Broad Gauge (BG) connections across the border that still exist are Benapole to Petrapole, Gede (Gethe) to Darshana / Chuadanga, and Singhabad (Sinhabad) near Malda to Rohanpur (near Rajshahi). Freight trains have been run on these lines off and on since 1972 after the formation of Bangladesh, and more regularly after transport agreements were signed by the two countries in the 1990s. In 2008, proposals were being considered to run more freight trains, including container services between Uttar Pradesh and Dhaka.

The Railway Master Plan has proposed a corridor (Corridor 7A: Dhaka-Mawa-Jajira-Bhanga- Jessore-Khulna-Mongla). Jessore-Benapole section is proposed under several corridors proposed by the plan (Corridor 7B: Dhaka – Mawa – Jajira-Bhanga - Jessore-Benapole and Corridor 2: Chilahati-Ishurdi-Jessore-Khulna-Mongla). The Government is now implementing these corridors and the Padma Bridge. Once implemented, distance between Dhaka to Benapole will be reduced about 318 Km. Distance between Dhaka and Mongla port will also be reduced to 276 km (saving more than 300 km travel distance. Comparative railway distance savings using Padma Bridge at Mawa point and Bangabandhu Bridge.

Table 5.7: Railway Distance ‘via Bangabandhu Bridge’ and ‘using Padma Bridge’ from Dhaka

Major Traffic Generation Points	Railway Distances ‘via Jamuna Bridge’ (km)	Railway Distances ‘using Padma Bridge’ (km)	Distance Savings (km)
Dhaka to Jessore	473	165	308
Dhaka to Khulna	529	221	308
Dhaka to Mongla Port	584	276	308
Dhaka to Darsana	403	245	168
Dhaka to Benapole	518	200	318

Source: Railway Master Plan

5.6.5 *Nature of Imports and exports using Beanpole Land Port*

Data related to weight wise distribution of imported and exported goods are not available. However using Benapole Land Port, cotton, chemical, motor car, motor cycle, tyre-tube, machinery & spare parts, food grains, fish, spices, sugar, egg, aluminum, refrigerator, paper etc. are imported and distributed throughout the country. On the other hand, using the same port Jute & jute goods, fish, soap, plastic goods, battery, construction materials etc. are exported.

On an average near about 200-250 trucks are assembled carrying export goods at Benapole Land Port under Jessore District. But generally 100-150 trucks are cleared in the Indian side leaving rest trucks tailbacked in Bangladesh side. This causes heavy traffic congestion in the port area. Beside the cost of export is increased due to demurrage charges by the transport agencies for the delayed delivery of export cargoes.

Bangladesh Government is constantly negotiating with the Indian Government to increase the number of exportable items and ensuring trade balance. Using friendly bilateral relationship and political ties, if the government is able to ensure the same, it is expected that tremendous pressure will be felt on the infrastructures in the future.

CHAPTER 6

IDENTIFICATION OF KEY ISSUES THROUGH PEOPLES' PARTICIPATION

6.1 Community Participation in Urban Planning

Though local people do not have formal education on urban planning, they possess some basic Code of building and land use regulation in social and cultural education. Local people have inherent knowledge about local environmental system, which should be explored through assessment of people's views during each stage of project cycle. People's participation is of great importance for the implementation of the Urban Area Plan. People living in upazila area are more aware with the local problems than any outsider. Their involvement is very much effective in decision making for preparation of socio-physical infrastructures. Designing of services according to effective demand, cost recovery, maintenance of social capital and even in reviewing of plans from time to time. It is important in enforcing building controls, selecting sites for public uses and paying for land acquisition. Local people should be allowed to articulate their opinions relating to local problems. Their opinions should be given due importance in decision making. The Urban Area Plan is a broad guideline for the development of the upazila through active people's participation.

Community participation is important factor in achieving sustainable resolution of slum and pro-poor interventions or strategies, as maximum level of participation assures that the needs of people being affected are met with the highest standards, there is a need to have a national level framework which not only advocates 'participation' as way of consulting with communities but actually creates possibilities for communities to involve to the maximum levels, there is need for a national level common policy to confirm that level of participation empower communities to make decisions for their betterment and find ways to solve their problems, acknowledging community knowledge, their right to livelihoods and right to live in the city.



Photograph 6.1: After Plan Participatory Rapid Appraisal (PRA) in Jhikorgachha involving local people and officials

6.2 PRA Methodology

For gathering information and data to investigate objectives, a number of participatory rural appraisal (PRA) tools have been used. It is essential to explain importance of adopting a participatory research approach, particularly the use of Participatory Rural Appraisal methods. Participatory Rural Appraisal (PRA) is an approach which incorporates methods to learn about rural or urban life and conditions from with and by rural or urban people. It can enable local people to share, enhance and analyse their knowledge for incorporating in designing, planning and formulating effective implementation strategies of the project and research. In PRA approach, the methods are more shared and owned by local people and it includes the methods like mapping and modeling, transect walks, matrix scoring, seasonal calendars, trend and change analysis, well-being and wealth ranking and grouping, and analytical diagramming to apply in natural resources management, agriculture, poverty and social

programmes, and health and food security (Chambers, 1994). In addition, PRA methods can promote collective action and community building and continuous empowerment of the participants through involving the participation of people in all phases like analysis, planning, implementation and monitoring and evaluation of research or project. It is more flexible approach and does not create any rigidity in the application. Nevertheless, the approach has some limitations and sometime these delimit the scope of programmes or projects. These may be compared with threats of this approach. For implementing effectively in the field, it requires a lot of commitment from participants and authorities and also needs well skilled and genuine facilitators to manage both participatory process and product. Specific methods utilized for the data collection process include brainstorming and listing problems and solutions, ranking/grouping of problems, dreams realized and mapping, venn (institutional) diagrams and dialogue with focus group/stakeholders. Table 6.1 presents an overview of participatory methods that have been applied in different urban and rural settlements of Jessore-Benapole Highway Corridor Development project.

Table 6.1: PRA Sessions/Meetings in Different Urban/Rural Settlements

Sl. No.	Urban/Rural Settlements	PRA Sessions
1	Jessore Paurashava	09
3	Benapole Paurashava	09
3	Jhikargachha Paurashava	09
4	11 Union Parishads (Arabpur, Diara, Upashahar, Jhikargachha, Chanchra, Godkhali, Panisara, Sharsha, Nabharan, Benapole and Ulashi)	12
5	After Plan PRA	06
	Total	45

Source: Final report on PRA, Development Plan for Benapole-Jessore Highway Corridor (2017-37)

6.3 Findings of the Urban PRA Sessions

To identify problems and their solutions, PRA sessions were conducted in each ward of Jessore, Jhikorgachha and Benapole Pourashava. Total twenty seven PRA sessions were organized in the urban settlements where different stakeholders such as ward councilors, local political leaders, business people, CDCs' members, NGO workers, lawyers, students, teachers and etc. participated. Participants in each session were divided into three or four groups in a lottery method to discuss the major problems of the wards where they are living. Participants were allowed to brainstorm the problems and they prepared a list of problems which were ranked by them. In the second phase of the PRA session, participants from all four groups were asked to vote the problems they have identified together. Further, participants had identified the solutions of the problems. In the third phase of PRA session, participants had identified the problems and proposed site for the possible solutions on a map through mapping exercises. Rank-order analysis was performed with PRA findings. As explained in method section, the respondents were then asked to rank the indicated factors according to their comparative importance in their perceptions, where higher value carried greater importance. The responses were put into a rank- order model in order to arrive at a quantifiable average rank value (R) and to demonstrate the relative importance of the identified factors in a graphical representation. Rank value was calculated from the individual rank based on a score of importance (10 being the highest and 1 the lowest) given to each factor by all respondents. Rank-order analysis is commonly used to measure preferences.

Figure 6.1: Model applied for rank-order analysis of participant realities towards participation

$$R = \frac{\sum\{(r_1 \times f_1) + \dots + (r_n \times f_n)\}}{N}$$

[Here, R = Final rank value; r = Individual rank given by the respondent; f = frequency; n = No. of factors identified; and N = Number of total respondents]

Source: Adapted from Malhotra, 2008; Swapan, 2014

6.4 PRA Findings in Jessore Paurashava

In Jessore Paurashava, total 142 participants participated in nine PRA sessions and these participants were allowed to brainstorm the problems and they prepared a list of problems. In brainstorming process, they prepared a list of 53 problems (Annex I). But, they selected 17 major problems of Jessore Paurashava through voting process (as shown in Figure 4). Participants identified poor drainage and waterlogging as the major problem through the voting method. Interestingly this was also ranked as the major problem by the participants in all of the nine wards. The most common problems among all these participants are problems related to road infrastructure such as insufficient roads; unplanned road network narrow streets; and poor road condition that were mentioned by all of the participants of nine PRA sessions in Jessore Pourashava. Thus, these two problems such as waterlogging and problems related to road infrastructure are existed in all the nine wards of Jessore Pourashava. The third most common problem includes blockage of Bhairab River which also causes waterlogging in different parts of the Jessore city. Other major infrastructural problems in Jessore Pourashava are scarcity of drinking water; lack of sanitation; unplanned building construction; lack of street lights; lack of electric poles; lack of dustbins; lack of health care centers; and unplanned slums and squatter settlements. The socio-economic problems include drug addition, unemployment among young people and recreational facilities.

6.4.1 Urban Development Planning Proposals from Local Citizens in Jessore Pourashava:

Participants also identified the solutions of the problems including physical infrastructure development and socio-economic development through promoting social services. As for example, to tackle the problems associated with the blockage of Bhairab River participants had opted for re-excavation of Bhairab River, linking the canals with Bhairab River and constructing walkways along the Bhairab River. Participants felt that installing new deep tube wells by the municipality can solve the scarcity of drinking water. To solve the problems associated with narrow streets, participants recommended for constructing footpaths and enforcement of building construction acts. They also felt that community policing and awareness building activities can solve the problems associated with drug and volatile law and order situation. Further, the participants recommended to construct permanent and temporary dustbins, increase waste transport facilities and develop recycling facilities can solve the solid waste problems of the wards in the Jessore Paurashava. In terms of stakeholder identification, participants of the PRA session had identified Jessore Municipality as the major actor for solving the identified problems. Drawing on their access to different actors most of the participants have mentioned that Ward Councillor and Mayor of the municipality is the key person to get access to any government services and facilities.

6.5 PRA Findings in Jhikorgachha Pourashava

In Jhikorgachha Pourashava, total 125 participants participated in nine PRA sessions and these participants were allowed to brainstorm the problems and they prepared a list of problems. In brainstorming process, they prepared a list of 21 problems. Then they ranked these problems of Pourashava through voting process (as shown in Figure 5). Participants identified blockage of Kapotakkho River as the major problem and ranked it as number 01

problem through the voting method. Interestingly this was also ranked as the number 01 or 02 by the participants in all of the nine wards. Participants identified insufficient roads, narrow streets and poor road infrastructure as the major problems that are associated with the growing urban population in Jhikorgachha Municipality. However participants of all nine PRA sessions identified water logging, lack of street light, scarcity of drinking water, unplanned building construction, lack of household waste collection facilities, and lack of bridges and culverts as the common problem in Jhikargachha Municipality.

6.5.1 Urban Development Planning Proposals from Local Citizens for Jikargachha Pourashava: In the third phase of the PRA session, participants are asked to explore solutions of the problems. To tackle the problems associated with water logging participants had opted for re- excavation of Kapotakkho River, linking the canals with Kapotakkho River and constructing guide wall. Participants felt that widening the roads and constructing the connecting roads will ensure better connectivity. Construction of parks along the river will solve the problems associated with recreational facilities. Some participants gave importance on construction of foot over bridge and widening the roads which will also tackle the problems associated traffic congestion. Construction of dock will help to foster the economic growth of Jhikorgachha Municipality. Establishing a planned market with better connectivity will help the people for efficient marketing of the agricultural product. Drawing on their access to different actors most of the participants have mentioned that Ward Councilor and Representative of Market Committee is the key person to get access to any government services and facilities.

6.6 PRA Findings in Benapole Paurashava

In Benapole Pourashava, total 134 participants participated in nine PRA sessions and these participants were allowed to brainstorm the problems and they prepared a list of problems. In brainstorming process, they prepared a list of 20 problems. Then they ranked these problems of Pourashava through voting process (as shown in Figure 6). Participants identified road infrastructure problems including insufficient roads, narrow streets and poor road condition as the major problem and ranked it as number 01 problem through the voting method. Interestingly this was also ranked as the number 01 by the participants in all of the nine wards.

Participants identified poor drainage and waterlogging as the major problems Benapole Municipality. Participants of all nine PRA sessions identified lack of playgrounds and recreational facilities, lack of street light, scarcity of drinking water, lack of electricity, lack of household waste collection facilities, slum and squatter settlement development and lack of bridges and culverts as the common problem in Benapole Municipality.

6.6.1 Urban Development Planning Proposals from Local Citizens Benapole Pourashava At PRA session, participants are asked to explore solutions of the problems. To tackle the problems associated with road infrastructure, participants of different wards recommended some solutions including widening the roads and constructing the connecting roads. Proposals to remove waterlogging and drainage network development are: constructing new drains; widening narrow drains; and improving condition of the drains Construction of parks and conserving playgrounds solve the problems associated with recreational facilities. Drawing on their access to different actors most of the participants have mentioned that Ward Councillor and Mayor are the key person to get access to any government services and facilities. Table 4 identifies local citizens' urban development planning proposals.

6.7 Findings of the Rural PRA Sessions

In rural context, eleven PRA sessions were organised in eleven unions such as Arabpur, Deara, Upashahar, Jhikargachha, Chachra, Godkhali, Panisars, Sharsha, Nabharan, Benapole and Ulashi where Union Parishads' Chairman, Ward Members (both male and female) and standing committees' members. Participants of all eleven unions identified road infrastructure problems as one of the major hindrances of rural development. They identified poor connectivity of Union with District Town and other Municipality, poor road condition, and insufficient roads, bridges and culverts as road infrastructure problems. In addition, most of the rural roads become unusable in the rainy season which is evident in all eleven unions. Local government representatives state that connecting smaller villages with asphalt roads would require significantly more funding, as these roads currently are mainly dirt roads and pathways. While local representatives express satisfaction that some road infrastructures had been done in last 5 years with the funding of LGSP project, they believe the problem is not completely solved because the recently paved sections of roads are already becoming unusable and require repairs. Second most cited problem is waterlogging in all eleven Unions. Participants cited other problems related to physical infrastructure including: lack of electricity; loss of agriculture land due to unplanned housing; inadequate health facilities; scarcity of pure drinking water; poor sanitation; and unplanned gher activity causing environmental degradation and roadside erosion.

6.8 Action Plan Matrix through PRA Process

Table 4.5 reveals action plan matrix for development planning in the surrounding urban and rural areas of Benapole-Jessore Highway Corridor. The action plan matrix are developed through PRA sessions where local government representatives, members from TLCC and WLCC of Pourashava and members of standing committees in Union Parishad participated and worked together. The action plan matrix includes key issues, specific actions and implementing organizations/actors.

Table 6.5: Action Matrix for Development Planning in Benapole-Jessore Highway Corridor

Key Issues	What must be done?	Where needs to implement?	By whom?
Promoting planned urban development	<ul style="list-style-type: none"> • Land use master plan development • Awareness raising of the residents through developing IEC materials (e.g. billboards, leaflets, circular in newspapers) and using electronic media • Involving TLCC and WLCC members for awareness raising of local residents • Recruitment of urban planners and engineers • Implementing Land use clearance and building plan permission by following Land Use Master Plan and Building Construction Rules • Community-based housing development for conservation of agricultural lands and natural water bodies • Industrial and commercial uses development by following Land Use Master Plan • Slum and squatter settlement upgrading 	Jessore, Jhikorgachha and Benapole	Pourashava, UDD and LGED

Road infrastructure development to reduce accessibility problems	<ul style="list-style-type: none"> • Road Master Plan needs to be developed that must show local and regional connectivity. • Following Master Plan, asphalt roads need to be constructed that must connect remote areas with Municipalities and District Towns. Existing roads need to be repaired and widened. • Bridges and culverts need to be constructed for enhancing connectivity. • The condition of most roads connecting the outskirts with the city center needs to be improved • For Jessore city, a city bypass needs to be developed so that Benapole-Jessore Highway Corridor would not create traffic problems • Internal resource mobilization is required for supporting road infrastructure development. • Construction of terminals for trucks, buses and easy-bikes • Construction of footpaths and removing illegal establishments from roads and footpaths • Provisioning of traffic signages and streetlights 	Jessore, Jhikorgachha, Benapole and 11 Union Parishads	Union Parishads, Pourashava and LGED
Water logging	<ul style="list-style-type: none"> • Drainage Master Plan Development • Excavation of rivers and canals • Identification of outfalls and connecting drains with outfalls by using proper design and planning • Constructing new drains, widening and repairing existing drains • Conservation of natural waterbodies • Regular maintenance of drains • Involving local citizens into drain maintenance • Waste management system development for growth centres and kutchha bazars • Stopping unplanned gher activities 	Jessore, Jhikargachha, Benapole Paurashavas and 11 Union Parishads	Union Parishads, Paurashavas and LGED
Development of EPZ	<ul style="list-style-type: none"> • Master Plan for EPZ • Identifying land for EPZ • EPZ project from government • Creating 60,000 employments from the EPZ • Housing and infrastructure development for EPZ employees 	Benapole Paurashava	Ministry of Finance Paurashava and LGED
Decision Making Power for Union Parishad	<ul style="list-style-type: none"> • Transferring natural resources management (Jal Mahal) authority from District Commissioner to Union Parishad • It will increase financial resources of Union Parishad that can be used for infrastructure development 	Deara Union Parishad	Ministry of LGRDC, Land Ministry, District Commissioner Office and

Recreational facilities development	<ul style="list-style-type: none"> • Riverside park development • Urban greeneries development both sides of road and along the river • Walkway development along the river 	Jhikargachha, Benapole Paurashavas	Paurashava, LGED, Private companies and NGOs
	<ul style="list-style-type: none"> • Conservation of open spaces and existing open spaces need to be converted into playgrounds, stadium and parks • Parks need to be developed adjacent to schools • Involvement of private sectors and NGOs in park development 		
Utility services	<ul style="list-style-type: none"> • Household waste collection system development • Planning and designing for waste transfer stations and sanitary landfills • Constructions of dustbins and increased vehicles/transport for waste collection • Improvement of urban poor"s water supply and sanitation services • Installation of deep tubewells to ensure water for Paurashava residents in the dry season • Expanding pipe water supply networks in all the Paurashavas • Electrification using electric poles • Construction of public toilets 	Jhikargachha, Benapole Paurashavas	Paurashava, LGED and NGOs

CHAPTER SEVEN

STRUCTURE PLAN POLICIES

7.1 Introduction

As stated in the preceding chapter, SP usually sets forth the policy directions providing flexibility to the other tiers of the plan. The current chapter of the report sets forth strategies and policies for the master plan. The strategies and policies have been prepared on sectoral basis.

7.2 Spatial Development Strategies

The project area is predominantly rural in nature with immense economic potentiality. There are three pourashavas and several unions in the project area. Both Jhikorgachha and Jessore pourashavas are quite old habitation in the southwestern Bangladesh. Jessore is the most densely populated areas of the whole corridor with mostly low-rise buildings. In other urban centers, population and structural density is relatively lower. Jhikorgachha and Benapole is mainly developed following the Highway (N706). Development pressure is relatively lower in Jhikorgachha compared to other urban centers.

Right now, the Government of the people's republic of Bangladesh has been implementing a number of high-priority projects in the southwestern part of Bangladesh that includes Padma Bridge at Mawa, revitalization of Mongla Sea Port, Khulna-Mongla Railway line, widening of the corridor road etc. It is expected that after the implementation of these projects, economy and urbanization of this region will be significantly triggered up. As a result, this corridor will become even more vibrant through the boost up of the export-import related activities in this area. Because of close proximity to Indian border, availability of cheap labour and agro-based raw materials, better air, rail and road connectivity, Indian investors will be encouraged to invest in the corridor.

Because of commercial importance of the roads and easy access to Asian Highway via major roads, roadside developments are expected to get faster pace with the construction of the project. The expected roadside developments are industries, markets/growth centers/shops, housing areas, etc. BBA has also identified some potential negative impact e.g.

- Loss of seasonal floodplain,
- Deterioration in surface water quality,
- Deterioration in groundwater quality,
- Waste generation,
- Land acquisition and resettlement,
- Loss of agricultural lands, and last but most importantly
- Change in land use

Following the increasing friendly political ties with India, it is expected that the bilateral trade, economic activities of the project area, industrialization and cross-border activities will increase significantly. This will create tremendous impact on the project area. Among many expected impacts, following can be easily comprehended:

- per capita income will increase,
- new employment opportunities will be created,
- migration pressure will emerge,
- rapid land use change along the major roads coupled with environmental deterioration will be very rampant,
- intensity of the land use will suddenly increase
- pressure on the existing utilities and services will become quite severe,
- traffic congestion and traffic related causality and pollution may increase and most importantly
- the current inhabitants of the project area may find it difficult to cope with sudden change.

After exhaustive exercise on the impact of the corridor on its surroundings, suggest to follow the following guiding principles to guide the spatial development of the project area for the next 20 years:

- a) Utilize the advantage of the Port for the promotion of export-import business as well as setting up of imported raw material based export oriented industries
- b) Preserve drainage areas to protect from hazards of waterlogging and flooding
- c) Ensure the highway functions and connectivity of the functional areas
- d) Limiting development to “clustered nodes” at existing and future intersections
- e) Encouraging residential, commercial, mixed-use and industrial uses within the existing cities
- f) Prohibiting strip development along the highway.
- g) Land use zoning approach to ensure proper functioning of the area
- h) Densification approach to minimize the conversion of scarce land
- i) Preserve agricultural areas to ensure food security and employability in this sector
- j) Promote and ensure investment friendly climate in terms of spatial arrangement

7.3 Policy related to water and environment:

The Development Plan for Jessore-Benapole Corridor is to be done considering the Benapole Municipality and Land Port area; Sharsha Upazila Town; Jhikargachha Upazila Town and Jessore Municipality, where preparation of land use planning and hazard mitigation guidelines considering hydrological situation of the project area, was a part of the corridor development plan.

These Policy Guidelines are suggestive centering on water related issues by nature for the effective development of the Jessore-Benapole Highway Corridor. So, land use zone is restricted to the development of the corridor under the Jessore-Benapole Highway and includes the following categories like flood and land zoning, agriculture, urban area, industrial area, highway corridor, industrial area, infrastructure, traffic and transport, integrated logistic hub for highway, airport and protection zone – water bodies and forest etc. The policy guidelines under various ministries denoting specific uses of land and water and permissible for different uses for planning were reviewed. Other guidelines are suggestive in nature and put forward as a holistic approach for the development of Jessore-Benapole Corridor.

Table 7.1: Policy related to Water and Environment

Policy	Executing Agency
<p>Water/1: Propose Land Zoning considering Flood inundation</p> <p>Justification: Flood analysis of the Jessore-Benapole Highway Corridor using existing water level data at Kobadak at Jhikargacha and Betna at Navaron for return period of 2.33 yr, 5.0 yr, 20 yr, 50 yr and 100 yr has been carried out and inundations for those floods of return periods are estimated. They show that existing development areas, settlements, infrastructures, the total corridor etc. are supposed to be under floodwater creating many kinds of hazards which need to be taken into consideration for planning and development purposes. The flood analysis results shown in previous chapter show the extent and severity of inundation of the corridor and it might be apprehended very well. It is evident from hydrologic analysis that inundation of the Jessore-Benapole Highway Corridor for different return periods of floods (2.33, 5, 20, 50 and 100 year) should be of major concern in its development plan especially land use planning and protection. The development plan of the Jessore-Benapole Highway Corridor especially land use planning and protection should be as per inundation of the corridor for different periods of flood events.</p>	<p>Pourashavas UDD</p>

<i>Water /2: The provide buffer along river and other water bodies</i>	RHD Pourashavas Proposed Corridor authority
Justification: All existing water courses, rivers, lakes, tanks should be protected. The boundary of water bodies and inundation might be ascertained as per high tide level or high flood level. No construction should be permitted in water bodies' premises and the water spreads. The provision of buffer could be a good option as per government orders enforce. (Source: policy guidelines, p 48, Final Report on Water Resources Management, Preparation of Development Plan for Benapole-Jessore Highway Corridor, 2017-37).	
<i>Water /3: propose open space and other recreational facilities on regularly flooded land and beside water bodies</i>	-UDD Pourashavas Proposed Corridor authority
Justification: The fishing activities, boating and the picnic along the river banks, recreational activities are considered as only exceptions. Platforms for fishing and rain shelters, sky jetties for boating are considered as friendly structures.	
<i>Water /4: Upgrade existing infrastructure above extreme flood level.</i>	LGED Pourashavas Proposed Corridor authority RHD
Justification: Jessore–Benapole National Highway was inundated during unprecedented flood of 2000. It was a rare event for the corridor and equivalent to 100 year return period having magnitude of about 6.53 m PWD at Jhikargachha. Road elevation and existing openings provided for the structures on it seemed inadequate during the flood of 2000. So, existing national highway should be upgraded i.e. present road elevation as well as bridge, culvert openings should be increased where it is possible up to 6.53 m PWD starting from Jhikorgachha, where freeboard should be also included.	
<i>Water /5: Eliminate cross dams over the rivers to restore ecology.</i>	Pourashavas LGED Proposed Corridor authority BWDB
Justification: Almost every prominent rivers, secondary rivers and parts of water bodies' are intervened by construction of cross dams by local power groups where fish cultures practiced. Cross dams over the water bodies turn the area virtually dead water entities and eco hydrological regimes are changed totally. Healthy water ecology has been missing and mono fish culture has led to extinction of other ecosystem services. As a result, the region has been suffering from social, biological, ecological, environmental degradations. To restore the vibrant eco-system services, such cross dams together with other unhealthy practices should be stopped and eliminated through integrated developmental activities.	
<i>Water /6: Encourage local knowledge and public participation for land and water management.</i>	Pourashavas LGED Proposed Corridor authority BWDB
Justification: People's participation in planning and water management of water development projects is now widely considered to be essential input for both efficiency and equity. Through adaption to the hydrological cycle in an area over hundred years, local people acquire detailed insights and knowledge hydrologic and ecologic system which is not found elsewhere. This wealth of information can be utilized by fostering people's participation in decision making during planning. For effective water and land management along the corridor local knowledge and public participation of the corridor should be encouraged.	

<p><i>Water /7: Protect agriculture and rural land use.</i></p> <p>The prime fertile agricultural land, existing plantations and aquaculture areas provide the major services for food security. These existing agricultural/rural land use activities to be kept intact, and urbanization will not be allowed. The permissible major uses are like: i) agriculture, horticulture, orchards and nurseries dairy and poultry, farm housing, fish farming, slaughter house, cottage industry not involving the use of any machinery driven power which do not create noise, vibration, smoke or dust; ii) small scale agro-based industries, bricks industry, feed mixing plant etc.; iii) brick kilns and lime kilns, power plant; iv) public utility establishments such as sub-station, receiving station, sewage disposal, gas installation, water supply installations including treatment plants; v) brick, tile or pottery manufacture; vi) hospital treating contagious diseases for disabled patients; vii) petrol filling stations with garages; viii) weigh bridges, service and repair of farm machinery; ix) godowns for storage of agriculture produce, fertilizers, cooking gas cylinders etc. and x) many others.</p>	<p>Pourashava UDD Proposed Corridor authority LGED</p>
<p><i>Water /8: Follow rules and regulations of the building specification guideline in BNBC.</i></p> <p>Possible source of air pollution will be dust due to handling of sand, cement, breaking of bricks/boulders, mixing of concrete ingredients and burning of bitumen for internal roads. However, due to the openness of construction sites and wind conditions, the dust and engine emissions are expected to have limited effects on the existing air quality. The anticipated air quality problem will be short lived, localized and minor lasting mainly during the construction. To keep the pollution level within acceptable limit, construction related emissions should be regulated. Regular water spray on dusty surfaces during dry season to reduce dust generation must be practiced. The rules and regulations of the building specification guideline as mentioned in BNBC should be followed especially by the contractors. Loading and unloading of construction materials likely to generate fugitive emission, shall be done in covered area or provisions of water fogging arrangement may be made around these areas. Regular maintenance of machinery and equipment and vehicular pollution check shall be made mandatory. Ambient air quality monitoring should be carried out quarterly during construction. If monitored parameters are above the DOE standard, suitable control measures must be taken by the contractor.</p>	<p>LGED RHD</p>
<p><i>Water /9: Proper selection of construction materials to protect environment.</i></p> <p>Improper selection of construction materials may threaten the environment. For example, traditional brick making process involves burning of trees, emission of Sulphur through coal burning, emission of dust etc. which are detrimental to health and environment. Mitigation: Hollow cement bricks as partition materials against bricks may be used. Steel shuttering and steel props can be used instead of wood and bamboo.</p>	<p>Pourashava RHD Proposed Corridor authority</p>

<p>Water /10: Tree conservation and re-plantation in the project area.</p> <p>Jessore Road along with hundred years old trees carries great cultural as well as historical values. Planning team recommends conservation of these historical trees. Removal of trees due to construction of the proposed project area would result disruption on ecosystem. In case of removal of dead trees, to compensate the loss, RHD will replant trees in the areas as mentioned below according to the prescription of Forest Department (FD) e.g., minimum two tree seedlings to be planted for each tree felled during monsoon period (June to August). Conservation of trees and re-plantation in the project area will not only function as landscape features resulting in harmonizing and amalgamating the physical structures of proposed complex with surrounding environment but will also acts as pollution sink/noise barrier. Adequate steps therefore shall be taken to ensure survival of these trees. The NGOs will be responsible for planting, monitoring and maintaining of trees. From the third year, RHD will be responsible for maintaining of trees.</p>	<p>Pourashava RHD Proposed authority NGOs</p> <p>Corridor</p>
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7.4 Policy: Transport planning

Benapole-Jessore corridor plays a significant role in the business and economy at local, regional and national scale. The multi-modal transit to India has enhanced its potential by many folds. A lion share of passenger and freight that passes through the Benapole-Jessore highway segment does not have any direct role to the surrounding economy. However, it has spin-off imprint on local land use and traffic. So, the corner stones of the transport strategies are to ensure smooth movement of traffic to and from Benapole port, facilitate the transfer, transit and foresee the traffic scenario in the corridor area to recommend for its road hierarchy.

Table 7.2: Policy related to Transport planning

Policy	Executing Agency
<p>Transport /1: Upgrade Benapole Jessore Highway to ensure free traffic flow.</p> <p>Justification: Roads and Highway Master Plan 2009 has proposed a four lane highway for N706 by 2020. To comply with their plan the same has been proposed with options for light and non-motorized vehicle and pedestrian. The National Highway the most important link for cross border business and economic progress for Bangladesh. The level of service (LOS) of this highway is far away below the expected standard. This has caused by insufficient lane, mix used of vehicle, and lack of traffic management and uncontrolled activities on road space. Along this 35 kilometer many local roads are connected to it. These little junctions and congestion around it cause delay to traffic moving on tis national highway. Public transport connecting Benapole-Jessore highway is vulnerable in term of public facility. However, it is functional with attributes like delays, irregularity, poor ticketing, crowded etc. Improvement of the facility will enhance its share by many folds. This highway needs to upgrade to a 4 to 6-lane which has also been addressed in the highway master plan. And other roads connecting to it should be controlled based on urban hierarchy it connects. With all these road expansion, hierarchy management and traffic management this highway corridor can be a line of</p>	<p>RHD Proposed Corridor authority</p>

<p>inspiration for economic growth. It is to note that freight traveling through this highway is a major concern but local inhabitants who and their ancestors lived here for decades needs to serve as well. Urban hierarchy and associated road hierarchy need to establish as local business and villagers do get benefit from the improvement of this corridor.</p>	
<p><i>Transport /2: Establish road hierarchy that connects the economic activities and urban centers.</i></p>	<p>LGED Pourashavas</p>
<p>Justification: Road Hierarchy: It is prudent to establish road hierarchy that connects the economic activities and urban centers. It has been advised to develop an urban/activity hierarchy and then connecting road hierarchy. Activities, that attracts heavy vehicle requires to have wider road. On the contrary, local market or bazar should be connected with both local and major road. Because, input to the market will come through major road and the local people by local access road. Proposed road hierarchy:</p> <ul style="list-style-type: none"> <input type="checkbox"/> Level-I roads will connect growth centres on highway with clusters of business and settlements <input type="checkbox"/> Only level I roads will connects the highway <input type="checkbox"/> Level II roads will make connection between two level I road or connect level I with cluster of economic activities and settlements <input type="checkbox"/> Local roads will be connected to level I and level II roads (preferable). <input type="checkbox"/> Service road along the highway will be provided in places where level I intersect with highway. This is to ensure that congestion created at intersection does not impact of the flow of traffic on main roads. 	
<p><i>Transport /3: Provide service roads on both side of the highway to accommodate local and slow moving vehicles.</i></p>	<p>RHD Pourashavas Proposed Corridor authority</p>
<p>Justification: It is common in Bangladesh that highways have direct access to local road. It is found that 35 Km of Benapole to Jessore highway has direct access to more than hundred roads. Traffic to and from these roads to N706 cause interruption to free flow of traffic and results in delay and congestion and hence lower performance. It is found that location of local market/bazar on highway is another reason. It has been proposed to construct service roads on both side of the highway. As, activities and traffic of bazar cannot spill over to highway and cause congestion.</p>	
<p><i>Transport /4: Establish Regional Connectivity and Diverted Traffic.</i></p>	<p>RHD Pourashavas Proposed Corridor authority</p>
<p>Justification: Most traffic travelling through this corridor do not destined to it or to Jessore. It goes to Kustia, Khulna, Dhaka and Chittagong and beyond the national boundary. So, emphasis needs to put on the easy ingress and egress with Benapole port. The current ring road is good for Kustia and Faridpur bound traffic. But outside Southern Bangladesh, for any location it requires crossing Jessore town which cause congestion in the city and looks a threatening issue for the future. It has been proposed to construct a new road from Muruli to R750. This new road will cater all traffic to Dhaka and Chittagong and beyond. For Nawapara, Khulna and Mongla port south part of Jessore City Bypass can be widened.</p>	

<p><i>Transport /5: Enhance freight transport and integrate multimodal facilities at rail junction.</i></p>	<p>Pourashavas Bangladesh Railway</p>
<p>Justification: So far there are only few trains coming to Benapole in a single day. Since it is of parallel to highway and slow in operation, it is not attracting much passengers. The train service is not popular for passenger travel. However, it can be a potential mode of freight transport specially when connection with Mongla port is complete. It requires huge investment to modify freight handling infrastructure in station. The recent declaration of having direct train from Bangladesh to Kolkata is a promise for the improvement of the corridor. It involves development of train track and rolling stock on the both side of the border. The under construction rail toward Mongla is another indicator that this line is going to be a busy freight channel. It will be prudent to have multimodal integration facilities at present rail junction.</p>	
<p><i>Transport /6: Restrict unplanned and high intensity development along the highway.</i></p>	<p>RHD Pourashavas Proposed Corridor authority</p>
<p>Justification: Land use and transport has a well-recognized reciprocal relationship. Nature of traffic on a road largely depends on the land use and its intensity of the places it connects and its surrounding land use that have access to it. Along with port-city connection, this highway connects several growth centres. This results movement of raw materials to farms and yields to market through it. For local agriculture commodity transport generally smaller truck, sometimes even locally made vehicles are used. On the contrary, export-import items from port used heavy duty large truck. Again, there is a heterogeneous mix of passengers' vehicles including NMT. All these traffic mix creates a slow flow on the road. Most settlements are clustered beside the road which is a common scenario for any unplanned area. The same trend can be used as a guiding principle for area development. It is found that without much development control a road can be a good trigger for development. Development refers here construction of buildings for residential or commercial purposes. So it is suggested that zoning must be defined as a corner stone of urban development strategy for this area. These zones are then connected to each other and a hierarchy of transport network is established.</p>	
<p><i>Transport /7: Provide parallel road to national highway.</i></p>	<p>Pourashava Proposed Corridor authority LGED</p>
<p>Justification: This spatial pattern of urban centers might give an impression that urban activities are located within these three centers and rest are low density and agriculture. But in reality we can see scattered settlements distribution across the whole landscape Location of job and economic activity is the central theme for any growth centre. Benapole, Navaron and Jhikorgachha sprung among the crowd to be higher order of urban centre. Sharsha, Godkhali and Laujani can be in second order. It reveals that all concentrations are on highways based market – depicting as a meeting place for the economic activities. This also indicates a lack of parallel roads; as a result people concentrate of the common access point – that is on highway. Except the Benapole Jessore highway all other roads have have no hierarchy. Basic idea is that local traffic can avoid national</p>	

highway as much as they can do and more economic activities that serves the local community can be moved and located off the highway. Importance has been given to those roads which has market connectivity. Several roads are recommended parallel to national highway and loops are created as development can be contained within the loops.	
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7.5 Demography and population growth

The project area has immense potentiality to be developed. Jessore paurashava has not yet touched the peak of development. On the other hand, Benapole Land port has immense potentiality to contribute in the national development. These two areas are located at the two ends of the project area. Because of their connectivity, the growth potentiality of the project area has also increased significantly. Apart from the same, being a part of the regional corridor development plan, this area carries enough significance.

With the increase of economic activities of the corridor, migration will increase. This will be coupled with the unplanned development, slum formation, environmental pollution, deteriorating living environment etc. Although, the SP recognizes that less concentration of population in the corridor would be better for ensuring health and sustainable living environment. Nevertheless, the above-mentioned reality cannot be overlooked. The project area is likely to be observing unprecedented growth in the coming decades, if all the economic predictions remain constant. Urban agglomeration through agglomeration of population is always better for economy and inversely related to environmental sustainability.

The working paper on Demography has suggested adding additional 10% population with the originally projected population. Apart from the same, it also suggested to consider commuters who will be traveling from outside of the project area, work inside the project area throughout the day and go back at the dawn. It is also to be noted here that most of the migrated population are rural poor. Providing employment, shelter, amenities etc. will be challenging for the proposed corridor authority. To avoid such overwhelming concentration of population (given that economic and manufacturing activities will increase tremendously), the government also need to focus on the regional growth centers and the rural areas, increase employment opportunities, and services and facilities. **Map 7.2** shows the distribution of population density of the project area.

Bangladesh Population Policy 2012 suggests treating the population as a resource not as a burden. The policy envisioned to develop a healthier, happier and wealthier Bangladesh through planned development and control of the nation's population.

Table 7.3: Policy related to Demography and Population growth

Policy	Executing Agency
Pop/1: To ensure equitable development for all the unions to avoid the unwanted concentration of population in any area.	Local Governments (Union Parishads / Pourashavas) Proposed corridor authority
Justification: Employment opportunity, living standard cannot be ensured for every of the unions at similar level. However, placement of population should be such that a balance can be maintained and the provided amenities can sufficiently serve the population.	
Pop/2: To promote compact urban development	Ministry of Planning, Local Governments (Union Parishads / Pourashavas) Proposed corridor authority Ministry of Planning
Justification: Compact development comes with so many benefits, e.g. less travel cost (time, money etc.), lesser expense for service provision, conservation of agricultural land and open space etc.	

<p>To ensure compact development better living environment need to be ensured in the existing urban centers. Overwhelming number of low-rise buildings provides great opportunity for walkup high-rise buildings in the project area. This can be achieved through Development control, Participatory Land Readjustment projects and Soft loans to land owners.</p>	
<p>Pop/3: To develop Capacity of the migrated folks.</p> <p>Justification: From the experience, it can be said that the migrated population do not usually have the required skill set. As a result, often these people remain unemployed or underemployed.</p>	<p>Ministry of Planning, Ministry of Education Ministry of ICT Local Governments (Union Parishads / Paurashavas) Proposed corridor authority</p>
<p>Pop/3: To ensure healthy living environment for the people.</p> <p>Justification: Healthy living environment is one of the major determinants for economic productivity. If it cannot be ensured, slumization will start in the project area resulting deteriorated residential environment.</p>	<p>Local Governments (Union Parishads / Paurashavas) Proposed corridor authority LGED NGOs/CBOs</p>
<p>Pop/3: To ensure development activities sensitive to the poor</p> <p>Justification: Usually the poor are the most vulnerable and most un heard of community in any geography. Only through mainstreaming these people in the development agenda, sustainable development can be achieved.</p>	<p>Local Governments (Union Parishads / Paurashavas) Proposed corridor authority LGED NGOs/CBOs</p>

7.6 Housing and associated public utilities and services

With the increase of volume of trade and economic ties with India and surrounding nations, volume of traffic will also increase, more employment will be generated, more opportunity for industrialization will be emerged, more commuting will happen and most importantly more population will gather in this corridor to enjoy economic benefit and better living standard. With the increase of population, more demand will be created for housing. Obviously, the migrated population will seek their lodge in the prominent urban centers as most of the urban services and facilities will be available as a response towards emerging demand. Linear population projection cannot comprehend these kinds of sudden change in population growth. Again demand forecasting for housing is also difficult because of uncertainties about family size. Nowadays, average family size is declining and the joint families are fragmenting. Nuclear families require smaller house but per head living space requirement is usually high. Higher number of nuclear families means higher number of housing units as well.

Demand for housing can increase very rapidly. On the other hand, supply of the same usually increases very slowly. This creates a sheer difference in the equilibrium resulting in the form of massive slums and squatters. To avoid such messy situation, the government should be prepared in a planned manner. Fortunately, most of the residential areas of the project area have very low density. Meaning the existing residential areas would be able to consume more people in the next couple of years providing enough time to be prepared for the future.

According to the population projection, the project area has total population of 5,90,440 (for the year 2015). This figure is 6,31,434; 6,75,884 and 7,24,108 for the year 2020, 2025 and 2030 respectively. By the year 2030, total deficit of housing units will be [Future demand (204236) – Existing stock (126679)] 77557. This many housing units will need to be created mostly in the already urbanized areas.

Table 7.4: Policy related to Housing and associated public utilities and services

Policy	Executing Agency
House/1: Prepare the existing urban centers to accommodate additional pressure of population.	Ministry of LGRD Pourashavas LGED
Justification: Economic development will lead to concentration of more population in the project area. Obviously, these people will prefer the existing urban centers for their living. Land use of the existing urban centers should be declared such that all these people can be easily accommodated and all the services and facilities can be made easily available for the people.	UDD
House/2: To ensure simple and accessible housing finance for middle and lower income groups.	Ministry of LGRD BHBFC
Justification: The data clearly shows that although most of the people of the project area have their own land but because of lack of finance, their housing condition is poor. Several studies can be conducted to identify the people who are in need of housing finance, their capacity to pay back, type of loan they need etc. Based on this study proper mechanism can be devised to specially target the lower and middle-income group.	Ministry of Housing and Public Works Private and Public Banks NHA Pourashavas
House/3: Prepare the project area to facilitate commuting and the commuters.	Ministry of Road Transport and Bridges RHD
Justification: With the increase of economic activities, pressure of commuting will also increase. The increasing number of commuters will require temporary shelters and all other utilities and services. All services projected for 20 years should not be allocated from the very beginning of the plan. Instead, location and space requirement should be determined for five years. Otherwise, lots of resource will be wasted and common people will face problem.	Pourashavas Proposed Corridor authority
House/3: Ensure and increase physical housing supply for the	NHA LGED
Justification: Because of high overhead cost, poor's access to housing units are often limited. Because of the same reason, private sectors also do not come forward to provide shelter for the poor. It requires long-term public-private partnership to increase the number of housing units. The concept of social housing may be used in this regard.	Pourashavas Proposed Corridor authority Ministry of Housing and Public Works
House/4: Improve living condition of the poor people.	NGOs / CBOs Pourashavas
Justification: From the construction material's point of view, the project area is in bad shape. Although the area is not highly prone to natural disaster, the miserable condition faced by the inhabitants during rainy season can be easily comprehended. Local Government Institutions, NGOs, BHBFC and NHA can take appropriate action to improve the living condition. Secondary data has also revealed that the in terms of source of drinking water, toilet facilities etc., the area is also in distress. The issue can be addressed temporarily by local government institutions. However, for integrated and holistic measures, an organization like WASA can be created to better serve the area.	LGED Proposed Corridor authority HBFC NHA

House/5: Provide all necessary services and facilities to promote housing at private sector.	Ministry of LGRD Pourashava RUBEC
Justification: It is more difficult to provide housing on public sector initiatives as it involves funding, land acquisition, takes long time. By providing infrastructure and services general people can be enables to build their own houses.	Ministry of Housing and Public Works NHA
House/6: Ensure participatory residential area densification	Pourashava UDD
Typical practice of land development through acquisition is a complicated and resource consuming process. Through different kinds of incentives, it is possible to bring the landowners together to develop apartments and ensure their access to different social community facilities. It is also possible to ensure planned development through this process.	Proposed Corridor authority LGED
House/7: Promoting clustered rural development	LGED NHA UDD HBFC
To get access in the existing transport network, rural settlements are usually developed as ribbon following the existing road alignment. This creates many kinds of problems (e.g. drainage blockage, longer travel time to reach different kinds of social and community services etc.). Clustered development leads to compact development that helps lowering the utility installation cost, ensuring cost effectiveness through securing access of the larger number of people into different kinds of social and community services.	

7.7 Land Use

The corridor is still dominated by rural land use. Land used for industrial and manufacturing purpose is negligible. From the land use distribution, evidently, communication system of the project area is also very poor. Agricultural land use is still dominating the project area. Although the whole situation does not portray the picture of a economically vibrant area, it also comes with some potentialities. The area has quite a lot of vacant space for providing urban services and facilities. Existing urban areas are surrounded by quite livable vacant/open space where additional population can be accommodated.

Table 7.5: Policy related to Land Use

Policy	Executing Agency
Land use /1: Conserve the agricultural areas and water bodies.	Ministry of LGRD Unions Proposed Corridor authority UDD LGED
Justification: The project site is still dominated by agro-based economy. Majority of the land is still used for agriculture purpose. To ensure food security and to avoid increase of unemployment rate, conservation of agricultural land is a must	
Land use /2: Procure land for open space facilities as quick as possible	Pourashavas & Unions DC Office LGED
Justification: When land value will be higher cost of providing the facilities will also be very high. Besides, with the growth of population vacant land will disappear gradually, so no land will be available at strategic locations for providing open space facilities.	

<i>Land use /3: Develop necessary infrastructures to promote agricultural activities and increased productivity.</i>	Ministry of Agriculture Department of Agricultural Extension LGED Ministry of Water sources
Justification: Agriculture is always considered less productive compared to other economic sectors. However, through providing irrigation, storage and other facilities, it would be possible to increase agricultural productivity.	
<i>Land use /4: Restrict residential development in the waterlogged areas or flood prone areas</i>	HBFC UDD LGED NHA
Justification: With the increase of population pressure, marginalized people will start seeking cheap place to live. Often these places deprives urban amenities and vulnerable to different natural and man-made disasters.	
<i>Land use /5: Restrict development activities in the designated flood plain areas.</i>	UDD
Justification: Although incidence of flood in the corridor is not at all notable. However, after revival of the river, the inhabitants will enjoy tidal flow of the same. To minimize adverse hydraulic effect, and to maintain	Proposed Corridor authority Pourashavas & Unions
<i>Land use /6: Restrict ribbon development around the Jessore-Benapole road</i>	UDD Proposed Corridor authority DC Office
Justification: As it is assumes that the said road will be playing a vital role in economic development of the area. Ribbon development by this road will hamper free flow of the vehicles increasing congestion and environmental pollution and cost.	
<i>Land use /7: Limit construction of Religious Structures on Public Land, Road Right of Way and Prevent Commercial Activities in Religious land use</i>	Corridor Authority, RHD, Upazila, Pourashava and Union level administration
Justification: It is a common practice in both urban and rural areas that people constructs religious structures on public land and the right of way of roads. These structures later invite many kinds of problems including congestion.	
<i>Land use /8: Restrict Industrial development outside designated areas</i>	UDD Proposed Corridor authority Pourashavas and Unions Ministry of Industries
Justification: Typically, industries are developed responding to the market force. The entrepreneurs choose location for industries without considering different environmental and planning determinants. To enjoy the opportunity of economy of agglomeration, more industries are set up nearby. Following investment in the formal sector, informal investments are also attracted.	
<i>Land use /9: Encourage multipurpose use of open spaces like playfield, eidgah etc.</i>	UDD Pourashavas and Unions Proposed Corridor authority
Justification: Specially in urban areas, where there is a severe lack of open spaces, multi-purpose use of these spaces is encouraged. For example, playgrounds can also be used for weekly hat, eid gathering, political and religious meetings etc.	

<i>Land use /10: Playgrounds and ponds located in the academics and government installations should be kept open for local community's use</i>	UDD Proposed Corridor authority
Justification: Other than Jessore, all other areas of the corridor still have open spaces for the local people to play. But experience portrays that with the economic development, amount of open space shrinks (specially in urban areas). If the playground and ponds located in the academics and government installations are not kept open for all, it will create stress on the physical and mental health of the people.	Pourashavas & Unions

7.8 Governance and institutional arrangements

Within the corridor, a number of administrative units exist, e.g. Jessore, Jhikorgachha and Benapole Pourashavas, a number of unions etc. These administrative units have different roles, responsibilities and capacity. Integration among these administrative unites will be a challenge.

Table 7.6: Policy related to Governance

Policy	Executing Agency
Governance /1: Establishment of Jessore-Benapole Highway Corridor Development Authority and Jessore Regional Office of Urban Development Directorate	Government of Bangladesh
Justification: Within Jessore-Benapole highway corridor, a number of urban local government institutions such as Jessore Pourashava, Benapole Pourashava and Jhikorgachha Pourashava and also rural local government institutions are existed. Among these local government institutions, municipalities are responsible for implementing and in limited scale, planning of urban development. However, rural local government institutions do not have capacity in terms administrative, work force and institutional arrangements to implement physical development planning. In addition, institutional coordination problems would arise between the urban and rural local government institutions in charge of implementing corridor development plan particularly in control of land and responsibility for planning and monitoring physical development in the Jessore-Benapole Highway Corridor areas. Thus, it is necessary to establish a 'Corridor Development Authority' for development control and Jessore Regional Office of Urban Development Directorate for monitoring and updating of Strategic Plans.	
Governance /2: Urban planning regulations place much emphasis on control rather than on guidance of urban development.	UDD Proposed Corridor authority
Justification: Planning legislations in form of land use plans, zoning, subdivision regulations, building codes, and other public policies shape and guide development. These regulations are normally adopted to help protect the urban and natural environment, gear infrastructure investments with development, and maintain and enhance property values. They are never meant to restrict or decelerate development but rather to direct and enhance it. Most planning regulations and standards in Bangladesh have been Considered to be too static and inflexible like some existing development control codes, the building and zoning regulations. The various acts and statutes for regulating urban development are too rigid and outdated and not conforming to the countries' current social, economic and political circumstances.	

<i>Governance /3: Upgrading of existing status of Jessore Pourashava</i>	Ministry of Local Government, Rural Development and Co-operatives
Justification: The elevation of local government institution like Jessore Municipality into a Municipal/City Corporation with enhanced development and service responsibilities retained much of the influence of the City Corporation in comprehensive city development. It is necessary as Jessore Pourashava can therefore be termed as the most important stakeholders of the city's development.	
<i>Governance /4: Strengthening urban and rural local government</i>	LGED
Justification: In order to carry out the future responsibility, both urban local government institutions such Benapole and Jhikorgachha Pourashavas and rural local government institutions should be further strengthened in terms legal provisions.	Ministry of Local Government, Rural Development and Co-operatives
<i>Governance /5: Mobilization of Resources</i>	GoB
Justification: This can be achieved through both central governments support and easy legal provision for urban local government institutions to implement income-earning projects with their own initiatives. However, adequate transparency arrangements are pre-conditions for such projects. Greater effort should be made both by corridor development authority, urban local government institutions and other rural local government institutions with the power to tax or impose fee towards optimum resource mobilization.	
<i>Governance /6: Increase quality and quantity of human resources</i>	UDD
Justification: Urban local government strengthening also demands both quantitative and qualitative strength of relevant personnel in such bodies. There are serious deficiencies in municipal human resources, particularly in availability of professional urban planners and other technical people. The system of providing bureaucrats and technical persons to the Pourashavas by the central government is also not very welcome by the Pourashava authorities since they involve additional financial burdens to the Pourashavas.	Proposed Corridor authority LGED
<i>Governance /7: Increase People's participation in plan implementation</i>	UDD
Justification: Citizen participation needs to be increased in plan implementation process. The Pourashava Act of 2009 has ensured greater participation of citizens through several Standing Committees, the Town Level Coordination Committee and the Ward Level Committee. Thus, it is necessary to ensure the participation of representatives of Standing Committees, the Town Level Coordination Committee and the Ward Level Committee in plan implementation.	Proposed Corridor authority LGED
<i>Governance /8: Quality of leadership is also important for Corridor Development Plan Implementation</i>	GoB
Justification: Quality of Pourashava leadership is also a very important issue in improving Pourashava governance. Since such leadership evolves through the election process, there is need for campaign for choosing good leaders. Both the government and non-government organizations can conduct such campaigns.	

<i>Governance /9: Awareness building of planning activities and public participation</i>	LGED UDD Proposed Corridor authority
Justification: The extent to which people are aware of the existence of planning activities and regulations is important because it partly determines the extent to which people will comply with these regulations. Lack of public participation and awareness of urban development plans and planning legislations lowers the chance of successful implementation of the plan and the degree of compliance with the required regulations.	

7.9 Economic Development and Industrialization

Economic development of any place is associated with generation of employment. And generation of employment depends on the rate of investment in various sectors of an economy. An economy of any area starts building up with investment in the basic sector that leads to the building up of the non-basic sector. Investment in basic sector is increasing slowly. But the planning team also argued that there is a huge potentiality of the area in terms of future industrial development.

Main strategy for economic sector is to promote basic sector investment climate and lead the local economy forward through promotion of Small and medium Enterprise (SME). Additionally to attract national and international investment.

Table 7.7: Policy related to Economic Development and Industrialization

Policy	Executing Agency
<i>Econ/1: Provide bank loans on easy terms to attract prospective investors in the SME sector.</i>	Ministry of Industries. Ministry of Commerce.
Justification: Easy loans would encourage and attract prospective investors for investment in small scale industries.	
<i>Econ/2: Take measures to channelize remittance to value adding productive sectors.</i>	Ministry of Industries. Ministry of Commerce.
Justification: Larger amount of remittance is being diverted to land purchase, which is considered as the safest investment. This huge capital may be channelized to productive sectors to help create more employment.	
<i>Econ/3: Arrange entrepreneurship training programmes for prospective investors.</i>	Ministry of Industries. Ministry of Commerce.
Justification: There are many potential investors who are ignorant of the ways and means of investment and operating an enterprise. the training can help them get educated in these lines.	
<i>Econ/4: Ensure clustered development of industries in the designated areas.</i>	UDD Proposed Corridor Development Authority Pourashavas Ministry of Industries. Ministry of Commerce.
Justification: All over the project area, small, medium and large industries are developed haphazardly. Small and medium industries have invaded residential zones. Clustered industries can enjoy the agglomeration effect. Additionally, it is relatively easier to provide common services like waste treatment plant, health services etc. Moreover, it helps monitoring the industries' environmental efficiency. Areas of clustered industrial development must be facilitated with all kinds of services required for establishing large and heavy industries.	

<i>Econ/5: Relocated Noxious and Hazardous Industries from the non-permitted areas to the designated industrial zones</i>	UDD Proposed Corridor Development Authority
Justification: At present lots of industries are developed without considering any environmental and health consideration. These industries need to be identified and relocated in the proposed industrial zones. These kinds of industries need to be identified and relocation process can be initiated in phases. Areas located for such industries must be equipped with all kinds of environmental safety and security measures, health facilities, waste processing facilities etc. Noxious industries should not be allowed in any other places other than the designated location.	Pourashavas Ministry of Industries Ministry of Commerce
<i>Econ/6: Promote agro-based, agro-supporting, small and medium Industries</i>	BSCIC Microcredit Regulatory Authority
Justification: The corridor is surrounded by huge amount of high productivity agricultural land. It is expected that the farmers of these areas will be using the corridor for transporting and trading agro-products. Because of availability of raw material, the corridor is one of the most suitable areas for agro-based and agro-supporting industries. Again, the small and medium industries are very important for employment generation (specially for women). Investors need to be facilitated through soft and hard incentives to invest in the project area to ensure employability in the project area. These kinds of industries can be allowed and promoted in the growth centers.	Ministry of Finance Ministry of Industries

7.10 Utility Services

Utility services are the most essential parts of urban life. To make an urban centre livable there must be adequate provision for utility services. Utility services include water supply, solid waste management, power supply, sanitation and drainage. Except power supply, the rest are the responsibilities of the Pourashava.

Table 7.8: Policy related to Utility Services

Policy	Executing Agency
<i>Utility/1: Exploration of alternative sources of water to ensure sustainable supply.</i>	LGED, Pourashavas and Unions
Justification: Amid constant rise of urban population, it is time to explore alternative sources of water, like, rain water harvesting and surface water supply.	
<i>Utility/2: Involve beneficiary participation in solid waste management.</i>	NGO and CBO Pourashavas and Unions
Justification: Involvement of beneficiaries in solid waste management will make the operation more effective and reduce financial responsibility of the local government.	
<i>Utility/3: Exploring re-use and recycling of waste materials to extract resources.</i>	NGO and CBO Pourashavas and Unions
Justification: Re-use and recycling of waste materials will produce resources and reduce cost of waste management.	

Utility/4: <i>Publicity on the benefits of hygienic sanitation to motivate people and enable people to have easy access to sanitary materials.</i>	LGED, NGO and CBO Pourashavas and Unions
Justification: Motivation will encourage people to adopt healthy sanitation and reduce health risks.	
Utility/5: <i>Protection of natural drainage system and preparation of hierarchical drainage network</i>	LGED, Pourashavas and Unions UDD
Justification: Natural drainage systems are being grabbed and filled up, which increases the risk of waterlogging. Well planned hierarchical drainage network help smooth drainage of storm and waste water.	
Utility/6: <i>Take initiative to popularize rain water harvesting</i>	LGED, Pourashavas and Unions
Justification: Because of its location, the project area is one of the badly affected areas of Bangladesh due to salinity. In such are, rain water should be preserved for drinking throughout the year. Non-	DPHE
Utility/7: <i>Promote community based Waste management</i>	LGED, Pourashavas and Unions
Justification: Waste management system is almost absent in the project area. Drastic improvement in the waste management system cannot be expected in the jurisdiction of union parishad areas. Considering better performance of the community based waste management, apart from actively involving the waste management, the local authorities should act as the facilitator or promoter of community based waste management system. NGOs can play vital role in this regard.	
Utility/8: <i>Popularize waste recycling and waste reduction process</i>	LGED, Pourashavas and Unions
Justification: In rural areas, per capita waste generated per day is comparatively lower than that of urban areas. With the increase of urbanization and economic agglomeration, more waste will be generated. Without recycling and reducing, waste management will be difficult.	
Utility/9: <i>Implement integrated WaSH programe</i>	LGED Pourashavas and Unions
Justification: To ensure healthy living standard for the people living in the corridor, an integrated WaSH ("Water, Sanitation and Hygiene") program need to be implemented with a long-term vision. For rural areas, low cost sanitary toilet may be a workable solution.	
Utility/10: <i>Ensure Health facilities for all</i>	Ministry of Health Pourashavas and Unions
Justification: Health facilities (for both curative and preventive health service) should be made available at the union level that will ensure access to health facilities at almost doorstep of the inhabitants. Health facilities are available at the pourashavas. However, capacity of these health infrastructures should be increased.	

7.11 Land Management Strategies

The corridor is one of the oldest habitations in Bangladesh, specially Jessore and Jhikorgachha pourashavas. Planning intervention in these areas is easier said than done. Moreover, people of these areas are not at all habituated with planned intervention. Thus conventional planning enforcement may not work for these areas. Taking this into consideration, following development strategies are proposed:

Table 7.9: Policy related to Land Management Strategies

Policy	Executing Agency
<p><i>Land/1: Adopt participatory land development technique for both land use management and infrastructural development</i></p> <p>Justification: There are many kinds of land development techniques. Depending on the local circumstances, this technique itself can vary. However, one of the preconditions of all these approaches is that the land owners must participate in the development process. Local authorities will be acting as facilitator and technical support provider. Local authorities need to be enabled to render these kinds of services.</p>	<p>UDD Pourashavas, Unions</p>
<p><i>Land/2: To enable the local planning authorities to initiate participatory land development techniques in the project area</i></p> <p>Justification: Local authorities need to be prepared to execute the participatory land development technique in the project area. Each of the Unions and Pourashavas should have their own planning cell headed by capable planners. Proper training and field visit need to be arranged for the relevant personnel to execute such projects in compliance with the international standard.</p>	<p>NGO and CBO UDD Proposed Corridor authority</p>
<p><i>Land/3: Develop mechanism to recover the cost of windfall gain of Infrastructure Development from the Beneficiaries (Betterment Fees)</i></p> <p>Justification: Due to the construction of new infrastructures funded by the government, the land price in the surrounding vicinity also increases. This is called windfall gain. The corridor authority will develop mechanism to implement betterment fees that will be adopted by the local authority and the implementing agency.</p>	<p>Corridor authority, Unions and Pourashavas</p>
<p><i>Land/4: Implement the Transfer of Development Rights (TDRs) for conservation of the protected areas.</i></p> <p>Justification: TDRs are very important mechanism that can be used by the planning authorities involving local community. Consensus building is the key to initiate TDRs. This tool will also provide flexibility to the Urban Area Plan. In addition, the planners may also use this tool as a bargaining mechanism for land use management.</p>	<p>LGED, NGO and CBO</p>
<p><i>Land/5: Execute Pre-emption (Priority Purchase Right by Government) for Transactions within the conservation areas.</i></p>	<p>LGED, DC Office</p>

<p>Justification: Protection of the demarcated conservation areas is one of the most important measures of plan implementation. Pre-Emption right of the planning agencies will help the local authorities to preserve the conservation and agricultural areas,</p>	<p>Pourashavas and Unions Proposed corridor development authority</p>
<p><i>Land/6: Implement major Infrastructural development through PPP</i></p>	<p>Public Private Partnership Authority LGED, DC Office</p>
<p>Justification: Local government organizations and the corridor authority will try to implement major infrastructure development projects through PPP. This will save lots of public fund and also accelerate the implementation process.</p>	<p>Pourashavas and Unions Proposed corridor development authority</p>

CHAPTER EIGHT STRUCTURE PLAN ZONING

8.1 Land Zoning Considering Flood Inundation

Flood analysis of the Jessore-Benapole Highway Corridor using existing water level data at Kobadak at Jhikargacha and Betna at Navaron for return period of 2.33 year, 5.0 year, 20 year, 50 year and 100 year has been carried out and inundations for those floods of return periods are estimated. They show that existing development areas, settlements, infrastructures, the total corridor etc. are supposed to be under floodwater creating many kinds of hazards which need to be taken into consideration for planning and development purposes. The flood analysis results are shown in Map 8.1 and Table 8.1, from where the extent and severity of inundation of the corridor might be apprehended.

Table 8.1: Water Level and Inundation

Return period (year)	2.33	5	20	50	100
Water Level (m PWD) at Jhikorgachha	4.77	5.25	5.91	6.27	6.53
Percentage of area inundated	41.65	55.54	74.36	85.31	92.45

Source: GIS Database, Development Plan for Benapole-Jessore Highway Corridor (2017-37)

8.1.1 Flood of 2.33 year return period: The Table 1 shows that for a normal flood (average annual) of 2.33 year return period, 41.65% of the study area under Jessore-Benapole Highway Corridor would be inundated, which comprises wetlands including boro cultivation, fish habitats, fish sanctuary, water bodies, haor-baor-beel, river, khal, flood flow channels etc. This area should come under conservation area and not to be intervened for ensuring food security, nutrition and ecological and environmental balance. On the other hand, this area may include open space for recreation, vegetations, parks etc.

8.1.2 Flood of 5 year return period: For a flood of 5 year return period, 55.54 % of the study area under the Corridor would be inundated, which means that additional 13.89% of land will be inundated in comparison to 2.33 year return period. It also comprises wetlands, water bodies, flood plain for cultivation of aus and aman and other agricultural crops. This land should not be intervened except irrigation and agricultural activities.

8.1.3 Flood of 20 year return period: For a flood of 20 year return period, 74.36 % of the study area under the Corridor would be inundated, which means that additional 18.82% of land will be inundated in comparison to 5 year return period. This additional area comprises rural settlements, homesteads, rural growth centres, rural infrastructures like rural roads connecting growth centres, union parishad head quarters, college, high schools, hospitals, rural farm lands, cultivation of rabi crops, homestead forests, etc. The lands under these category (2.33, 5, 20 years return period flooding) should not be proposed for urban development.

8.1.4 Flood of 50 year return period: For a flood of 50 year return period, 85.31 % of the study area under the Corridor would be inundated, which means that additional 10.95 % of land will be inundated in comparison to 20 year return period. This additional area comprises urban area, commerce and industry and other urban infrastructure.

8.1.5 Flood of 100 year return period: For a flood of 100 year return period, 92.45 % of the study area under the Corridor would be inundated, which means that additional 7.14 % of land will be inundated in comparison to 50 year return period. This additional area should comprise higher order services of urban centres, National Highway, Railway, Power Plants and stations, relief and rehabilitation activities, etc.

8.2 Zoning Categories in Structure Plan

Development Plan for Jessore-Benapole Corridor includes Benapole Municipality and Land Port area; Sharsha Upazila Town; Jhikorgachha Town and Jessore Town, proposes hazard mitigation guidelines considering hydrological situation of the project area. Land use planning has been used as an important tool in disaster mitigation. In this option, risks are reduced not by hazard proneness of the site, but by changing the functional characteristics of the hazard area. This can be applied when the hazard proneness of the sites varies within planning area.

8.2.1 Conservation Zone: Water bodies are our life providers. So, all existing water courses, rivers, lakes, tanks should be protected. The boundary of water bodies and inundation should be delineated as per flood analysis. Flood and Land Zoning and relate to high tide level or high flood level. No construction should be permitted in water bodies' premises and the water spreads. Fishing activities, boating and picnics along the river banks, recreational activities are considered as only exceptions. Platforms for fishing and rain shelters, jetties for boating should be considered as friendly structures. This area is the most frequently flooded area (2.33 year return period flooding). Characteristics of this area need to be preserved. However, the existing rural homesteads located in this zone should not be evicted or allowed to be expanded. Agricultural activities are allowed in this zone without changing the characteristics of land. Natural flow of water should not be interrupted under any circumstances.

8.2.2 Agricultural Zone: The prime fertile agricultural land (within 2.33 to 5 years return period inundation), existing plantations and aquaculture areas provide the major services for food security. These existing agricultural/rural land use activities to be kept intact, and urbanization should not be allowed. The permissible major uses are like: agriculture, horticulture, orchards and nurseries dairy and poultry, farm housing, fish farming, cottage industry. This area is totally dedicated for agricultural activities. Some agro-supporting activities like cold storage, Fertilizer storage, mini godown etc may be allowed in this area.

8.2.3 Rural settlement Zone: Rural settlements are the hub of rural livelihood which contains traditional culture as well as ecology and generates agriculture production. Low density rural settlements are composite hub for rural livelihood. In this plan, the areas within 5 to 20 years return period inundation are proposed for rural settlement. Other than dwellings, agricultural and related facilities that enhance livelihood, nothing should be allowed in this area. As required amount of manpower is already available in the designated areas, no additional dwelling units (residential land) should be allowed in this area.

8.2.4 Designated Urban Areas: In this plan, the areas over 20 years return period inundation are proposed for urban and urban promotion. There are three Pourashava in the project Area, namely Jessore, Jhikorgachha and Benapole. With much lower current density, it is expected that these areas would be able to host the increased population in the years to come. Plan of these urban centers are prepared to ensure safe, easily accessible, environmentally sustainable and healthy living environment. These areas are also the main centers of employment and economy with various types like higher order commercial establishments, specific non-polluting green industrial establishments, mixed/multiple uses in the concerned master plans, urban infrastructure etc. The corridor is supposed to have interchange of goods from one mode of transport to another mode of transport especially through these nodal points. The corridor would act as a transit hub among different modes of transport. Loading, unloading and elated main and ancillary activities are to be in these uses.

Map No.: 8.1

Digital Elevation Model of Benapole-Jessore Highway Corridor

DEVELOPMENT PLAN FOR BENAPOLE-JESSORE HIGHWAY CORRIDOR PROJECT

Scale: 1:182,000

6 KM

Legend:

Administrative Boundaries: District Boundary, Upazila Boundary

Water Bodies: River, Canal

Infrastructure: Railway Line, Highway, Road

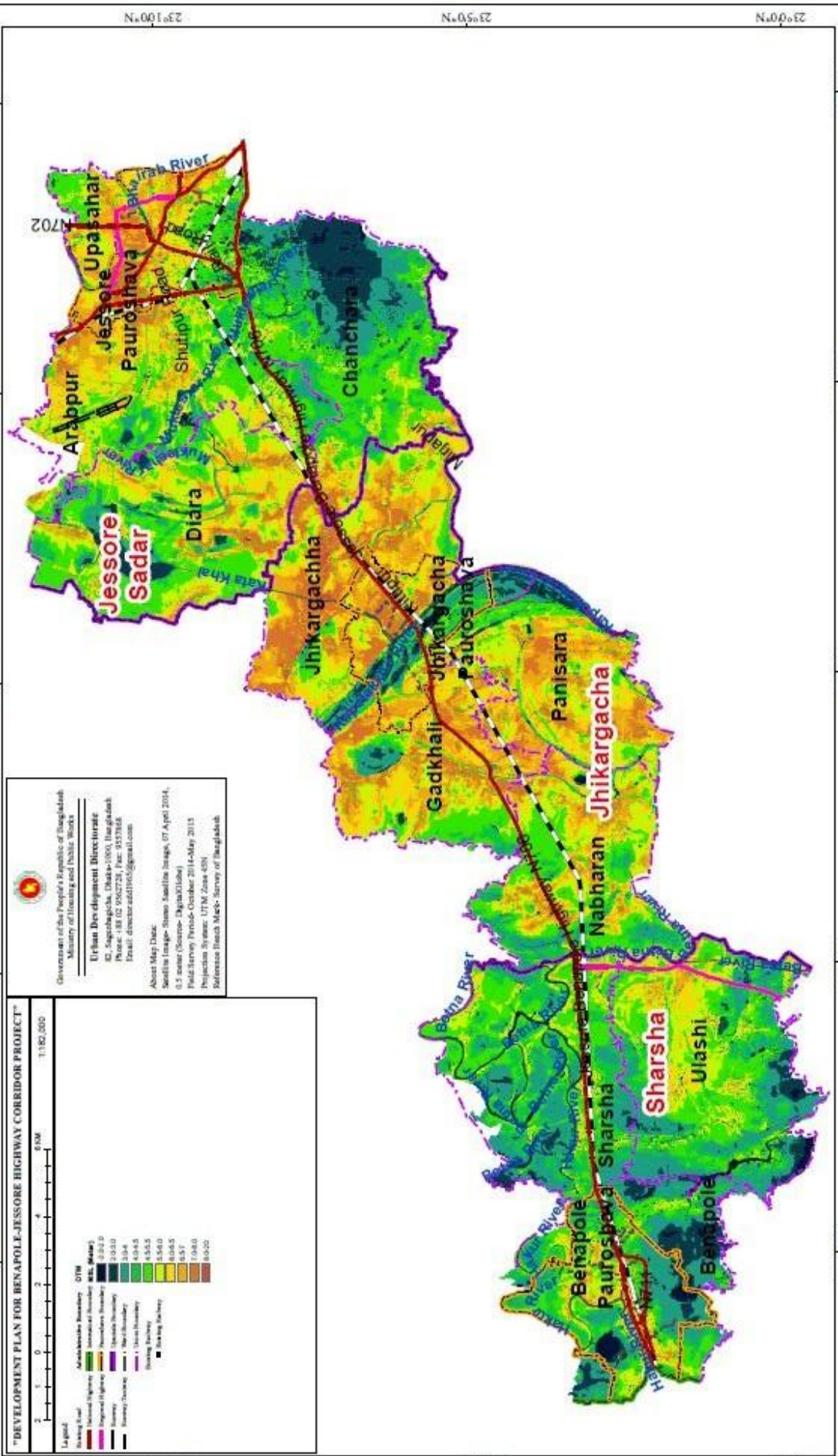
Settlements: Urban Area, Village

DTM (Meters): 10-20, 20-30, 30-40, 40-45, 45-50, 50-55, 55-60, 60-65, 65-70, 70-80, 80-200

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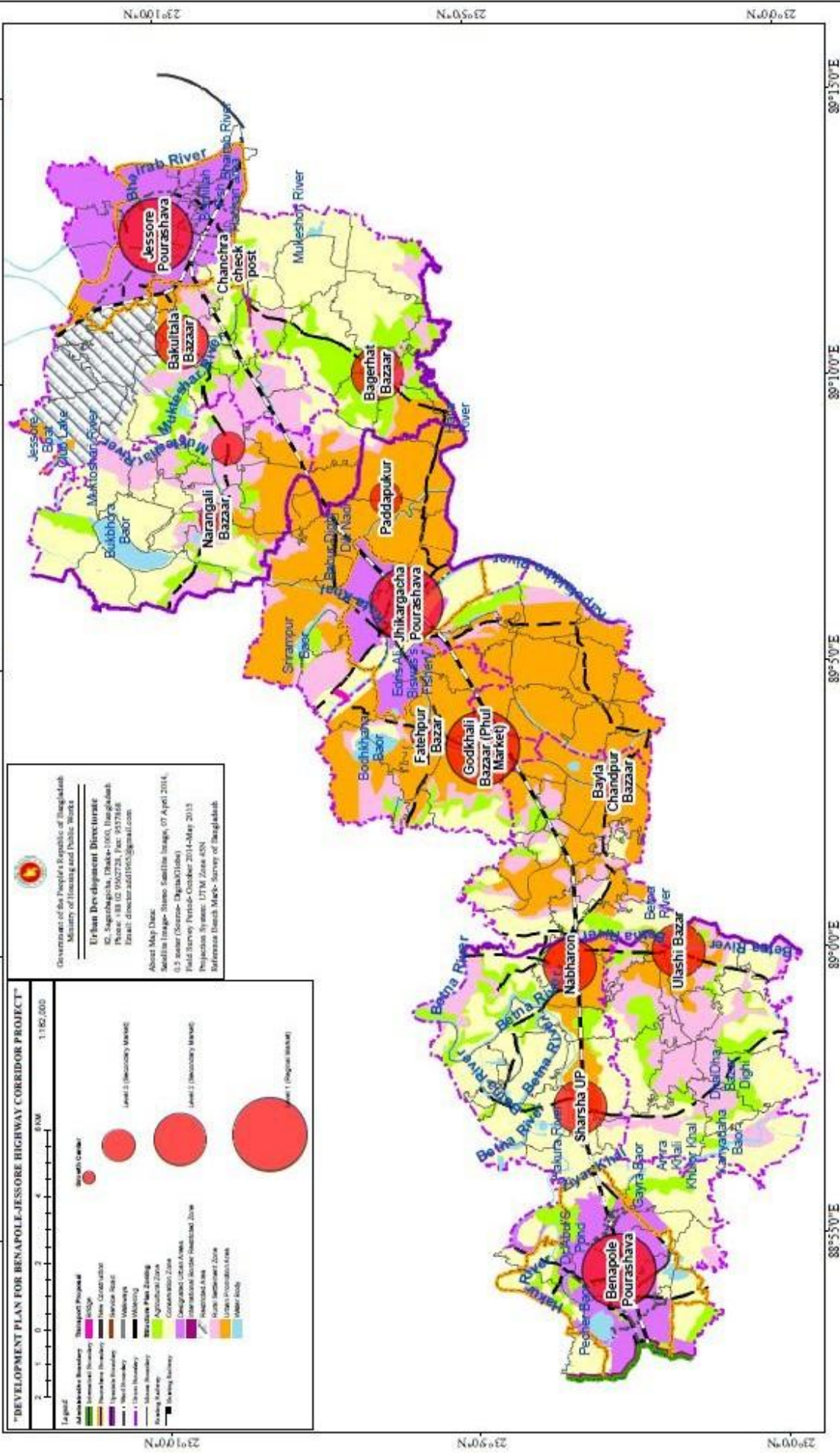
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About Map Data:
 Satellite Image: Stereo Satellite Image, 07 April 2014,
 S-5 sensor (Source: DigitalGlobe)
 Field Survey: March-October 2014-May 2015
 Projection System: UTM Zone 48N
 Reference Elevation: Survey of Bangladesh



Map No.: 8.3

Structure Plan Zones of Benapole-Jessore Highway Corridor



8.2.5 *Urban Promotion Zone:* Apart from the designated urban areas within areas over 20 years return period inundation, there are many places where economic agglomeration can be observed. These areas have very high potentiality for future urban formation. These areas are relatively flood free. Detailed plan for these areas are not developed under this corridor plan, after the expiration of the current urban area plan (2027).

8.2.6 *Restricted Zone:* Jessore Cantonment is located on the west by the Jessore town. The Airport is also located by the west of the cantonment. The airport has some restriction over the surrounding lands in regards of building heights. On the other hand, the cantonment is a key point installation. For, this surrounding, land use should be kept a rural/agriculture/conservation.

8.2.7 *Water Body Buffer Zone:* According to water act for shore up to 50 meters of rivers within the planning area has been designated as no construction zone. In addition to other water bodies it is 10 meters. The buffer would preserve the conservation zone as well as water and environmental resources.

8.2.8 *Border Buffer:* The 'Joint India-Bangladesh Guide Lines for Border Authorities, 1975' suggests that the border security forces on both sides shall observe some simple rules to avoid possibility of unpleasant incidents, which includes defensive works of any nature within 150 yards on each side of the border. Within this zone any construction would require clearance from the border guard authority.

8.2.9 *National Highway Buffer Zone:* One of the prime development control measures for the planning area is to prohibit ribbon development in order to maintain efficient traffic carrying capacity of the national highway. On the other hand, any high intensity development in the existing urban centers or growth centers can easily be served with required utilities. For this the plan recommends to prohibit any high intensity development within 100 meters from both sides of the national highway.

PART 2
URBAN AND RURAL AREA PLAN

CHAPTER 9

URBAN AND RURAL AREA PLAN

9.1 Introduction

Urban and Rural Area Plan has been prepared following the guidelines prescribed in structure plan. As stated earlier, structure plan is a strategic plan that lays down the sectoral policies. However, these policies need to be spatially translated. This part of the package serves that purpose.

This plan is mainly developed for three urban centers of the project area- Benapole Pourashava, Jhikorgachha Pourashava and Jessore Pourashava. If and when the corridor will become vibrant, obviously rural footloose population will gather in the corridor to enjoy better income and better lifestyle. People will prefer the existing urban centers for living. Thus, the existing urban centers need to be prepared to face the challenge.

Urban Area Plan is to guide physical development of the three pourashavas including its economic and social activities. The Urban Area Plan follows the traditional Master Planning approach prevalent in the country that designates plot-to-plot use of land. Thus, it will also serve as a tool for development control or management.

9.2 Objective and purpose of Urban and Rural Area Plan

Main objective of the Urban and Rural Area Plan is to spatially translate the policies of the higher-level framework (Structure Plan). Nonetheless, urban area plan is prepared basically to provide detail guidance for land use management, identify the locations and alignment of major infrastructures to ensure sustainable living environment. In doing so, it will fulfill the policies of the Structure Plan and Urban Area Plan recommendations and meet the broad objectives of the Plan.

9.3 Area coverage of the Urban Area Plan

Urban area plan is prepared for the three pourashavas of the project areas, namely Jessore, Jhikorgachha and Benapole. The plan assumes that more and more people will settle in the project area in the near future to enjoy better income and better living environment. It is also assumed that people will prefer existing urban centers to enjoy better urban services. A brief of these pourashavas are portrayed in Table 9.1.

Table 9.1: Area of three Urban Area Plan

Sl. No.	Urban Centers	Area (sq. km.)
1	Jessore Urban Area Plan	21.35
2	Jhikorgachha Urban Area Plan	13.89
3	Benapole Urban Area Plan	18.83

Source: GIS Database, Development Plan for Benapole-Jessore Highway Corridor (2017-37)

9.3.1 Background of Benapole Pourashava

Benapole is a pourashava in Sharsha Upazila in the Jessore District of Bangladesh. The most important land port and immigration check post is located at the Bangladesh-India land border jointly operated by Bangladesh Customs, Bangladesh Land Port Authority (BLPA) and Immigration Police.

Urbanization of Benapole started in the 1990s, mostly, along the Jessore Road. Benapole was a Union Parishad before 2006. Since 2006 it has become a Pourashava. Within 04 (four) years of its establishment, Benapole Pourashava was promoted from category C to B at December 01, 2010. At November 20, 2011, the Pourashava was promoted to category A.

Historically Benapole has been playing an important role in increasing the bilateral ties between Bangladesh and India. The Petrapole Customs station of India is situated across the border since 1947. The railway link between Bangladesh and India through Benapole was established in 1884. It is one of the oldest railway links in Asia. However, it was discontinued in 1976 for want of adequate traffic. It was re-opened at January 21, 2001.

Indian Government has decided to give priority to export in Bangladesh through Benapole-Petrapole border. During the period of 2005-06 to 2014-15, Benapole has witnessed a rise of imports by around 10% on an average each year. In 2005-06 import was BDT 5191 crore, which has almost three-folded to BDT 15665 crore. The capacity of Road transport from Benapole to Jessore is limited only to the Jessore Road, which has remained as a 2-lane highway since a long time ago. It acts as a bottleneck for economic expansion of Benapole port.



Photograph 9.1: Benapole: Gateway to Bangladesh

Benapole land port is one of the key agents of economic development of the corridor. Because of high prospect of the BLP, the economic potentiality of the whole pourashava is also immense. The plan is developed to maximize the economic potentiality of the pourashava.

9.3.2 Background of Jessore Pourashava

Jessore is the administrative hub of Jessore District. It is located at the bank of Bhairab River. Jessore is located between 22°48' to 23°23' north latitude and 88°50' to 89°34' south longitude. There is confusion about the origin of the name "Jessore". However, many people guessed that it was named during the reign of King Protapaditto who established dominion at Jessore at 1574 AD. Jessore became a district at 1781. Jessore is one of the oldest pourashavas of Bangladesh. It was declared a pourashava at 1864. The area of the pourashava is 25.72 km².

Because of its geographic location, the Pourashava is well connected with the other parts of Bangladesh through rail and road transport. Jessore Pourashava is located on flood free land. Utilizing the existing prospect of the area several industries are already developed in the pourashava. Small industries are located within the Pourashava in a haphazard manner. However, heavy industrial belt is developed at the southern part of Jessore (mainly at Noapara) by the Bhairab. Close proximity of BLP, Jessore Airport, Railway connectivity with India and Mongla Port, an existing industrial belt, Padma Bridge (under-construction) are some of the major determinants of development of Jessore Pourashava.

First ever Railway line in Indian subcontinent was established at Bombay (India) at 1853. Within 30 years of its inception, at 1884, Jessore was connected to Kolkata through railway line. The landscape of Jessore is highly dominated by low rise buildings. Structural density of Jessore is the highest among the administrative units. Most important administrative structures are located at Jessore.



Photograph 9.2: Historic Collectorate Building

9.3.3 Background of Jhikorgachha Pourashava

Jhikorgachha Pourashava is located on the bank of the Kapatakkha river. It is located at the halfway between Jessore and Benapole. It lies on 23° 06' north latitude and 89° 05' east longitude.

Historically, it is one of the prominent business centers of the southwestern Bangladesh. However, after 1947, due to separation of countries and loss of navigability of the Bhairab River, the importance of trade of this area reduced significantly.

Jhikorgachha Thana was turned into an upazila in 1983 and the Paurashava was established in 1998. Its present status is Category "B" Paurashava. Because of close proximity to the BLP, availability of flood free land for infrastructural development, availability of unskilled and cheap manpower, availability of high-valued agricultural land etc. Some of the heavy industries are also available in the area proving the availability of all agents of industrial development. This area is potentially one of the most suitable area for future growth of administrative activities, large infrastructures of international and national importance, urban agglomeration etc. The plan for this pourashava is prepared keeping all these issues in mind.

Jhikorgachha is one of the oldest urban centers of the corridor. At 1800 AD, Mr. Makenzie established an indigo (*indigofera tinctoria*) industry in this area. In fact, the development of Jhikorgacha was first incepted through this industry. Because of Mr. Makenzie's contribution, the area was named Makenzie-gonj. However, there are some confusions about the origin of the name, "Jhikorgachha". It is popularly said that an Englishman named Jinkor established an indigo factory. A market was established close to this factory that was named Jinkorgacha-gonj after Mr. Jinkor.



Photograph 9.3: Kobadak River passing through Jhikorgachha Town

9.4 Goals and Objectives of Land use plan

Land use can be lucidly defined as the spatial manifestation of the human activities. Land use plan is the most important part of urban area plan. While preparing the Land use Plan, condition of the existing urban areas and their immediate surroundings were considered with the purpose of providing development guidance in the areas where most of the urban development activities are expected to take place over the next 10 years. Land use plan is prepared to fulfill the following objectives:

1. To protect and enhance the viability and livability of residential neighborhoods,
2. Ensure that opportunities for convenient and concentrated commercial development are provided to support both the local and regional market
3. Provide sufficient opportunities for industrial development,
4. To balance open space and environmental preservation with the development needs.
5. Encourage mixed-use development.
6. To ensure accessibility throughout the urban centers.

While preparing land use plan two issues were carefully considered and maintained:

- a) External economy and diseconomy
- b) Intensity of the impact of land use

External economy and diseconomy is often defined as the services (and dis-services) rendered free (without compensation) by one producer to another (Scitovsky 1954). In context of land use, this may imply the utility rendered by placement of appropriate (and inappropriate) land uses by another one. Often this utility is transmitted through its impact on market price (land value). Intuitively, speaking, land use is proposed such that it does not conflict with each other. Land use intensity is the extent to which land is used. The planning team tried to maintain smooth gradient of land use intensity to make sure that high and low intensity land uses are not placed side-by-side.

9.5 Structure and purpose of Urban Area Plan

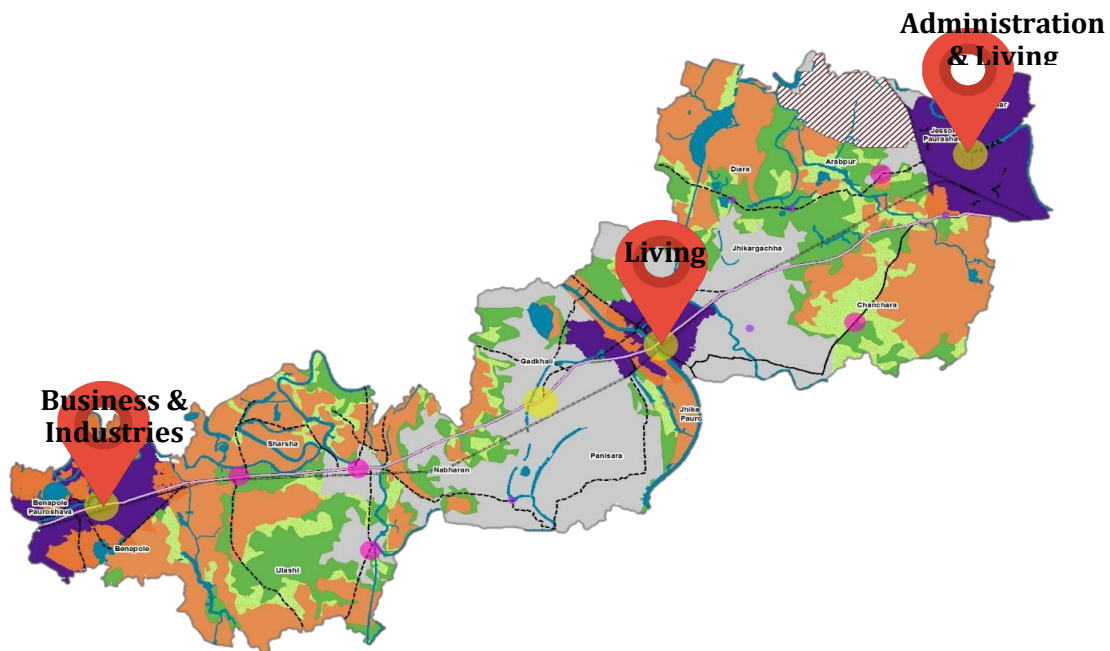
Urban area plan is broadly divided into two parts, plan map and explanatory report. The Urban Area Plan is presented in both, map and textual format. The plan map super imposed on latest cadastral/revenue map having plot boundaries within mouzas. The plan is accompanied by an explanatory report supported by necessary figures, maps and data.

The map depicting the plan illustrates the future land use zoning, transport proposals and proposals of some major infrastructures and other development proposals. Report elaborates all proposals proposed in the plan, including implementation strategies. Urban Area Plan is developed to provide guidance to UDD and local authorities as to how it can develop the roles i.e. to promote, co-ordinate and manage development.

Three urban centers are planned keeping their future role in mind. Jessore pourashava is planned for people to live in and also to serve the administrative purpose. Jhikorgachha is planned to serve the residential purpose. Thus it is planned to preserve the neighborhood characteristics. Benapole, on the other hand is planned to promote industrial and manufacturing activities. Please see the following figure for area-wise purpose of each of the urban area plan.

Purpose of this plan is not to provide detailed and comprehensive layout of the three pourashava. This plan mainly lays down the land use plan. In addition to that the plan has also identified the location and areas of some essential infrastructures that will be required by the year 2037. It is to be mentioned here that the plan has not proposed all the required infrastructures.

Figure 9.1: Purpose of Urban Centers



9.5 Duration, Revision, and Updating of the Urban and Rural Area Plan

The Urban and Rural Area Plan is developed for a duration of 10 (Ten) years from the time of its approval that is up to the year 2027. Considering the dynamic nature of the urban areas, the plan should be reviewed at regular interval of 5 years.

CHAPTER 10

LAND ZONING AND DEVELOPMENT CONTROL

10.1 Development Control

Urban growth without development control would accelerate undesirable land utilization accompanying congestion, confusion and delay which would be difficult to rectify in future. Hence, Land use has to be rigidly followed to forestall haphazard and sprawling growth and also to ensure optimum use of land in the highway corridor. Development control is an urgent and imperative need to resist haphazard and sprawling growth. Decisions for development taken by individuals separately on the basis of immediate needs without reference to provisions of plan and programs do not respect environment, public health or safety provisions and cost effectiveness. Without control over development activity land use intensity exceeds the permissible limit and deterioration of inter-relationships of functions in urban and rural areas.

10.2 Land use Zones

Land use Zoning is one of the most important tool of development management and control. It aids the legal power which is delegated to Urban Development Directorate (UDD) / municipalities to ensure the welfare of the community. Depending on the purpose, zoning type varies.

10.2.1 Area Zoning: This type of zoning specifies land uses for different land parcels. Overall development goal of the localities are manifested through this plan. Another objective of this plan is to minimize external diseconomy (conflicts among land uses).

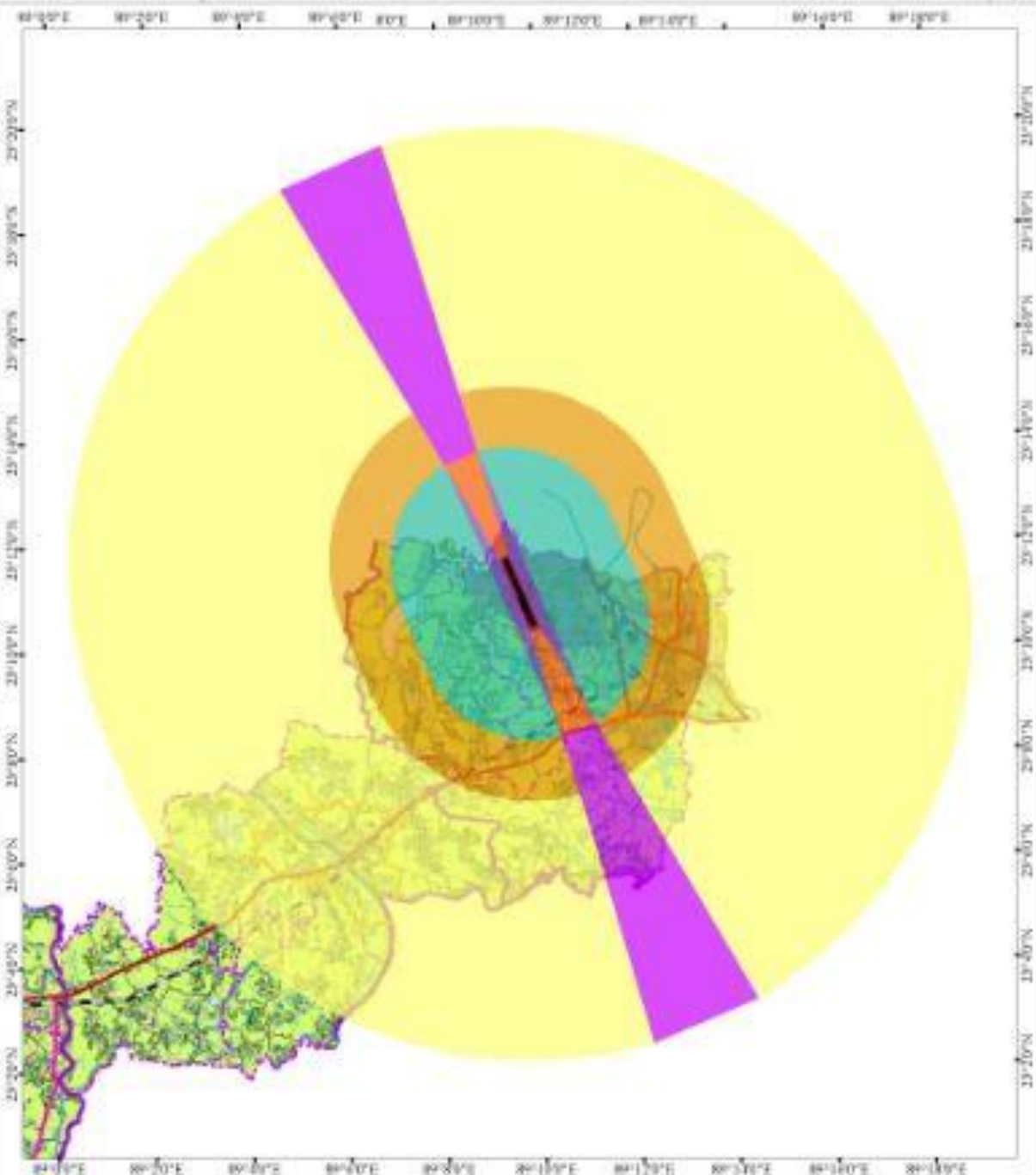
10.2.2 Density Zoning: If the density of population of an area is controlled, it will create tremendous pressure on the utility and services available in the area and ecological footprint. This also ensures a healthy community and enjoyable community life. Currently, there is no effective rule to control population density of different areas according to their physical and socio-economic characteristics or trend. ‘Dhaka Mahanagar Imarat Nirman Bidhimala 2008’ is the only tool to control population density that introduced Floor Area Ratio (FAR). Apart from FAR, there are several standards to achieve desired population density such as number of dwelling units per acre, maximum room occupancy etc. each with their comparative effectiveness. Height restrictions also aid density zoning.

10.2.3 Height Zoning: This zoning imposes height restrictions for structures. If the height of the structures coupled with the prescribed number of dwelling units per acre and maximum room occupancy, residential density of an area can be controlled. Height zoning is also important to tackle earthquake vulnerability of the project area.

Since the project area is located in relatively safer zones in terms of earthquake vulnerability. Moreover almost entire project area is made up of clayey soil with very low load bearing capacity standard height for the structures within the area is recommended. However, as the project area is located by the international boarder. High-rise building by the boarder may be a security risk. Considering this, the whole residential areas are divided into three categories. Some identified regions (in the planning database) by the boarder should have height no more than two stories.

Map No.: 10.1

Airport Height Restriction Zone



"DEVELOPMENT PLAN FOR BENAPOLE-JESSORE HIGHWAY CORRIDOR PROJECT"



Legend		
A- Runway	Existing Government Land Use	Mixed Use
B- Approach Surface	Agriculture	Non-Governmental Services
C- Final/Intermediate Surface	Transmission Network	Restricted Facilities
D- Taxiway Surface	Commercial	Religious
E- Inner Horizontal Area	Community Service	Residential
F- Critical Surface	Education and Research	Restricted Area
G- Outer Surface	Government Services	Service Industry
H- Stopway	Group of Trees / Forest	Transport and Communication
Existing Railway	Health Services	Vacant Land
Existing Highway	Manufacturing and Processing Activities	Water Body
	Mixed Services	



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About Map Data:

Satellite Image: Google Satellite Image, 07 April 2014,
0.5 meter (Source: DigitalGlobe)
Field Survey Period: October 2014-May 2015
Projection System: UTM Zone 45N
Reference Epoch: Mean - Survey of Bangladesh

In addition, Jessore Air Port is located in the project area. Height restrictions for flight safety around Air Port according to the Civil Aviation Ordinance, 1960 shall be abiding for the structures of that part of the project area. Height zoning is shown in Map 10.1. In addition to these zoning, blinking lights are mandatory for all the buildings with more than 500 feet height. Civil aviation authority must approve all the building with more than 07 (seven) stories, if it is located within the zones showed in the map 10.1. Development around the airport must follow the following height restriction:

- a. **Runway Area:** All kinds of construction is prohibited within 500 feet (152 meters) in any direction from the center of the runway.
- b. **Approach Area:** Between 500 to 13000 feet from the end of the runway, structures are permitted following a height/distance ratio of 1:50. But maximum permissible height is 182 feet.
- c. **Funnel area:** Between 13000 to 50000 feet from the end of the runway, structures are permitted following a height/distance ratio of 1:40. However, maximum height should be 500 feet.
- d. **Transitional surface and Inner horizontal surface:** Between 500 to 13000 feet from the center of the runway, structures are permitted following a height/distance ratio of 1:7. But maximum permissible height is 150 feet.
- e. **Inner Conical Surface:** Between 13000 to 20000 feet from the center of the runway, structures are permitted to maintain a height/distance ration of 1:20 upto a height of 500 feet.
- f. **Outer horizontal surface:** Between 20000 to 50000 feet from the center of the runway, maximum permissible height of the buildings is 500 feet.

10.3 Land use classification

Structure plan has divided the project area into couple of broad zones, e.g. existing urban areas, Urban Promotion Area, conservation area, agricultural area, rural settlements and water bodies. In addition to these, the project area contains Jessore Cantonment, police stations etc. which are categorized as restricted. Land use classification depends on a large number of variables. However, it is largely dependent on the purpose of land use survey. Land use survey basically records the use of land by its functional activity such as residential, industrial or commercial. Land use classification of the survey data is described below.

Table10.1: Preliminary Land use Categories in the Survey Data

Sl. No.	Land use type	Description
1	Agriculture	All types of agricultural uses
2	Residential	Planned, unplanned, average density (High, middle and low)
3	Group of Trees / Forest	All kinds of agglomeration of trees
4	Water Body	Ponds, ditches, etc.
5	Circulation Network	Roads of LGED, RHD and pourashava
6	Government Services	All kinds of government offices (e.g. Pourashava office, LGED office)
7	Mixed Use	Mixed area mainly dominated by Residential and commercial land
8	Manufacturing and Processing Activities	Heavy and small industries
9	Commercial	All kinds of markets with ancillary shops
10	Vacant Land	Vacant land with no apparent use
11	Education and Research	All kinds of Schools, collages, TTCs
12	Transport and Communication	Passenger shed, Bus station, Train station, truck terminal etc.
13	Recreational Facilities	Parks, play/sports grounds, indoor facilities, zoological garden
14	Religious	Mosques, churches, pagodas etc.
15	Health Services	Clinics, hospital etc.
16	Service Activity	NGO offices, Graveyard, crematory, historic sites, etc.
17	Restricted	Cantonment, air force, civil aviation etc.
18	Miscellaneous	Miscellaneous

Source: GIS Database, Development Plan for Benapole-Jessore Highway Corridor (2017-37)

This classification is developed such that usages of all land parcels can be classified into any one of the categories. Another objective is to ease off the planning process so that the survey categories can be translated into planning categories. Much of the fulfillment of the project objective depends on the land use plan. The plan needs to be flexible, on one hand, to let the urban centers grow by itself. On the other hand, it has to be rigid to control haphazard development. Additionally, the classification should also ease off process of land use clearance of UDD. By Keeping these issues in mind, the classification of the land use for the planning database. Please see Table 10.2 for details about the land use classification used in the planning database of the urban area plan.

Table 10.2: Land use Categories in the Urban Area Plan

Sl. No.	Land use type	Description
1	Agriculture	All types of agricultural uses
2	Residential	Planned, unplanned, average density (High, middle and low)
3	Water Body	Rivers, Cannels, Ponds, ditches, etc.
4	Circulation Network	Roads, Walkways etc.
5	Transport and Communication	Passenger shed, Bus station, Train station, truck terminal etc.
6	Land Port	Land Port including associated facilities
7	Administrative	All kinds of government offices
8	Mixed Use	Mixed area mainly dominated by Residential and commercial land
9	Manufacturing and Processing Activities	Heavy and small industries
10	Commercial	All kinds of markets with ancillary shops
11	Education and Research	All kinds of Schools, collages, TTCs
12	International Border Buffer Zone	Buffer within 50 yards from Zero line
13	Recreational Facilities	Parks, play/sports grounds, indoor facilities, Tourist zone
14	Community Services	All kinds of religious activities, Health facilities, NGO offices, Graveyard, crematory, historic sites, etc.
15	Conservation	Areas of high incidence of flood (need to be conserved)
16	Restricted Area	Cantonment, air force, civil aviation etc.
17	Urban Deferred	Land reserved for future urban use
18	Foreshore Zone	Buffer within 50 meters from edge line of rivers and 10 meters from other water bodies

Source: GIS Database, Development Plan for Benapole-Jessore Highway Corridor (2017-37)

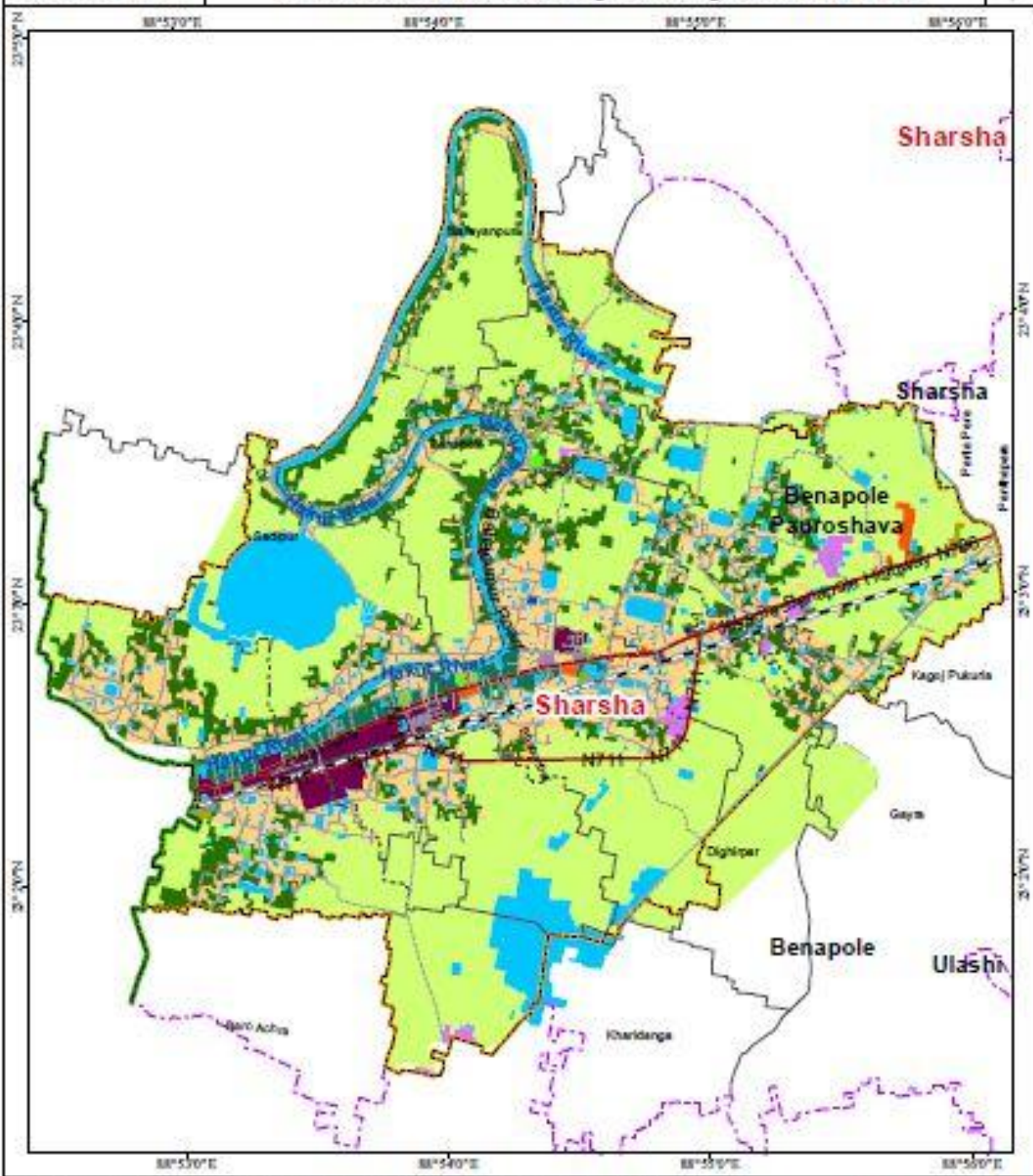
10.4 Types and Patterns of Existing Land Use

10.4.1 Land use of Benapole Pourashava

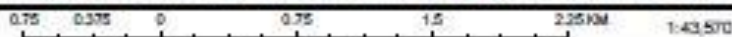
Land use of Benapole Pourashava is still dominated by agricultural activities covering more than 40% of the total area (Table 10.3). Less than one fourth of the total area is covered by residential use, which is followed by Group of Trees / Forest. Surprisingly, the contribution of the transport related land use is about 3.5% which is rather insignificant compared to the ideal situation. Insufficient amount of land for this purpose is definitely one of the major reasons of traffic congestion in the pourashava. Government and mixed use are the next major land use of Benapole pourashava (Map 10.2).

Map No.: 10.2

Generalized Land Use Map of Benapole Urban Area



"DEVELOPMENT PLAN FOR BENAPOLE-JESSORE HIGHWAY CORRIDOR PROJECT"



Legend

National Highway	Administrative Boundary	Agriculture	Mixed Use
Regional Highway	International Boundary	Circulation Network	Non-Governmental Services
Local Road	Fountains Boundary	Commercial	Recreational Facilities
Railway	Upazila Boundary	Community Service	Religious
Railway (Trackway)	Ward Boundary	Wholesale and Retail	Residential
Station Railway	Union Boundary	Commercial Services	Restricted Area
Station Railway	Mousa Boundary	Group of Trees / Forest	Service Activity
Station Railway	Ward Boundary	Health Service	Transport and Communication
	Station Railway	Manufacturing and Processing Activities	Vacant Land
		Manufacturing and Processing Activities	Water Body
		Manufacturing and Processing Activities	



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About Map Data:
Satellite Image- Stereo Satellite Image, 07 April 2014,
0.5 meter (Source- DigitalGlobe)
Field Survey Period- October 2014-May 2015
Projection System: UTM Zone 45N
Reference Bench Mark- Survey of Bangladesh

Table 10.3: Land use distribution in Benapole Urban Area Plan (according to the GIS database)

Sl. No.	Land Use Type	Area (acre)	Area (sq.m.)	Area (sq. km)	Percentage
1	Administrative	8.0277	32487.12	0.03	0.17
2	Agriculture	9.7481	39449.30	0.04	0.21
3	Circulation Network	345.5332	1398323.39	1.40	7.42
4	Commercial	118.3999	479147.33	0.48	2.54
5	Community Services	28.1584	113953.02	0.11	0.61
6	Conservation	1078.6770	4365250.78	4.37	23.18
7	Education and Research	23.6680	95780.82	0.10	0.51
8	International Border Buffer Zone	109.3006	442323.64	0.44	2.35
9	Land Port	231.4010	936446.45	0.94	4.97
10	Manufacturing and Processing Activities	293.0805	1186054.64	1.19	6.30
11	Mixed Use	102.3160	414058.11	0.41	2.20
12	Recreational Facilities	310.9791	1258487.70	1.26	6.68
13	Residential	718.5956	2908053.28	2.91	15.44
14	Residential- Low Rise	284.0710	1149594.36	1.15	6.10
15	Residential- Planned	313.0885	1267024.21	1.27	6.73
16	Transport and Communication	46.8547	189614.42	0.19	1.01
17	Urban Deferred	135.9891	550328.52	0.55	2.92
18	Water body	495.8479	2006625.32	2.01	10.65
	Total	4653.7362	18833002.42	18.83	100.00

Source: GIS Database, Development Plan for Benapole-Jessore Highway Corridor (2017-37)

10.4.2 Land Use of Jhikorgachha Pourashava

Jhikorgachha is one of the oldest urban centers of the project area. Unlike Benapole, Jhikorgachha Pourashava is dominated by residential land use covering about 38% of the total landscape. Group of trees and agriculture are the next major type of land use totaling about same as the residential land use. Compared to Benapole, amount of mixed use area is also higher in Jhikorgachha. Situation is completely reverse for the transportation related land use (Map 10.3).

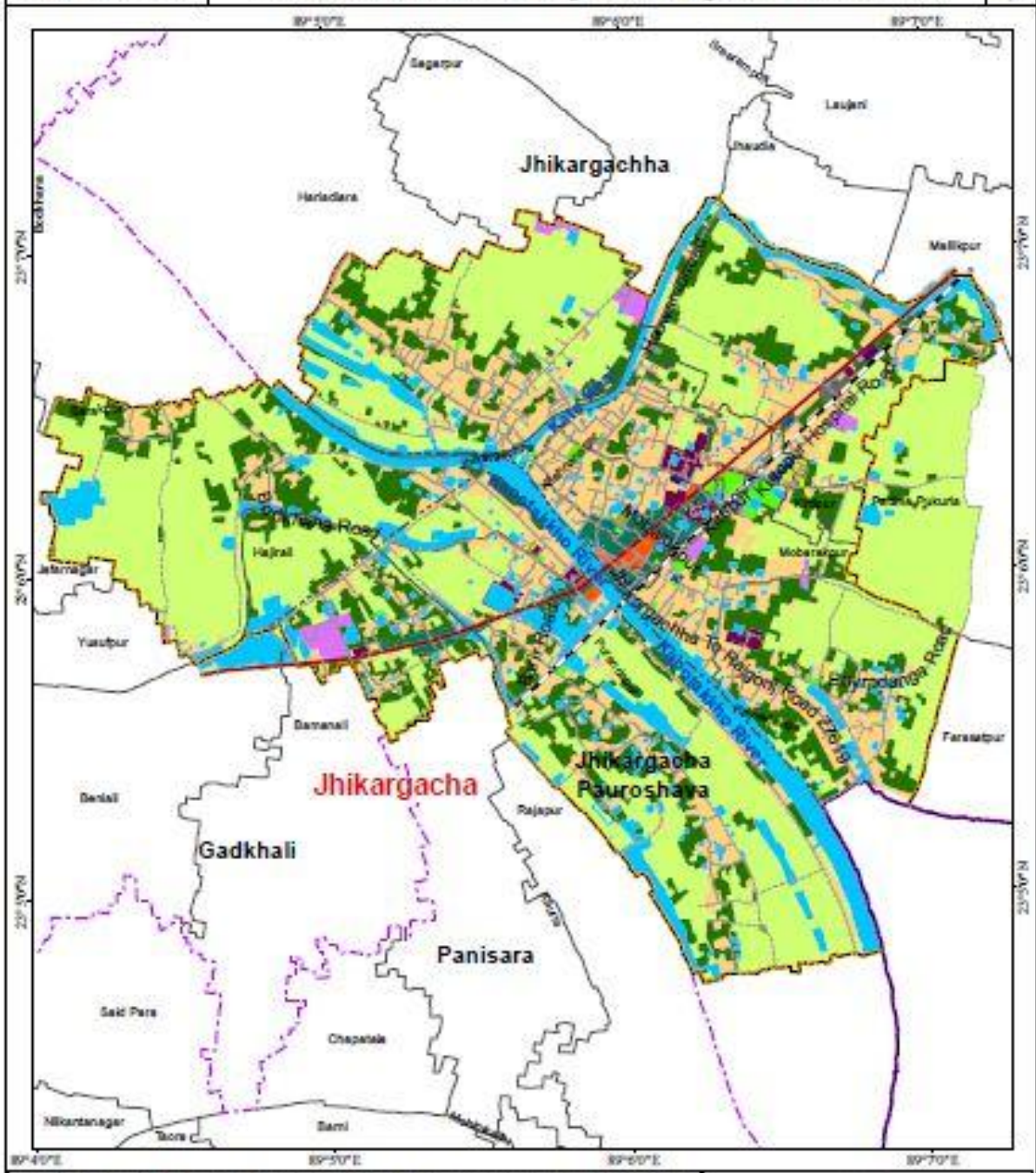


Photograph 10.1: Jhikorgachha Bridge over Kobadak

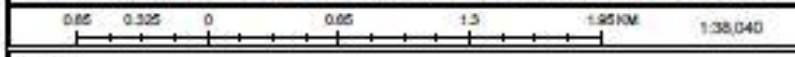
In terms of land use dedicated for Manufacturing and Processing Activities, Jhikorgachha is far ahead of Benapole. This may be because of close proximity to Jessore (closest source of manpower after Jhikorgachha itself) and raw materials (agricultural products).

Map No. 10.3

Generalized Land Use Map of Jhikorgachha Urban Area



"DEVELOPMENT PLAN FOR BENAPOLE-JESSORE HIGHWAY CORRIDOR PROJECT"



Legend			
Existing Road	Administrative Boundary	Existing Urbanization Land Use	Mixed Use
National Highway	International Boundary	Agriculture	Non-Governmental Services
Regional Highway	Parishada Boundary	Circulation Network	Recreational Facilities
Local Road	Upazila Boundary	Commercial	Religious
Railway	Ward Boundary	Community Service	Residential
Railway Station	Union Boundary	Education and Research	Restricted Area
Mosque Boundary	Mosque Boundary	Government Services	Service Activity
Existing Railway	Group of Trees / Forest	Health Services	Transport and Communication
	Manufacturing and Processing Activities	Miscellaneous	Waste Land
			Water Body


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About Map Data:
 Satellite Image- Stereo Satellite Image, 07 April 2014,
 0.5 meter (Source- DigitalGlobe)
 Field Survey Period- October 2014-May 2015
 Projection System: UTM Zone 45N
 Reference Bench Mark- Survey of Bangladesh

Table 10.4: Land use distribution of Jhikorgachha Pourashava (according to the GIS database)

Sl. No.	Land Use Type	Area (acre)	Area (sq.m.)	Area (sq. km)	Percentage
1	Administrative	37.49513	151737.42	0.15	1.09
2	Agriculture	430.85271	1743599.05	1.74	12.55
3	Circulation Network	268.92889	1088316.61	1.09	7.83
4	Commercial	63.39545	256552.30	0.26	1.85
5	Community Services	41.29115	167099.35	0.17	1.20
6	Conservation	449.42632	1818763.79	1.82	13.09
7	Education and Research	59.68603	241540.77	0.24	1.74
8	Manufacturing and Processing Activities	339.45182	1373712.77	1.37	9.89
9	Mixed Use	134.51624	544367.92	0.54	3.92
10	Recreational Facilities	134.57048	544587.41	0.54	3.92
11	Residential	809.28896	3275076.23	3.28	23.58
12	Residential- Planned	247.53263	1001729.00	1.00	7.21
13	Transport and Communication	28.49039	115296.51	0.12	0.83
14	Urban Deferred	36.00751	145717.23	0.15	1.05
15	Water body	351.59982	1422873.97	1.42	10.24
	Total	3432.53352	13890970.33	13.89	100.00

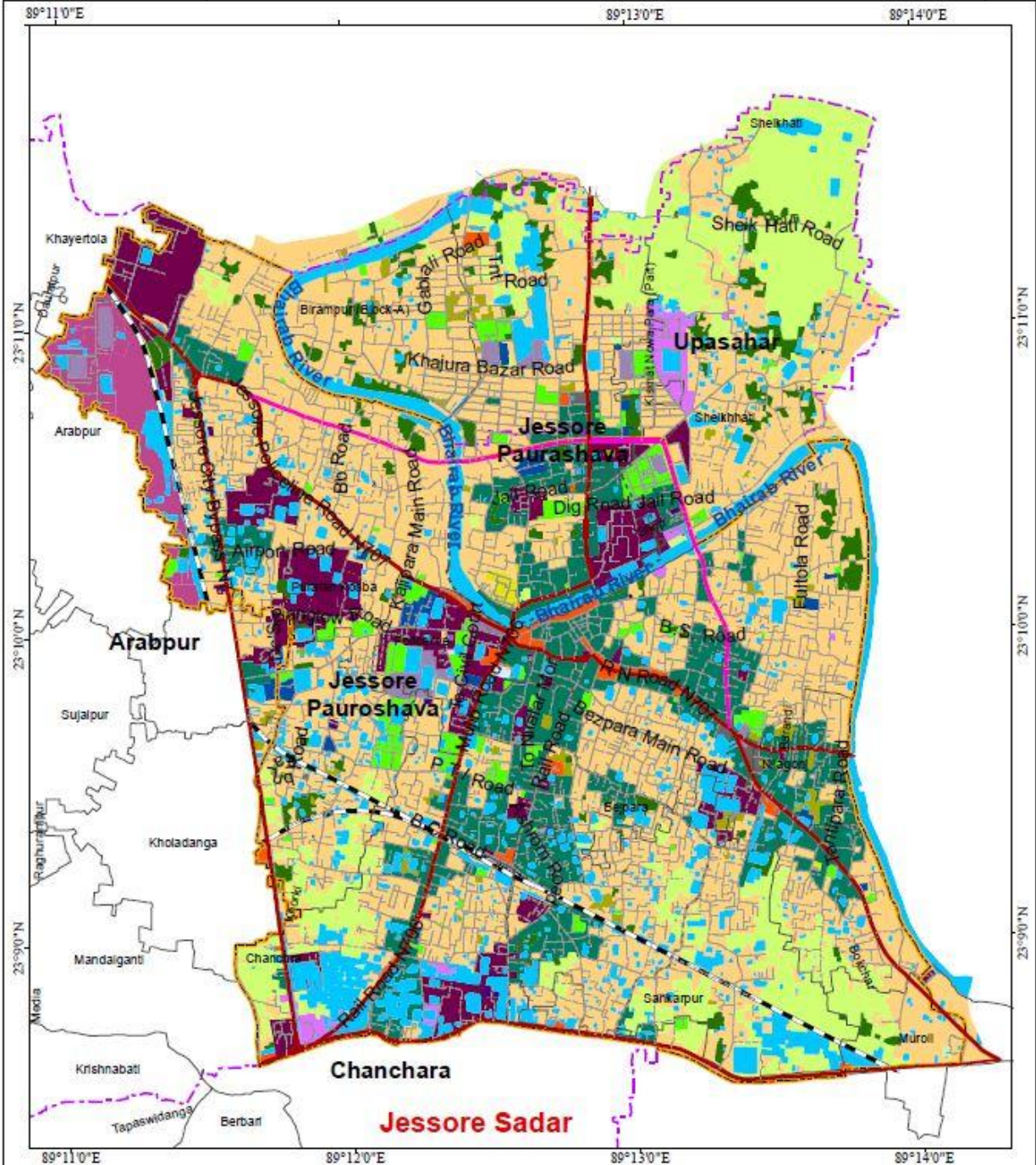
Source: GIS Database, Development Plan for Benapole-Jessore Highway Corridor (2017-37)

10.4.3 Land use of Jessore Pourashava

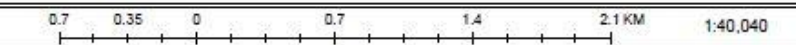
As Jessore is one of the oldest urban centers of southwestern Bangladesh, more than 58% area is covered by residential or mixed use area. Water body including river, canals, ponds etc. covers about 13% of total area. Agriculture and group of trees covers about one-tenth of the total landscape. Jessore accommodates comparatively more land for transportation (about 6%) compared to Jhikorgachha and Benapole (Map 10.5 for details).



Photograph 10.2: Daratana Bridge over the Mukteswari River at Jessore Town and encroachments from both ends of the river



"DEVELOPMENT PLAN FOR BENAPOLE-JESSORE HIGHWAY CORRIDOR PROJECT"



Legend			
Existing Road	Administrative Boundary	Existing Generalize Landuse	Mixed Use
National Highway	International Boundary	Agriculture	Non-Governmental Services
Regional Highway	Paurashava Boundary	Circulation Network	Recreational Facilities
Local Road	Upazaila Boundary	Commercial	Religious
Railway	Ward Boundary	Community Service	Residential
Railway-Taxiway	Union Boundary	Education and Research	Restricted Area
Existing Railway	Mouza Boundary	Government Services	Service Activity
	Existing Railway	Group of Trees / Forest	Transport and Communication
		Health Services	Vacant Land
		Manufacturing and Processing Activities	Water Body
		Miscellaneous	



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0.5 meter (Source- DigitalGlobe)
Field Survey Period- October 2014-May 2015
Projection System: UTM Zone 45N
Reference Bench Mark- Survey of Bangladesh

Table 10.5: Land use distribution of Jessore Pourashava (according to the GIS database)

Sl. No.	Land Use Type	Area (acre)	Area (sq.m.)	Area (sq. km)	Percentage
1	Administrative	265.50	1074448.62	1.07	5.03
2	Agriculture	403.00	1630882.79	1.63	7.64
3	Circulation Network	318.01	1286938.46	1.29	6.03
4	Commercial	71.63	289862.59	0.29	1.36
5	Community Services	44.17	178759.87	0.18	0.84
6	Conservation	49.20	199099.94	0.20	0.93
7	Education and Research	206.10	834038.03	0.83	3.91
8	Manufacturing and Processing Activities	53.43	216212.78	0.22	1.01
9	Mixed Use	733.23	2967289.21	2.97	13.90
10	Recreational Facilities	103.55	419043.89	0.42	1.96
11	Residential	2198.97	8898897.53	8.90	41.69
12	Residential- Planned	194.45	786916.61	0.79	3.69
13	Restricted Area	103.58	419186.84	0.42	1.96
14	Transport and Communication	20.60	83383.38	0.08	0.39
15	Water body	509.08	2060180.79	2.06	9.65
	Grand Total	5274.50	21345141.34	21.35	100.00

Source: GIS Database, Development Plan for Benapole-Jessore Highway Corridor (2017-37)

10.5 Standards of Land use planning and infrastructures

Planning Standard is a guiding principal that guide the planners and decision makers in providing or allocating required amount of space for different purpose. Standard should not thought to be static over time. It changes with respect to the socio-economic conditions, culture etc. As there is no nationally acceptable planning standard, there is always scope for controversy and disagreement. However, the proposed standard should be treated rather flexibly. Specially where there is a lack of available spaces, all the standards cannot be strictly followed.

Objective of this plan is not to allocate spaces for all kinds of services for all the areas. Spaces for the infrastructures that require relatively larger land area, have immediate need, possess importance in terms of regional and local context. Most importantly, the planning team have only proposed those services that have immediate need. This plan, however, suggest to develop detailed neighborhood level plan for all the planned habitable areas (both urban and rural areas). In doing so, the proposed standard can be used. These standards (Table 10.6) are adopted from a research conducted by UDD that reviewed the space standards of many planning projects of Bangladesh.

Table 10.6: Standards of different kinds of services

Sl. No.	Land use Components	Standard (acre per population)	Remarks
1	Residential		
	a Private/General Residential	100-150 person/1 acre	
	b Public/Govt. Residential	150-200 person/1acre	
2	Education		
	a Nursery/Elementary School	2 acre/10,000 population	
	b Primary School	5 acre/5,000 population	
	c Secondary School	10 acre/20,000 population	
	d College/University	5-10 acre/20,000 population	
	e Vocational Training Center	5 acre	1/ Pourashava
	f Others (Library, Public Library)	0.5 acre/20,000 population	1/ Pourashava
3	Open Space and Recreation		
	a Central Park	5-10 acre	1/ Pourashava
	b Neighborhood/Community Park	1 acre/10,000 population	
	c Playground/Play Field	3 acre/20,000 population	
	d Stadium (Indoor and Outdoor)	5-10 acre	Optional/1/ Pourashava
	e Cinema Hall	3 acre	1/ Pourashava
	f Club House	1 acre	Optional/1/ Pourashava
4	Commercial		
	a Wholesale Market	3-5 acre	1/ Pourashava
	b Retail sale / Kitchen Market / Neighborhood Market	0.5 acre/10,000 population	
	c Shopping Complex	0.5 acre/20,000 population	
	d Cattle Market(Hat)	1-1.5 acre	1/ Pourashava
5	Industrial		
	a General/ Agro /Cottage Industry	2-5 acre /10,000 population	
	b Heavy Industry	10 acre	As per local requirement/Optional/ 1/ Pourashava
6	Administrative		
	a Upazila Complex	10 acre/Upazila	
	b Pourashava Office	3 acre/Pourashava	
	c Word Councillor's Office	0.10 acre/Office	
	d Jail/Sub-Jail	10 acre/Upazila	
7	Community and Social Services		
	a Eidgah	2 acre/20,000 population	
	b Graveyard	1 acre/20,000 population	
	c Cremation Ground	0.5 acre/20,000 population	
	d Mosque/Temple/Church	0.5 acre/20,000 population	
	e Community Center/ Auditorium	0.5 acre/20,000 population	
	f Club/Gymnasium	0.10 acre	Optional
	g Day Care Center	0.10 acre	Optional
8	Health		
	a Upazila Health Complex	5 acre/50 bed hospitals	1/ Pourashava

Sl. No.	Land use Components	Standard (acre per population)	Remarks
	b Specialized Hospital	1 acre	1/ Pourashava
	c Maternity/ Child Care Center	1 acre/20,000 population	
	d Clinic	0.25/20,000 population	
9	Utility		
	a Electricity Supply/ Electric Sub-station	1 acre/20,000 population	
	b Water Supply Station with Treatment Plant	1 acre/20,000 population	
	c Gas Supply Station	1 acre/20,000 population	
	d Waste Disposal Ground	2-3 acre/ Upazila/ Pourashava	
	e Waste Collection Point	0.2 acre per Station	
	f Sewerage Treatment Plant	As per Local Requirement	
	h Drainage Treatment Plant	As per Local Requirement	
10	Transport and Communication Infrastructure		
	a Bus Terminal	1 acre	1/ Pourashava
	b Bus Stand	0.5 acre/20,000 population	
	c Truck Terminal	1 acre	1/ Pourashava
	e Rickshaw/Van/Tempo Stand	0.25 acre/Station	
	f Fuel/Filling Station	0.5 acre/20,000 population	
11	Government Services		
	a Police Station	3-5 acre	1/ Pourashava
	b Police Box	0.5 acre/Box	
	c Post Office	0.5 acre/20,000 population	
	e Fire Service	1 acre/20,000 population	
	f Telephone Exchange	0.25 acre/20,000 population	
12	Miscellaneous		
	a Slaughter House	0.15/20,000 population	
	c Foreign Offices		Optional
13	Circulation Network (Road)		
	Road Type	ROW	
	a Pourashava Primary Road	60-100 Feet	
	b Secondary Road	30-40 Feet	
	c Local/Connecting Road	Minimum 20 Feet	
	d Walkway/Footpath	5-8 Feet	
14	Drainage Network		
	Drain Type	Width	
	a Primary Drain		As per local requirement
	b Secondary Drain		As per local requirement

10.6 Demography of the project areas

10.6.1 Population forecast of Benapole Pourashava

As stated earlier, Benapole became a pourashava at 2006. Ward wise population data is not available for 2001. Thus, it is not possible to compare the population of 2001 and 2011. However, from the population of 2001 and 2011 of the upazilla, it was possible to extract the growth rate. **Table 8.7** shows the ward-wise demographic condition of Benapole Pourashava

Table 10.7: Area, households and population by wards (2011)

Ward No.	Area (sq.km.) (as per BBS)	Population			Household	Density
		Male	Female	Total		
Ward - 1	1.19	2014	1987	4001	930	3362.185
Ward - 2	0.61	2228	2229	4457	1056	7306.557
Ward - 3	1.19	2776	2695	5471	1272	4597.479
Ward - 4	1.37	1911	1913	3824	918	2791.241
Ward - 5	0.85	1385	1377	2762	618	3249.412
Ward - 6	1.38	2983	3024	6007	1455	4352.899
Ward - 7	0.26	1791	1626	3417	797	13142.31
Ward - 8	0.91	1593	1607	3200	774	3516.484
Ward - 9	0.84	1796	1589	3385	743	4029.762
Total	8.6	18477	18047	36524	8563	

Using the population growth rate of the upazilla, ward-wise population was projected. According to BBS, Benapole had a population of **36,524** in 2011. By the end of the structure plan period (2037), population of Benapole pourashava will be **45,821**. By 2025, population of the pourashava will be **41,268** (please see **Table 8.8** for details). The area poses huge potentiality for industrial development. If the potentiality is properly utilized, the area will experience huge population boost.

Table 10.8: Ward-wise projected population

Ward No.	Population (2011)	Projected Population				
		2020	2025	2030	2035	2037
Ward - 1	4001	4328	4521	4722	4933	5019
Ward - 2	4457	4821	5036	5260	5495	5591
Ward - 3	5471	5918	6182	6457	6745	6864
Ward - 4	3824	4136	4321	4513	4714	4797
Ward - 5	2762	2988	3121	3260	3405	3465
Ward - 6	6007	6498	6787	7090	7406	7536
Ward - 7	3417	3696	3861	4033	4213	4287
Ward - 8	3200	3461	3616	3777	3945	4015
Ward - 9	3385	3661	3825	3995	4173	4247
Total	36524	39507	41268	43107	45028	45821

10.6.2 Population forecast of Jessore Pourashava

Population didn't grow in all the wards. In fact in some of the wards, population decreased. However, because of future growth potentiality negative growth rate for population is not feasible. So, instead of ward-wise growth rate, the gross growth rate of Jessore Pourashava (1.423056 per annum) is considered for population projection.

Table 10.9 Shows the projected and existing population of Jessore Pourashava. According the BBS, population of the pourashava was 1,76,655 in 2001, which increased to 2,01,794 in 2011. Following the same trend, it is expected that the population will be **2,91,153** by the end of the structure plan period (2037). Nonetheless, by the end of the duration of the urban area plan (2025), population of Jessore Pourashava will be **2,45,832**.

Table 10.9: Ward-wise projected population

Ward no.	HH (2001)	Pop (2001)	HH (2011)	Pop (2011)	Projected population					
					2015	2020	2025	2030	2035	2037
Ward - 1	4524	22210	6038	26401	27933	29973	32163	34512	37033	38092
Ward - 2	3268	16654	3788	16377	17327	18593	19951	21408	22972	23629
Ward - 3	3145	18219	3740	17382	18391	19734	21175	22722	24382	25079
Ward - 4	4021	19723	4873	20470	21658	23240	24937	26759	28713	29535
Ward - 5	5915	28310	8231	39407	41693	44739	48007	51514	55276	56857
Ward - 6	3447	17668	4123	17642	18666	20029	21492	23062	24747	25454
Ward - 7	4735	21486	6219	26103	27618	29635	31800	34122	36615	37662
Ward - 8	2900	14761	3533	15081	15956	17122	18372	19714	21154	21759
Ward - 9	3478	17624	5385	22931	24261	26034	27935	29976	32165	33085
Total	35433	176655	94203	201794	213502	229098	245832	263789	283058	291153

10.6.3 Population forecast of Jhikorgachha Pourashava

Jhikorgachha is one of the most potential areas of future urban growth. According to BBS, population of Jhikorgachha pourashava was 27834 and 32774 respectively for the year 2001 and 2011. However, by the end of the structure plan (2037) and urban area plan (2025) period, population of the pourashava will be 50,126 and 41,893 respectively (Table 10.10).

Table 10.10: Ward-wise projected population

Ward No.	Area (In Acre)	Census population		Projected population				
		2001	2011	2016	2021	2025	2030	2037
1	491.69	4234	5105	5540	6011	6525	7078	7808
2	19.84	1713	2096	2275	2468	2679	2906	3206
3	89.49	4123	4400	4775	5181	5624	6100	6729
4	83.75	3077	3968	4306	4672	5072	5501	6069
5	455.64	2953	3277	3556	3859	4189	4543	5012
6	290.78	3726	4600	4992	5416	5880	6378	7036
7	343.9	4537	2669	2897	3143	3412	3700	4082
8	281.99	2176	2850	3093	3356	3643	3951	4359
9	680.32	1295	3809	4134	4485	4869	5281	5826
Total	2737.41	27834	32774	35569	38591	41893	45438	50126

Table 10.11 Population Projection for the whole Project Area

Geo Unit	Population (2001)	Population (2011)	Growth Rate (GR)	Adjusted GR	Population (2015)	Population (2020)	Population (2025)	Population (2030)
Sharsha Union	39583	44805	0.01	1.01	47217	50414	53829	57474
Benapole Union	48812	36524	-0.03	1.00	36524	36524	36524	36524
Ulashi Union	30499	33607	0.01	1.01	34998	36818	38733	40747
Arabpur Union	33471	41361	0.02	1.02	45401	51010	57313	64394
Diara Union	32469	36789	0.01	1.01	38786	41436	44267	47291
Jessore Paurashava	176655	201796	0.01	1.01	213531	229164	245942	263948
Upasahar Union	14305	16546	0.02	1.02	17607	19031	20569	22231
Chanchra Union	35807	44239	0.02	1.02	48556	54548	61281	68844
Jhikargachha Union	27834	26056	-0.01	1.00	26056	26056	26056	26056
Gadkhali Union	23760	26892	0.01	1.01	28338	30256	32303	34489
Panisara Union	19843	21828	0.01	1.01	22715	23874	25092	26372
Nabharan Union	26776	29495	0.01	1.01	30711	32303	33976	35737
	541471	559938			590440	631434	675884	724108

10.7 Proposed Land Use Zones

Benapole, Jessore and Jhikorgachha are the three urban centers. As stated in the structure plan, responding to the higher economic prospects, employability and better utilities and services, people will start gather in in the project area. With proper planning intervention, it is expected that people will prefer these urban centers to live.

Detailed land use has been proposed for the three urban centers as a part of urban area plan. In the plan proposal, the urban centers have been divided into land use zones in the light of guidelines provided in the Structure Plan.

The predominant land use is agriculture followed by rural settlements. Plan proposal includes designation of the project area into various types of land use zones according to use character. Spatial development of the project area will be according to land use classification proposed in proceeding section entitled “Land use classification”.

Demand for different kinds of land uses depends on the projected population. However, it is of utmost importance to acknowledge the statement of the structure plan that the population is expected to increase exceeding the projected population responding to the economic prosperity. Based on this assumption, the structure plan suggested to add 10% additional population with the projected population.

10.7.1 Land use Zone wise description

The following sections deal with the general description of the proposed land use composition of the three urban centers. Vision of the planning of these urban centers is stated in the preceding chapter.



Photograph 10.3 : Incoming Transports towards Bangladesh

Land Port: Benapole, the most important land port of Bangladesh handles about 80% of total amount of import and export goods between Bangladesh and India. As, recently initiated high priority projects like Khulna-Mongla Railway, Padma Bridge, revitalization of Mongla sea port and Benapole Land Port, upgrading national highway are expected to create huge economic impact not only on southwest region but also hole Bangladesh. So, the land port needs to be upgraded with related facilities. In the Benapole Urban Area Plan (2017-27) of this study project reserved area for extension for land port in southern part of the town.

Table 10.12: Land Reserved for Extension of Land Port at Benapole Pourashava

Proposed services	Mouza	JL. No.	Sheet No.	Plot No.	Area (Acres)	Area (Hectors)
Land Port	Bhobarber	88	2	452-462, 465-469, 471-474, 497-499, 565-567	4.678	1.893
	Kagajpukuria	50	3	3906-3922	5.390	2.181
				463-589, 609-624, 882-907, 933, 935-971, 974-998, 1000, 1003, 1004, 1036, 1213-1216, 1219-1246, 1279, 1282, 1284,	56.140	22.720
	Bhobarber	88	2	506, 508,533, 534, 554-557, 559, 562-595, 611, 655, 656, 658, 663-685,	86.610	35.050
	Choto Achara	89	2			
Total area proposed to be dedicated for land port					152.818	61.844

Source: GIS Database, Development Plan for Benapole-Jessore Highway Corridor (2017-37)

Residential: As stated earlier, there is no residential density related standard in Bangladesh. A brief about the available tools are stated in preceding section. According to the Private Housing (land) Development Ordinance 2004 (section 8(2)), density of residential areas should be 350 ppa, which is not achievable for the project area. However, UDD prescribed a minimum of 100 to 150 ppa for residential area.

Benapole: By the end of this urban Area plan, Population of Benapole is expected to reach 41,268, After adding 10% additional population, this figure becomes (41,268+ 4,127=) 45,395. The pourashava divided by the corridor road (Jessore-Benapole Highway) and the railway line. It has relatively higher density at the northern part versa. According to BBS (2011) ward-2 has the highest population density. Nonetheless, the current gross density of Benapole Pourashava is 17 ppa. By the end of the duration of this urban area plan, this density will be 22ppa. It is also to be mentioned here that the public representatives envisioned to create 60,000 to 70,000 employments at Benapole. If all kinds of supports are provided and this vision becomes a reality, Benapole will have to accommodate additional 2,40,000 persons (each employee will have a family with, on an average, 04 family members). Meaning the density will be 130 ppa. However, this density is almost unachievable.

Considering the projected population, beanpole will require $(45,395 \div 150) \approx 303$ acre area to accommodate the population. The survey revealed that a total of 685.58 acre of residential land is already available at Benapole Pourashava. Meaning there is no need to allocate additional space for residential purpose. Considering the vision of the people's representative a total of 1654.42 acres area is allocated for the residential purpose.

Jessore: In 2011, Jessore had a population of 201794. Considering the constant growth rate, by 2015, this figure reached 2,13,502 and by the end of the duration of the urban area plan (2025), population of Jessore Pourashava will be 2,45,832. Including 10% additional population with the projected population, this figure will be $(245832+24583=)$ 2,70,415. Considering the standard population density (150 ppa), Jessore Pourashava requires $(270415 \div 150 =)$ 1803 acres of residential land compared to existing 1639.41 acre. Meaning a total of $(1803-1639) = 164$ acre additional land need to be allocated for residential purpose. Responding to the need, the planning team has assigned 1721.363 acres of land for the same purpose. It is to be noted here that Jessore has higher density of low rise buildings. It possesses immense potentiality for vertical expansion and densification.

Jhikorgachha: By the year 2025, population of Jhikorgachha Pourashava is expected to reach 41893. Including 10% additional population, this figure became (41,893+4,189=) 46082. Considering standard population density (150 ppa), a total (46082÷150=) 307.213 acre land is required to be allocated for residential purpose. Survey reveals that already 564.65 acre land is allocated for residential purpose.

A total 1116.879 acre land is allocated for residential purpose. In addition to the relatively flood free area and close proximity to two employment hubs of the area (Jessore and Benapole), jhikorgacha is one the oldest urban centers possessing all the characteristics required for residential area, the pourashava has already proved its potentiality for residential land use.

Allocated space for different kinds of residential Land use: Three types of residential areas are proposed for the three urban centers. Low-rise residential areas are proposed mainly in the border areas for security reasons. Additionally, some flood vulnerable areas are there in the project area where people are living for ages. More than two storied buildings should not be permitted in the designated areas for low-rise residential areas.

Planned residential areas are the locations of planned expansion of residential facilities. Based on the load bearing capacity of the soil, availability of required infrastructures, high-rise buildings should be promoted for these areas. Areas categorized under “Residential” land use are usual residential areas, where people are already living. For both “Planned Residential” and “Residential”, Building Construction Rules, 1996 will be applicable along with all other applicable rules.

Table 10.13: Allocated space for Residential Land use

Urban Centers	Types of Residential Area	Area (Acre)	Area (Hector)
Jessore			
	Residential	1721.363	696.614
	Planned Residential	194.39	78.67
	Low-rise Residential	0	0
Jhikorgachha			
	Residential	855.049	346.027
	Planned Residential	261.830	105.959
	Low-rise Residential		
Benapole			
	Residential	772.713	312.707
	Planned Residential	347.405	140.590
	Low-rise Residential	534.302	216.225

Source: GIS Database, Development Plan for Benapole-Jessore Highway Corridor (2017-37)

Commerce and business: Because of higher potentiality of bilateral trade with India, BBIN treaty, possibility of future FDA (Free Trade Agreement), stable political environment of Bangladesh, improvement in power sector and transport; the corridor possesses immense potentiality for future expansion of trade and commerce.

As about 80% bilateral trade with India takes place through this corridor, the area possess potentiality for export oriented industries and agro-based industries. Accordingly, two EPZs are proposed at Benapole and Jhikorgachha. Projection of trade and commerce is a tricky task. Often it is dependent on the assumptions. Thus, the accuracy of the projection is dependent on the accuracy of the assumptions. For each of the pourashavas, after analyzing the existing situation and future prospects, assumptions are developed very lucidly.

Benapole: Benapole, being the border town of Bangladesh, has a historical background and importance. Although the pace of urbanization is still slower in Benapole, implementation of the high-priority projects of the government (Padma Bridge, Khulna-Mongla railway line, widening of corridor road etc.) will open up new avenues of development in Benapole. Responding to better communication, more people will use this BLP for traveling between Bangladesh and India.

BBIN treaty will ease off cross border freight transport. Additionally, because of close proximity to India, availability of cheap labour, and investment friendly climate may attract FDI from India. All these issues are considered while planning the pourashava.

In addition to the EPZ, 02 (two) dedicated commercial areas- are proposed one for import-export activities (located close to the BLP) and the other for the EPZ itself. A wholesale market is also proposed in Benapole Pourashava. Kitchen / Neighborhood market is proposed for each of the wards of the pourashava. It is proposed to be located at the Neighborhood Center. Please explore Table 10.12 for details about these proposals.

Apart from these dedicated commercial areas, a total of 32.663 Acre land is allocated for general commercial activities distributed all over the pourashava to satisfy general needs of the people.

Table 10.14: Proposed Commercial Services in Benapole Pourashava

Sl. No	Proposed services	Mouza	JL. No.	Sheet No.	Plot No.	Area (Acres)	Area (Hectors)
1	Wholesale Market	Bhobarber	88	2	452-462, 465-469, 471-474, 497-499, 565-567	4.678	1.893
2	Cattle hat	Kagajpukuri	50	3	3906-3922	5.39	2.181
3	Commercial Area-1 (Dedicated for export-import activities)	Choto Achara	89	2	261, 496, 501, 503-509, 518, 520, 532-536, 596, 878, 905	16.654	6.739
4	Commercial Area-2 (dedicated for industrial production)	Bhobarber	88	2	782, 786, 787, 840-853, 862, 865-869, 1084	5.941	2.404
Total area proposed to be dedicated for commercial use						32.663	13.217

Source: GIS Database, Development Plan for Benapole-Jessore Highway Corridor (2017-37)

Jhikorgachha: Jhikorgachha is the most suitable area for future urban agglomeration. Moreover, vast unused flood free land surrounding the pourashava also extends the opportunity of future urban development in the project area. Surrounding open spaces are also suitable for large infrastructural development. This will also contribute to the urban development of Jhikorgachha pourashava. Apart from the regular commercial areas, one major commercial agglomeration is proposed for the EPZ. Additionally, a cattle hat cum slaughter house is also proposed in this area (Table 10.13).

Table 10.15: Proposed commercial services in Jhikorgachha Pourashava

Proposed services	Mouza	JL. No.	Sheet No.	Plot No.	Area (Acres)	Area (Hectors)
Commercial Area-1	Kirtipur	67	2	672, 671, 669, 666, 667, 665, 664, 668, 663, 662, 658, 758, 756, 661, 760, 759, 660, 757, 761, 762, 763, 764, 765, 789, 790	7.644	3.093
Cattle hat cum slaughter house	Hajirali	70		219-238, 341, 347, 349-351, 606	4.925	1.993
Total area proposed to be dedicated for commercial use					12.569	5.086

Source: GIS Database, Development Plan for Benapole-Jessore Highway Corridor (2017-37)

Jessore: Jessore is the most densely developed city of the corridor. Due to the lack of sufficient vacant space, additional proposals for trade and commerce was not possible. However, as Jessore is a well-developed city, most of the commercial requirements are already in place. However, from the Focused Group Discussion (FGD), the planning team identified a few requirements for the pourashava, which are listed below:

- Improvement of kitchen market at ward no 02 (also known as Boro Bazar)
- Improvement of Fish market at ward no 02 (also known as Mas Bazar)
- New poura market at Monihar Cinema hall intersection
- New Kitchen Market development near Chuadanga Bus Stand (on the land of dead canal) A total of 12.569 acres area is accommodated for serving commercial purpose.

10.8 Open space and Recreational facilities

Due to agglomeration of different income generating factors, more and more people will be gathering in the project area. There is already severe inadequacy of recreational facilities; the situation will be further aggravated by the future accumulation of population in the project area. If spaces of all the proposed recreational facilities are not preserved at this moment, it will be very difficult to expand these facilities in the future to meet the increasing demand. The situation worsened when the open ponds and playfields located at the premise of the academics and other government establishments were confined by the boundary walls. As more and more ponds are walled, people are becoming increasingly dependent on ground water and the supply water provided by local government organizations. The stakeholders suggested to preserve big ponds and develop park facilities by these ponds. The planning team suggest to keep these ponds and playfields open for everybody's use.

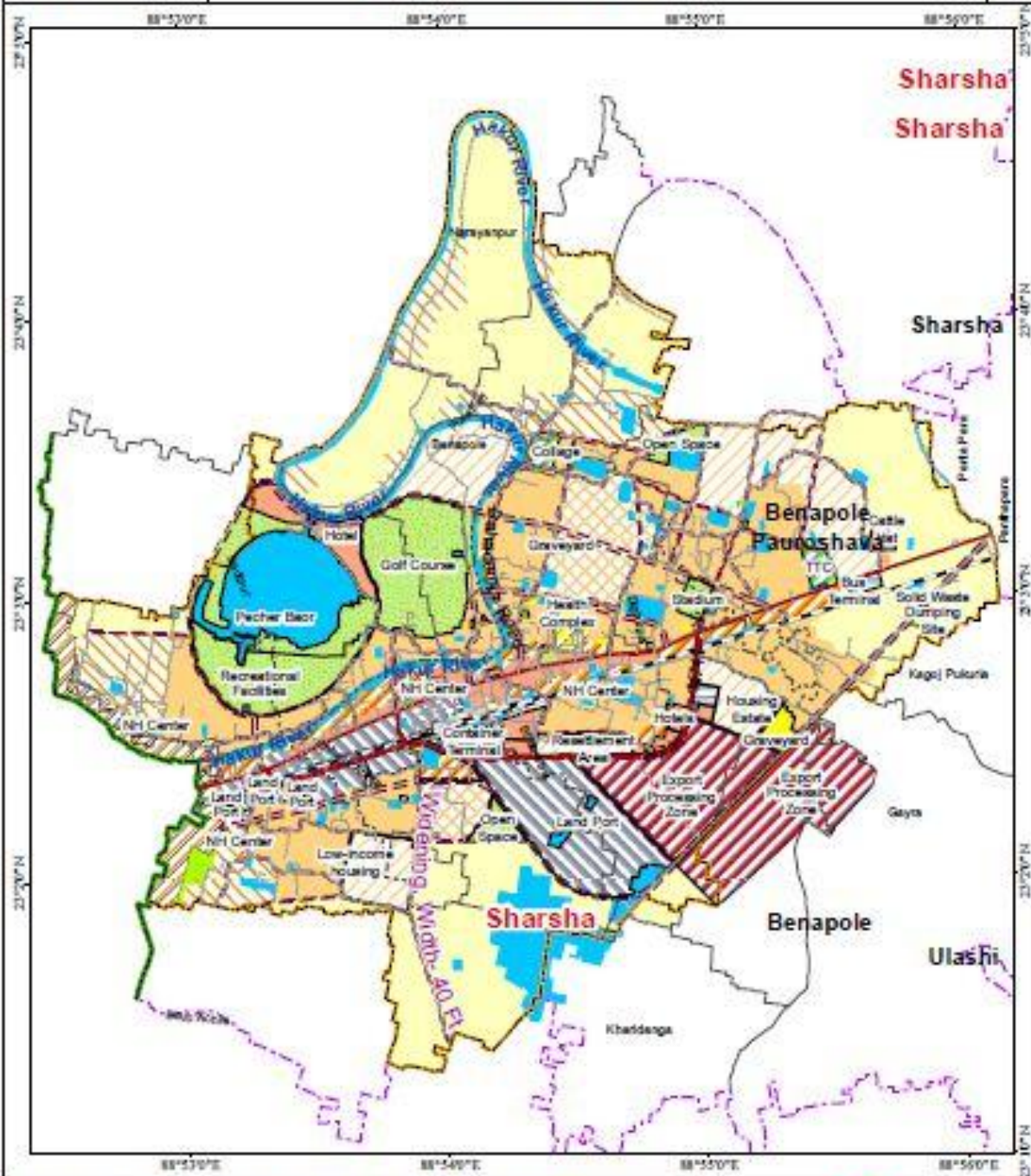
The planning team also suggests developing parklets for every neighborhood. Locations of these parklets are not identified by this plan. The planning team suggests that the location should be chosen through participatory process. For implementation, either PPP or private funding scheme can be employed.

Benapole: Benapole Pourashava is mainly developed at the northern side of the highway. Southern part of the same remains underdeveloped. The central part of the city is densely developed by low-rise buildings. However, the city possesses immense scope of further densification. The area of the pourashava extended in 2006. Although major portion of the pourashava is frequently flooded (return period = 2.33 year), the city will keep growing responding to the regional need.

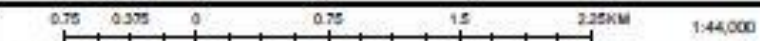
Considering the regional importance of the Pourashava, a regional park is proposed surrounding and including Perher Baor (also known as Pecho Baor). Main purpose of this proposal is to conserve the Baor, maintain ecological footprint of the area and also satisfy the recreational need of the people for the years to come. While planning and developing the area, lots of touristic elements should be placed so that the whole place can be maintained by its own income. This place can also be used for showcasing our culture and heritage.



Photograph 10.4: Benapole Gate under construction



"DEVELOPMENT PLAN FOR BENAPOLE-JESSORE HIGHWAY CORRIDOR PROJECT"



Legend			
Existing Road	Administrative Boundary	Urban Area Plan	Municipal and Procs. Activities
National Highway	International Boundary	Administrative	Mixed Use
Regional Highway	Panchshaha Boundary	Agriculture	Recreational Facilities
Local Road	Upazila Boundary	Circulation Network	Residential
Railway	Ward Boundary	Community Services	Residential- Low Rise
Railway-Trolley	Union Boundary	Commercial	Residential- Planned
Existing Railway	Mousa Boundary	Conservation	Restricted Area
Existing Railway	Mousa Boundary	Education and Research	Transport and Communication
Existing Railway	Mousa Boundary	International Border Buffer Zone	Urban Deferred
		Land Port	Water body
			Urban Infrastructure
			Proposed Transport Network

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About Map Data:
 Satellite Image- Stereo Satellite Image, 07 April 2014,
 0.5 meter (Source- DigitalGlobe)
 Field Survey Period- October 2014-May 2015
 Projection System: UTM Zone 48N
 Reference Bench Mark- Survey of Bangladesh

Table 10.16 : Proposed open space and Recreational facilities in Benapole Pourashava

Proposed services	Mouza	JL. No.	Sheet No.	Plot No.	Area (Acre)	Area (Hectors)
Regional Park	Sadipur	46	2,3	881, 882, 933-937, 958, 959, 964, 1461-1471, 1486-1537, 1583-1676, 1719-1728, 2942, 2943, 2962-2965, 2999-3033, 3059-3073, 3080-3179, 3210, 3211, 3257, 3260, 3261, 3299, 3316-3321, 3329	88.30 8	35.736
Stadium	Dighirpar, Kagajpukuria	87, 50	1,2	146, 160-184, 1846, 1850-1861, 1868, 1869	10.04	4.062
Total area					98.35	39.798

Source: GIS Database, Development Plan for Benapole-Jessore Highway Corridor (2017-37)

Jhikorgacha: Jhikorgacha is located between Jessore and Benapole. Because of its location and availability of flood free spaces, this area is the most suitable place for future accommodation of population. Frequently flooded area can be found by the Kapatkha River.

Thus, the conservation area is also located by the said river. Biggest market of Jhikorgacha is located where the highway (N706) crossed the river. This is also the most heavily populated area. Considering the future demand, several locations are proposed for regional parks. Location of these areas are chosen such that people living at both side of the river are equally served. These parks are located on the most heavily flooded land by the Kopothakho River. A stadium is also proposed by the river. This stadium will also serve the proposed BKSP (Bangladesh Krira Sikha Protisthan).

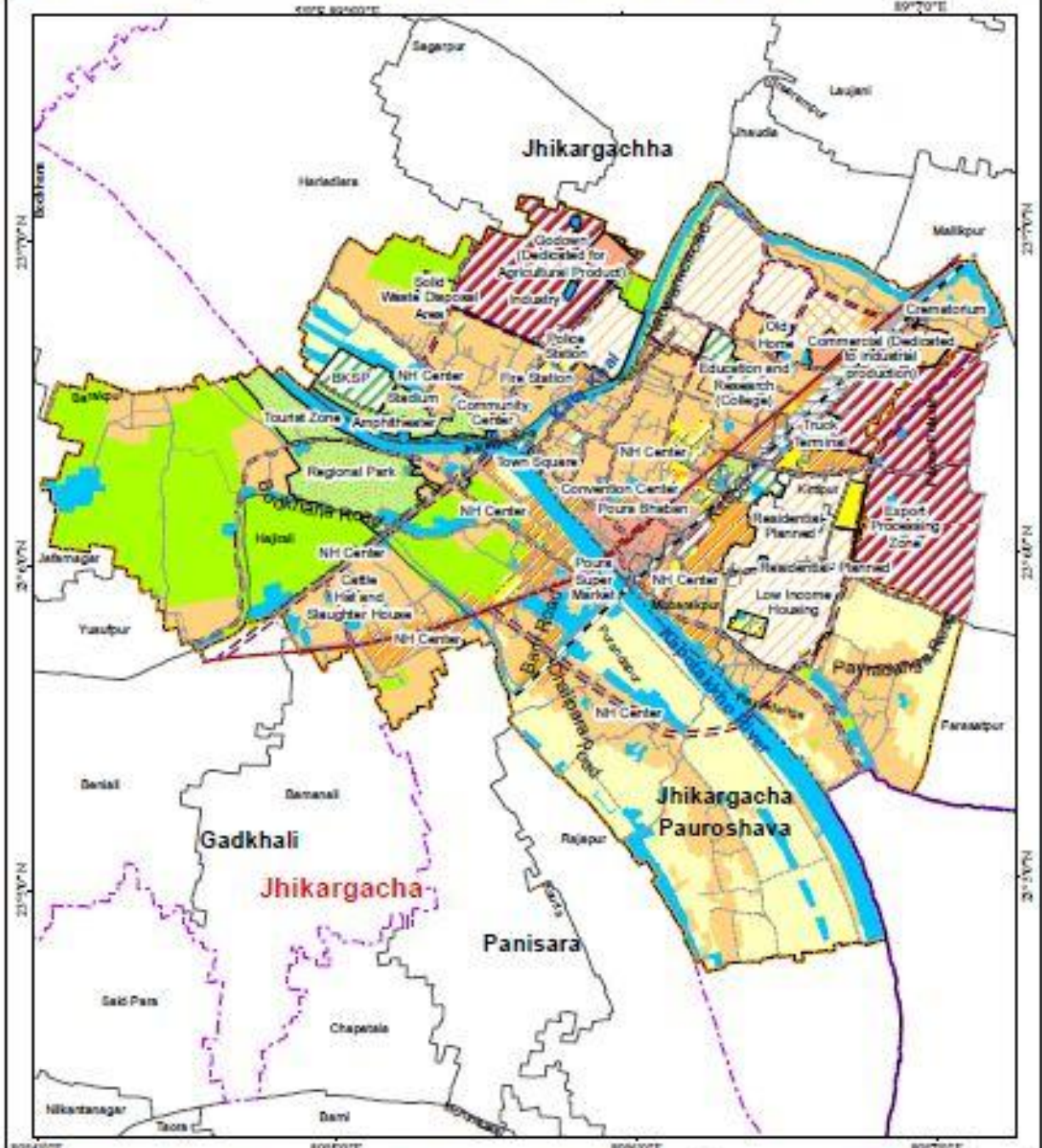


Photograph 10.5: The Kata Khal, connects Buk Vara Beel and the Kobadak at Jhikargacha

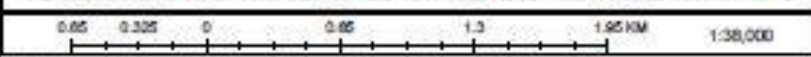
Table 10.17: Proposed open space and Recreational facilities in Jhikorgachha Town

Proposed services	Mouza	JL. No.	Sheet No.	Plot No.	Area (Acre)	Area (Hectors)
Regional Park -1	Barakpur, Barbakpur, Hajirali, Puronandapur	33, 70, 69	2,3, 1	1-4,7;77, 82-85;1121, 1596,1597, 1603 - 1649, 652, 1701-1727,1734-739,1744-1890,1894, 1896, 1897, 1901-907, 1910, 1915-1918,1922-1925,1961, 1983, 1987, 2173, 2176	70.356	28.472
Municipal Park	Jhikorgachha	34	-	1139-1142,1147, 1152-1165,1168	6.114	2.474
Stadium and BKSP	Jhikorgachha	34	-	275, 285-288, 294, 298-304, 307-333, 340-346, 363-382, 422- 463,1152, 1207, 1209	32.288	13.066
Tourist Zone	Jhikorgachha	33	1, 2, 3	702, 747, 1060, 1066-1075,1085-1121, 1650, 1727-1733,1740-1743,1764-1766		
Amphitheatre	Jhikorgachha	34		331-363,372-377,382-411,414-422, 424, 426-427, 1152, 1206, 1208, 1454-1455		

Source: GIS Database, Development Plan for Benapole-Jessore Highway Corridor (2017-37)



"DEVELOPMENT PLAN FOR BENAPOLE-JESSORE HIGHWAY CORRIDOR PROJECT"



Legend		Urban Area Plan	
Existing Road	Administrative Boundary	Agriculture	Manufacture and Prod. Activities
National Highway	International Boundary	Community Network	Mixed Use
Regional Highway	Paurashava Boundary	Community Services	Recreational Facilities
Local Road	Upazala Boundary	Commercial	Residential
Kanney	Ward Boundary	Conservation	Residential- Low Rise
Kanney-Tollway	Union Boundary	Education and Research	Residential- Planned
Existing Railway	Misra Boundary	International Border Buffer Zone	Restricted Area
		Land Port	Transport and Communication
			Urban Deferred
			Water body
			Urban Infrastructure
			Proposed Transport Network



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About Map Data:
Satellite Image- Stereo Satellite Image, 07 April 2014,
0.5 meter (Source- DigitalGlobe)
Field Survey Period- October 2014-May 2015
Projection System: UTM Zone 48N
Reference Bench Mark- Survey of Bangladesh

Jessore: As stated earlier, Jessore is a highly populated area. Finding space for recreational purpose is a very big challenge. However, it is suggested to retain the available open spaces and water bodies. There are 01 municipal park, DC Court Park, 04 cinema halls, 01 stadium, 10 playfields, 05 community centers, 01 auditorium, and 02 libraries in Jessore pourashava, which is truly insufficient compared to the demand.

There are 06 (six) publicly owned ponds (Two ponds at municipal park located at ward no 05, Lal Dighi pond by keshoblal Road (ward no 06), Jomaddarpara pond (chotoner mor, shankorpur, Ward no 07), Methopukur par pond at ward no 01). These ponds need to be preserved. Park facilities can be developed surrounding these ponds. Furthermore, following additional recreational facilities are proposed for Jessore pourashava (please see table 10.18 for details).



Photograph 10.6: Chanchra Shib Temple at Jessore

Table 10.18: Proposed open space and Recreational facilities in Jessore Pourashava

Proposed services	Mouza	JL. No.	Sheet No.	Plot No.	Area (Acre)	Area (Hectors)
Community Park	Ghop	90	2	199	0.314	0.127
Park	Barandi	91	5	2550, 2551, 2558	1.630	0.648
Park	Sankarpur	82	1	71, 72, 73, 661	1.136	0.459
Park	Barandi	91	3	1773	1.789	0.723
Park	Shankarpur	82	1	595, 275, 278, 279	1.472	0.595
Park	Sankarpur	82	2	1094, 1095, 1096, 1097, 1105-1109, 1312	3.553	1.438
Recreational Park	Barandi	91	4	2033-2036, 2045, 2046	6.361	2.574
Recreational Park	Bokchar, Murly, Sankarpur	88, 83, 82	2	39, 133, 341-347; 1-22, 33, 39, 41-46, 232; 1188-1197, 1210-1238, 1316, 1317, 1319	52.23 9	21.140

Source: GIS Database, Development Plan for Benapole-Jessore Highway Corridor (2017-37)

10.10 Education

Educational facilities of the three urban centers will not only be used by the people of these urban centers but also by the other people living in and outside of the corridor. So it would be unwise to consider only the projected population of the three urban centers while proposing different educational facilities. Moreover, capacity of the schools can be tremendously increased through introducing double-shift in each of the primary and secondary schools. There are some primary schools where secondary school's facility can be developed.

As Jessore University of Science and Technology is located at the Northern part of Jessore Jessore-Jhinedah highway (N7) (about 12 km away from Doratana Intersection of Jessore Pourashava). This university is enough to fulfill the demand of the corridor. So, additional university is not required in the project area. Government is already planning for shuttle train service from Jessore to address connectivity issue.

This plan has not identified all the locations of all the required educational facilities. Among several reasons, most important one is, the required amount of space and number of facilities are not required right now. The current plan has allocated spaces only for facilities of immediate need. Moreover, predicting distribution of population density is easier said than done. If locations of educational facilities are identified right now, there is very good chance that it will not serve the expected population.

Benapole: There are 02 secondary schools, 07 primary schools, 09 madrasa, 05 kindergartens, 01 library, 01 collage and 02 orphanages in Benapole pourashava. Considering the projected population (45,395), demand of educational facilities in Benapole Pourashava is as follows (**Table 10.17**)

Table 10.19: Demand for different kinds of educational facilities of Benapole Pourashava by 2035

Sl no	Land use Components	Standard (acre per population)	Demand
1	Nursery/Elementary School	2 acre/10,000 population	9.08 acre
2	Primary School	5 acre/5,000 population	45.40 acre
3	Secondary School	10 acre/20,000 population	22.70 acre
4	College/University	5-10 acre/20,000 population	22.70 acre
5	Vocational Training Center	5 acre	05.00 acre
6	Others (Library, Public Library)	0.5 acre/20,000 population	11.35 acre

Source: GIS Database, Development Plan for Benapole-Jessore Highway Corridor (2017-37)

Nonetheless, not at the demand can be fulfilled because of so many constraints (e.g. lack of suitable space for educational services within close proximity of the residential neighborhood). Sometimes, to enjoy the effect of agglomeration, sometimes many schools are located close to each other leaving a lot of areas unserved. This is becoming pretty big problem for Benapole Pourashava. After, analyzing the current situation, the planning team proposed the following educational infrastructures for Benapole Pourashava-

Table 10.20: Proposed educational facilities of Benapole Pourashava

Proposed services	Mouza	JL. No.	Sheet No.	Plot No.	Area (Acres)	Area (Hectors)
Collage	Porabari	49	2	831, 838-858, 864, 870, 871	8.169	3.305
TTC	Bhobarber, Choto Achara	88, 89	2	463, 464, 466, 506, 508, 533,534, 554-593, 671, 572, 575, 679, 680, 681, 686- 690	16.428	6.648

Source: GIS Database, Development Plan for Benapole-Jessore Highway Corridor (2017-37)

Jessore: There are 07 collages, 15 secondary schools, 44 primary schools in Jessore pourashava. Being one of the oldest urban centers of the southwestern Bangladesh, the area is already well served by different urban services. By the end of the urban area plan, population of Jessore Pourashava is expected to be 2,70,415. For the estimated population, required amount of educational facilities is shown in the following table.

Table 10.21: Demand for different kinds of educational facilities of Jessore Pourashava by 2035

Sl no	Land use Components	Standard (acre per population)	Demand
1	Nursery/Elementary School	2 acre/10,000 population	54.083 acre
2	Primary School	5 acre/5,000 population	270.41 acre
3	Secondary School	10 acre/20,000 population	135.2075 acre
4	College/University	5-10 acre/20,000 population	135.2075 acre
5	Vocational Training Center	5 acres	05 acres
6	Others (Library, Public Library)	0.5 acre/20,000 population	6.760375 acre

Because of lack of spaces, required amount of land cannot be allocated for educational purpose. However, after analyzing the demand for educational infrastructures, the planning team proposed the following table.

Table 10.22: Proposed educational facilities of Jessore Pourashava

Proposed services	Mouza	JL. No.	Sheet No.	Plot No.	Area (Acres)	Area (Hectors)
TTC	Sankarpur	82	2	1281, 1283	0.791	0.320
School	Khorki	79		539	0.587	0.237
KG School	Puratan Kasba	93	2	1189	0.219	0.088
School	Sankarpur	82	2	1102, 1103, 1104, 1114	2.769	1.120

Source: GIS Database, Development Plan for Benapole-Jessore Highway Corridor (2017-37)

Jhikorgachha: By the end of the urban area plan period, Jhikorgachha is expected to have a total population of 46,082. As stated earlier, Jhikorgachha is one of the most suitable places for residential development. If the government agrees to provide proper incentive for industrial development, it is expected that the EPZ will become vibrant. And if this assumption is materialized, Jhikorgachha is expected to become one of the most populous places of the corridor.

Table 10.23: Demand for different kinds of educational facilities of Jhikorgachha Pourashava by 2035

Sl no	Land use Components	Standard (acre per population)	Demand
1	Nursery/Elementary School	2 acre/10,000 population	9.22 acre
2	Primary School	5 acre/5,000 population	46.02 acre
3	Secondary School	10 acre/20,000 population	23.04 acre
4	College/University	5-10 acre/20,000 population	23.04 acre
5	Vocational Training Center	5 acres	05 acres
6	Others (Library, Public Library)	0.5 acre/20,000 population	1.15 acre

However, after analyzing the demand for educational infrastructures, the planning team proposed the following:

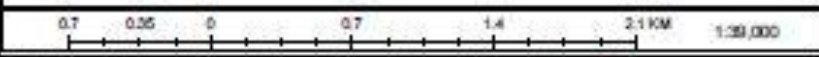
Table 10.24: Proposed educational facilities of Jhikorgacha Pourashava

Proposed services	Mouza	JL. No.	Sheet No.	Plot No.	Area (Acres)	Area (Hectors)
Collage	Kirtipur	67	2	371-385, 391-397, 401, 442	10.461	4.233
TTC	Kirtipur	67	1,2	222, 594- 619, 625- 630, 643-645	9.557	3.867

Source: GIS Database, Development Plan for Benapole-Jessore Highway Corridor (2017-37)



"DEVELOPMENT PLAN FOR BENAPOLE-JESSORE HIGHWAY CORRIDOR PROJECT"



Legend			
Existing Road	Administrative Boundary	Urban Area Plan	Municipal and Proc. Activities
National Highway	International Boundary	Agriculture	Mixed Use
Regional Highway	Neighbors Boundary	Circulation Network	Recreational Facilities
Local Road	Upazila Boundary	Community Services	Residential
Railway	Ward Boundary	Commercial	Residential - Low Rise
Railway-Terminus	Union Boundary	Conservation	Residential - Planned
Existing Railway	Mousa Boundary	Education and Research	Restricted Area
		International Border Buffer Zone	Transport and Communication
		Land Port	Urban Deferred
			Water body
			Urban Infrastructure
			Proposed Transport Network



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About Map Data:
Satellite Image- Sarsco Satellite Image, 07 April 2014,
0.5 meter (Source- DigitalGlobe)
Field Survey Period- October 2014-May 2015
Projection System- UTM Zone 45N
Reference Bench Mark- Survey of Bangladesh

10.11 Conservation Zone

Conservation area is mainly delineated by the structure plan where it has strictly suggested to preserve the original characteristics of the land. This area includes the most frequently flooded areas, Rivers, Cannels, Baors and other wetlands. Condition of the waterbodies in the project area is not at all satisfactory. Both Kapotakha and Betna rivers are encroached by the local people for different purpose. The planning team have been informed by the Mayor of Banapole that the pourashava is now implementing a project to reclaim the land of the river. However, it will take a long time and huge fund to complete the whole project. More about the waterbodies are included in the chapter on water resources.

There is no standard for conservation area. In fact, there is no demand for the same. Often, people perceive this area as a burden. However, conservation of these areas is very important for maintaining the ecology and environment, ground water recharging, biodiversity, food security etc. Large portion of the delineated conservation area is now under agricultural use. During monsoon season, this area becomes submerged.

Conservation areas are not suitable for infrastructural development. The structure plan proposed to adopt stricter regulation for the conservation areas. It has also suggested couple of strategies to protect these areas. The local government and also the proposed corridor authority should collaborate with each other to do this job.

Table 10.25: Area demarcated as conservation area in pourashava

SI	Pourashavas	Area (Acre)	Area (Hector)	Percentage of total area
1	Jessore	102.95	41.66	2.59 %
2	Jhikorgachha	575.91	233.06	15.89 %
3	Benapole	1977.43	800.24	34.78 %

Source: GIS Database, Development Plan for Benapole-Jessore Highway Corridor (2017-37)

10.12 Community Facilities

Community services are the infrastructures that are required by the people in their day to day activities (e.g. religious infrastructures, graveyard, community center etc.). These are the services that are required both in urban and rural areas. However, nature of these activities may vary from one place to another.

As stated earlier, the plan has only proposed some essential services for the existing urban centers. Other than the three pourashavas, there are other areas which are highly potential for future urban formation (e.g. Sharsha upazilla town, Nabharon, Godkhali etc.). Following table shows the area wise distribution of area proposed for community facilities.

Table 10.26: Pourashava wise distribution of area demarcated as Community Services area

SI no	Pourashavas	Area (Acre)	Area (Hector)	Percentage of total
1	Jessore	49.30	19.95	1.23
2	Jhikorgachha	50.35	20.38	1.39
3	Benapole	39.94	16.16	0.70

Source: GIS Database, Development Plan for Benapole-Jessore Highway Corridor (2017-37)

10.13 Urban Deferred

Often urban deferred area is defined as the area of higher potentiality of development. Because of lack of some very essential services, the area remains under developed. Sometimes these areas are identified separately so that this area is prioritized appropriately in the development agenda.

Determining future requirement of an urban center is often easier said than done. This is because; so many variables influence the future in variable scale. As it is often impossible to predict all the variables accurately, determining the future requirement is also impossible. To meet the requirement of the future urban centers, an urban deferred area is determined to meet the unpredicted demand of the future.

Such space is not available at Jessore. However, as both Benapole and Jhikorgachha is expected to increase more rapidly than Jessore, urban deferred area is more important for these two pourashavas. Accordingly, a total of 150.158 acre areas in Benapole and 39.353 acre area in Jhikorgachha pourashava has been delineated as urban deferred area. Following table shows the area wise distribution of urban deferred area.

Table 10.27: Pourashava-wise distribution of area demarcated as “urban deferred”

SI no	Pourashavas	Area (Acre)	Area (Hector)	Percentage of total area
1	Jessore	0	0	0
2	Jhikorgachha	39.353	15.925	1.148 %
3	Benapole	150.158	60.767	2.603

Source: GIS Database, Development Plan for Benapole-Jessore Highway Corridor (2017-37)

10.14 Mixed use

All over the world, mixed land use is promoted as it is environmentally more sustainable and friendly to compact development. Moreover, the whole world is moving away from mono functional land use to multi-functional land use. Nonetheless, the planners need to be judicious about the activities to be put in the mixed-use zone.

External economy and diseconomy of land use along with the intensity need to be considered before approving land use. For example, a bus station in a residential area will create conflict (diseconomy). But a bus station and a gas station can be placed side by side without incurring any negative impact.

Mixed land use means an optimum mix of land uses. Objective should always be to ensure maximum safety, security and comfort of the people living in the mixed use zone. Following table shows the pourashava wise distribution of proposed mixed use areas-

Table 10.28: Pourashava-wise distribution of area demarcated as “mixed use”

SI no	Pourashavas	Area (Acre)	Area (Hector)	Percentage of total area
1	Jessore	734.86	297.39	18.45
2	Jhikorgachha	151.94	61.49	4.19
3	Benapole	108.46	43.89	1.91

Source: GIS Database, Development Plan for Benapole-Jessore Highway Corridor (2017-37)

10.15 Manufacturing and processing activities

One of the major objectives of this plan is to make the corridor economically vibrant. To achieve this objective, industrialization must be promoted. At present, industrialization is taking place in haphazard manner. It was really difficult to find spaces for manufacturing activities in Jessore. However, plenty of spaces are available at Jhikorgachha and Benapole. For each of these pourashavas, an EPZ is proposed in addition to the usual industrial areas. It is expected that the EPZ proposed at Benapole will be implemented first. EPZ at Benapole is focused on the export oriented industries. Another objective is to attract FDI from India.

Contrary to Benapole, the EPZ of Jhikorgachha is expected to attract both domestic and Indian investment. As Jhikorgachha is surrounded by vast agricultural land, Industries of this EPZ are expected to use the agricultural products. It is also expected that each of the EPZs will generate at least 60,000 employments. Areas of EPZs are 268.135 and 304.670 acre for Benapole and Jhikorgachha respectively. Pourashava wise distribution of land use allocated for Manufacturing and processing activities is shown below:

Table 10.29: Town wise distribution of area demarcated as “Manufacturing and processing activities”

SI no	Pourashava	Area (Acre)	Area (Hector)	Percentage of total area
1	Jessore	21.07	8.53	0.53
2	Jhikorgachha	355.42	143.83	9.81
3	Benapole	258.55	104.63	4.55

Source: GIS Database, Development Plan for Benapole-Jessore Highway Corridor (2017-37)

10.16 Agricultural and conservation area

Both agricultural and conservation area are highly flood prone. Conservation area is demarcated by the structure plan. However, during preparation of urban area plan, considering the existing situation, minor modification were made. Jessore being the most densely populated area, most of the agricultural and conservation areas are already under different kinds of usages. Major concentration of these land uses are observed in Benapole and Jhikorgachha. Agricultural activities are also permitted in the conservation area. However, following conditions must be fulfilled:

- a) Land elevation must not be altered
- b) Natural flow of water must not be interrupted
- c) Nature of land cannot be changed

Agricultural area tends to decrease with the increase of rate of urbanization. Distribution of agricultural and conservation areas among the pourashavas are depicted in the following table:

Table 10.30: Pourashava-wise distribution of area demarcated as Agricultural and Conservation land use

Pourashavas	Land use	Area (Acre)	Area (Hector)	Percentage of total area
Jessore	Agricultural	0.13	0.05	0.0032
	Conservation	102.95	41.66	2.59 %
Jhikorgacha	Agricultural	499.43	202.11	13.78
	Conservation	575.91	233.06	15.89 %
Benapole	Agricultural	607.38	245.80	10.68
	Conservation	1977.43	800.24	34.78 %

Source: GIS Database, Development Plan for Benapole-Jessore Highway Corridor (2017-37)

10.17 Administrative Land Use

Jessore being the old district town accommodates highest amount of land for administrative purpose. It is expected that the pourashava will continue to serve the purpose for the years to come. However, administrative use is expected to increase in Benapole responding to increased import-export related activities. However, the planning team found that both the pourashavas have sufficient amount of space already allocated for this purpose. Following table summarizes the pourashava-wise distribution of proposed administrative land use:

Table 10.31: Distribution of “Administrative” Land in Urban Areas

Sl no	Pourashava	Area (Acre)	Area (Hector)	Percentage of total area
1	Jessore	263.21	106.52	6.61
2	Jhikorgachha	38.55	15.60	1.06
3	Benapole	85.23	34.49	1.50

Source: GIS Database, Development Plan for Benapole-Jessore Highway Corridor (2017-37)

Details about the proposed land use distribution for Benapole, Jhikorgachha and Jessore are portrayed in Map 10.5, 10.6 and 10.7 respectively.

10.18 Growth Centers

Growth centers play the most vital role in economic development of the area. Usually these growth centers are hierarchically linked with one another to form a network where the economy circulates and agglomerates. This economic circulation and agglomeration acts as the lifeblood of the economy of the corridor. For the sake of planning, growth centers are defined into the following categories:

Level 1: Serves as the regional market. Very old and established urban center (may also serve as the administrative hub). It is primarily used by intermediary traders exchanging with large buyers and are focal points for wholesale and retail sale of agricultural and non- agricultural goods and services. Large urban centers need regional connectivity. Have highest potentiality of future development.

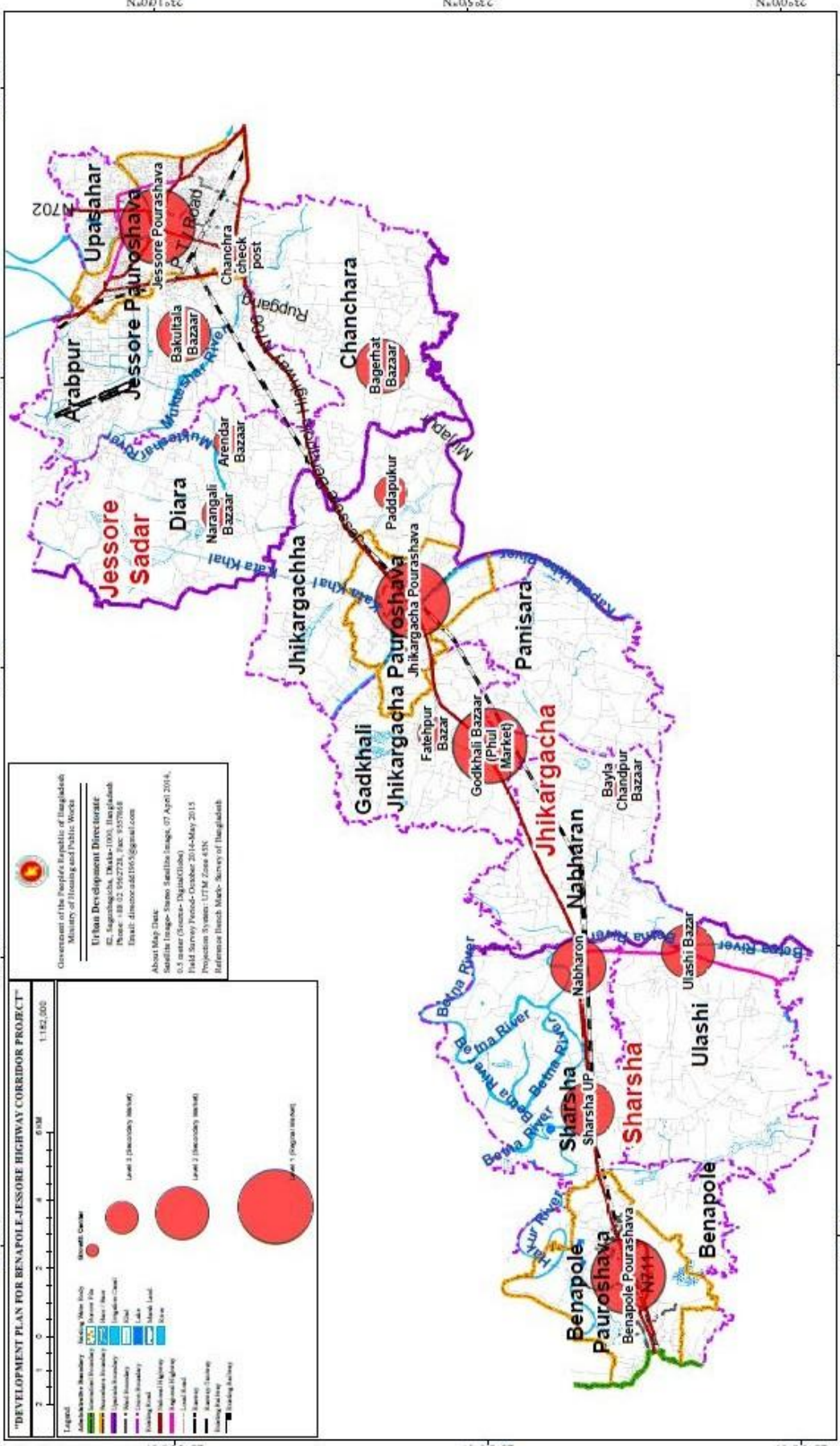
Level 2: Secondary Market, typically serving a Thana. They are used by intermediary traders exchanging with large buyers, and are focal points for wholesale and retail sale of agricultural and non-agricultural goods and services.

Level 3: local assembly markets, used by farmers and local traders exchanging with intermediary traders who move agricultural produce up to higher levels of the marketing system, and for the sale of foodstuffs, agricultural inputs and retail goods.

Map 10.8 shows details about growth center hierarchy. Hierarchy of these growth centers is declared Based on the hierarchy; these growth centers are linked with one another to form a network. Level-1 growth centers are linked with the national highway so that they can contribute in fulfilling the national demand of different kinds of goods. For example, Godkhali Bazar is quite famous for flower business nationally. Growth centers being the lifeblood of the economic activities of the corridor, the planning team suggests to follow the following development strategies for these centers:

- Promote mixed use development in the Rural Growth Centers using the principle of Planned Unit Development (PUD).
- Ensure hierarchical connectivity with the economic nodes and surrounding rural settlements based on the economic demand of the growth centers
- Promote agro-based and agro-supporting, small and cottage industries in the growth centers
- Ensure well-coordinated agricultural value chains in the project area and barrier-free direct entry of the agro-products in the competitive market

Map No.: 10.8 Location of Growth Centers on Benapole-Jessore Highway Corridor



Ensure integrated and planned development considering all agents of development (power, infrastructure, policy support etc.)

- Promotion of Rural Growth Centers as Trading Hub of the Rural Community
- Access of the rural folks of all income-groups (specially marginalized groups) should be ensured in the Growth Centers

10.19 Rural Settlement Zone

Rural settlements are one of the major land uses of the project area. These areas also need community services. For the areas for which such services are not allocated, following principals need to be followed:

- a) To ensure compact urban development, community services should be placed only in the designated urban areas and rural settlements.
- b) Community or neighborhood boundary need to be defined objectively.
- c) Threshold population for each of the community need to be determined and based on the same, need for different kinds of services will be identified.
- d) Maximum participation of the stakeholders should be ensured to identify the locations for different kinds of services. This will maximize the possibility of implementation of the services.
- e) Place making approach of planning can be adopted for planning the community level planning.
- f) Utmost effort should be there to ensure utilization of existing infrastructures (e.g. roads) and minimize destruction of any structures.
- g) Flood level and return period should be considered carefully for identifying the location of the infrastructures.
- h) Instead of locating these services dispersedly, it is better to locate these facilities in cluster. This will be helpful to ensure compact development.

10.20 Implementation, monitoring and evaluation of land use plan

Land use plan is the most important mechanism for development management. Low-density settlements are dispersedly located all over the landscape. However, finding suitable land for physical development work is a very big challenge. As most of the land is privately owned and availability of land in public sector is very inadequate. For infrastructural development, land has to be obtained through acquisition. Other means of participatory land development process (e.g. land readjustment and guided land development) is quite rare for Bangladesh because of lack of policy and legal support and public awareness, complicated land ownership structure, inability of the implementing agencies, top-down nature of decision making, instable and complicated political situation etc. On the other hand, land acquisition process is really complicated and quite long. Often it includes lengthy and complex legal process. This lengthens the project implementation period causing cost overrun.

Funding constraints, on the other hand, is one of the major hindrances of project implementation in Bangladesh. The Pourashava and union porishads do not have sufficient financial capacity to pay for its day to day activities let alone to implement physical development projects. However, Benapole land port is one of the major sources of income generation for the corridor. However, it will require quite a long time and policy support from the government to make the corridor financially solvent and develop ability to implement development projects.



Photograph 10.7: Gadkhali Kali Mondir at Jhikorgachha by the Highway

CHAPTER 11

PERMITTED AND CONDITIONAL USE

11.1 Introduction

In the following paragraphs general definition, permitted and conditionally permitted uses under each Land use zone is furnished one by one. The uses not listed here in any of the category shall be treated as Restricted Use for the Land zone category and shall not be permitted only except decision by the Planning Authority. In such situations the use shall get permission in the category of New Use.

11.2 Residential Zone

Residential Zones are intended primarily for housing development but may also include a range of other uses particularly those that have the potential to foster the development of new residential communities such as schools, small shops, doctor’s chambers, open space like playing fields and so on. Limited Commercial facilities within this zone shall be planned and developed as an integral retail or business unit which, comply with the planned mixed-use concept of the Urban Area Plan.

11.2.1 Land use Permitted in Residential Zone

The following uses in the tables are proposed to be applicable for this zone only.

Table No. 11.1: Land use Permitted in Residential Zone

Permitted
Artisan's Shop
Assisted Living or Elderly Home
Confectionery Shop
Barber Shop
Child Daycare \ Preschool
Cleaning \ Laundry Shop
Communication Service Facilities
Communication Tower Within Permitted Height
Condominium or Apartment
Cottage
Cyber Café
Daycare Center (Commercial or Nonprofit)
Drug Store or Pharmacy
Employee Housing (Guards \ Drivers) \ Ancillary Use
General Store
Grocery Store
High School

Public Transport Facility
Satellite Dish Antenna
Shelter (Passers By)
Shoe Repair or Shoeshine Shop (Small)
CBO Office
Special Dwelling
Temporary Tent
Temporary Pandle for Permitted Function
Newspaper Stand
Specialized School: Dance, Art, Music, Physically Challenged & Others
Transmission Lines
Urban-Nature Reserve
Utility Lines
Woodlot
Children’s Park (Must Have Parking)
ATM Booth
Water Pump \ Reservoir
Monument (Neighborhood Scale)

Household Appliance and Furniture Repair Service (No Outside Storage)
Housing For Seasonal Firm Labor
Landscape and Horticultural Services
Mosque, Place Of Worship
Newspaper Stand
Nursery School
Orphanage
Eidgah
Photocopying and Duplicating Services (No Outside Storage)
Pipelines and Utility Lines
Playing Field
Primary School
Private Garages (Ancillary Use)
Project Identification Signs
Property Management Signs

Bill Payment Booth
Boarding and Rooming House
Dormitory
Memorial Structure (Ancillary)
<i>Neighborhood Center* (Where Neighborhood Center exists)</i>
Community Center
Doctor \ Dentist Chamber
Cultural Exhibits and Libraries
Fast Food Establishment \ Food Kiosk
Flowers, Nursery Stock and Florist Supplies
Fitness Centre
Gaming Clubs
Departmental Stores
Retail Shops \ Facilities

11.2.2 Land use conditionally permitted in Residential Zone

The following uses may be permitted or disallowed in this zone after review and approval by the authority/committee following appropriate procedure while the application meets the criteria mentioned in the requirement.

Table No. 11.2: Land use conditionally permitted in Residential Zone

Conditional
Addiction Treatment Center
Amusement and Recreation (Indoors)
Funeral Services
Art Gallery, Art Studio \ Workshop
Automobile Driving Academy
Beauty and Body Service
Billiard Parlor \ Pool Hall
Book or Stationery Store or Newsstand
Building Maintenance \ Cleaning Services, No Outside Storage
Bus Passenger Shelter
Graveyard \ Cemetery
Coffee Shop \ Tea Stall
Correctional Institution
Courier Service
Crematorium
Plantation (Except Narcotic Plant)
Furniture & Variety Stores
Emergency Shelter
Energy Installation
Garages
Garden Center or Retail Nursery
Fire Brigade Station
Police Station

Temporary Rescue Shed
Guest House
Slaughter House
Static Transformer Stations
Tourist Home or Resort
Market (Bazar)
Optical Goods Sales
Outdoor Café
Outdoor Fruit and Vegetable Markets
Community Hall
Neighborhood Co-Operative Office
Overhead Water Storage Tanks
Row House
Paints and Varnishes Store
Parking Lot
Patio Homes
Photofinishing Laboratory
Post Office
Postal Facilities
Sports and Recreation Club
Tennis Club
Flood Management Structure
Telephone Sub Station
Electrical Sub Station

11.2.3 Restricted Uses in Residential Zone

All uses except permitted and conditionally permitted uses are restricted in this zone.

11.3 Manufacturing and Processing Zone

Promoting the development of industrial areas as the primary locations for uses including manufacturing, repairs, warehousing, distribution, open-storage, waste materials treatment and recovery, and transport operating Centers, industrial zone has been demarked. The development of inappropriate mixes of uses, such as office based industry and retailing will not normally be encouraged here.

It is an objective to ensure that, normally, new buildings in primarily industrial areas are single storey with high ceilings to provide versatility and adaptability to accommodate a broad range of types of plant, machinery and delivery vehicles throughout their design life. It is an objective to ensure that the likely demand for car parking and delivery vehicle facilities are fully met within the site, to apply the highest standards of design, hard and soft landscaping and to ensure that pedestrian access is provided and that provision is made for public transport.

11.3.1 Land use Permitted in Manufacturing and Processing Zone

The following uses in the tables are proposed to be applicable for this zone only.

Table No. 11.3: Land use Permitted in Manufacturing and Processing Zone

Permitted	
Confectionery Shop	Public Transport Facility
Bank & Financial Institution	Restaurant
Bicycle Assembly, Parts and Accessories	Retail Shops \ Facilities
Blacksmith	Salvage Processing
Bus Passenger Shelter	Salvage Yards
Communication Tower Within Permitted Height	Satellite Dish Antenna
Freight Transport Facility	Sawmill, Chipping and Pallet Mill
Police Box \ Barrack	Shelter (Passers By)
Fire \ Rescue Station	Television, Radio or Electronics Repair (No Outside Storage)
Grocery Store	Transmission Lines
Household Appliance and Furniture Repair Service	Truck Stop & Washing or Freight Terminal
Machine Sheds	Utility Lines
Meat and Poultry (Packing & Processing)	Wood Products
Mosque, Place Of Worship	Woodlot
Newspaper Stand	ATM Booth
Photocopying and Duplicating Services	Water Pump \ Reservoir
Pipelines and Utility Lines	Effluent Treatment Plant
Printing, Publishing and Distributing	Social Forestry

11.3.2 Land use conditionally permitted in Manufacturing and Processing Zone

The following uses may be permitted or denied in this zone after review and approval by the authority/committee following appropriate procedure.

Table 11.4: Land use conditionally permitted in Manufacturing and Processing Zone

Conditional	
Amusement and Recreation (Indoors)	Super Store
Appliance Store	Lithographic or Print Shop
Plantation (Except Narcotic Plant)	Motor Vehicle Fuelling Station \ Gas Station
Cyber Café	Motorcycle Sales Outlet
Daycare Center (Commercial or Nonprofit)	Outdoor Fruit and Vegetable Markets
Doctor \ Dentist Chamber	Outside Bulk Storage
Electrical and Electronic Equipment and	Overhead Water Storage Tanks
Employee Housing	Painting and Wallpaper Sales
Energy Installation	Paints and Varnishes
Fast Food Establishment \ Food Kiosk	Parking Lot
Garages	Parking Lot (Commercial)
Grain & Feed Mills	Private Garages
Incineration Facility	Retail Shops Ancillary To Studio \ Workshop
	Jute Mill

11.3.3 *Restricted Uses in Manufacturing and Processing Zone:* All uses except permitted and conditionally permitted uses.

11.4 Commercial Zone

The commercial zone is intended to provide all the facilities and services with the commercial land use. Commercial zones are designed into two types: office and business predominated. Commercial Office Zone is an office pre-dominated commercial zone that mainly supports the official works. It supports other types of commercial activities, too. Proposals for these areas involve large-scale buildings and require a high degree of accessibility and parking space for car users and delivery vehicles.

11.4.1 *Land use permitted in commercial zone*

Commercial office zone is mainly intended for supporting the official works. There are several functions that are permitted in this zone.

Table 11.5: Land use permitted in commercial zone

Permitted
Accounting, Auditing or Book keeping Services
Billboards, Advertisements & Advertising Structure
Agri-Business
Agricultural Sales and Services
Ambulance Service
Antique Shop
Appliance Store
Auction Market
Auditorium, Coliseum, Meeting Halls, and
Auto Leasing or Rental Office
Auto Paint Shop
Auto Parts and Accessory Sales (Indoors)
Auto Repair Shop (With Garage)
Automobile Wash
Automobile Sales
Confectionery Shop
Bakery or Confectionery Retail
Bank & Financial Institution
Bar (Licensed)
Barber Shop
Beauty and Body Service
Bicycle Shop
Billiard Parlor \ Pool Hall
Book or Stationery Store or Newsstand
Building Material Sales or Storage (Indoors)
Bulk Mail and Packaging
Bus Passenger Shelter

Department Stores, Furniture & Variety Stores
Doctor \ Dentist Chamber
Drug Store or Pharmacy
Electrical and Electronic Equipment and
Fast Food Establishment \ Food Kiosk
Freight Handling, Storage & Distribution
Freight Transport Facility
Freight Yard
General Store
Grocery Store
Guest House
Hotel or Motel
Inter-City Bus Terminal
Jewelry and Silverware Sales
Junk \ Salvage Yard
Super Store
Market (Bazar)
Mosque, Place Of Worship
Motorcycle Sales Outlet
Multi-Storey Car Park
Newspaper Stand
Outdoor Fruit and Vegetable Markets
Outdoor Recreation, Commercial
Parking Lot (Commercial)
Pet Store
Photocopying and Duplicating Services
Photofinishing Laboratory & Studio
Pipelines and Utility Lines
Post Office

Cinema Hall
Communication Service Facilities
Communication Tower Within Permitted Height
Computer Maintenance and Repair
Computer Sales & Services
Conference Center
Construction Company
Courier Service
Cyber Café
Daycare Center (Commercial or Nonprofit)

Preserved Fruits and Vegetables Facility \ Cold Storage
Printing, Publishing and Distributing
Project Identification Signs
Property Management Signs
Public Transport Facility
Refrigerator or Large Appliance Repair
Resort
Restaurant
Retail Shops \ Facilities
Salvage Processing

11.4.2 *Land use Conditionally Permitted in commercial zone:* Some functions are permitted with some condition in this zone.

Table 11.6: Land use conditionally permitted in commercial zone

Conditional
Amusement and Recreation (Indoors)
Bicycle Assembly, Parts and Accessories
Broadcast Studio \ Recording Studio (No Audience)
Coffee Shop \ Tea Stall
Concert Hall, Stage Shows
Construction, Survey, Soil Testing Firms
Trade Shows
Craft Workshop
Plantation (Except Narcotic Plant)
Energy Installation
Firm Equipment Sales & Service
Agricultural Chemicals, Pesticides or Fertilizers Shop
Fitness Centre
Flowers, Nursery Stock and Florist Supplies
Forest Products Sales
Fuel and Ice Dealers
Garages
Garden Center or Retail Nursery
Police Box \ Barrack

Fire \ Rescue Station
Grain & Feed Mills
Household Appliance and Furniture Repair Service
Incineration Facility
Indoor Amusement Centers, Game Arcades
Indoor Theatre
Lithographic or Print Shop
Motor Vehicle Fuelling Station \ Gas Station
Musical Instrument Sales or Repair
Optical Goods Sales
Painting and Wallpaper Sales
Paints and Varnishes
Parking Lot
Patio Homes
Postal Facilities
Poultry
Private Garages
Professional Office
Retail Shops Ancillary To Studio \ Workshop
Stone \ Cut Stone Products Sales

11.4.3 *Restricted Uses: in commercial zone:* All uses except permitted and conditionally permitted uses.

11.5 Conservation Zone

This area is the most frequently flooded area (2.33 year return period flooding). Characteristics of this area need to be preserved. Water bodies are our life providers. So, all existing water courses, rivers, lakes, tanks should be protected. The boundary of water bodies and inundation should be delineated as per flood analysis. Flood and Land Zoning and relate to high tide level or high flood level. No construction should be permitted in water bodies' premises and the water spreads. Fishing activities, boating and picnics along the river banks, recreational activities are considered as only exceptions. Platforms for fishing and rain shelters, jetties for boating should be considered as friendly structures. However, the existing rural homesteads located in this zone should not be evicted or allowed to be expanded. Agricultural activities are allowed in this zone without changing the characteristics of land. Natural flow of water should not be interrupted under any circumstances.

11.5.1 Land use Permitted in Conservation Zone

The following uses in the tables are proposed to be applicable for this zone only.

Table 11.7: Land use Permitted in Conservation Zone

Agricultural Dwellings and all kinds of	Static Electrical Sub Stations
Animal Husbandry	Transmission Lines
Animal Shelter	Utility Lines
Graveyard \ Cemetery	Woodlot
Communication Tower Within Permitted Height	Plantation (Except Narcotic Plant)
Cottage (existing inhabitants should have de- facto right, new ones should not be permitted)	Social Forestry
Crematorium	Memorial Structure
Dairy Farming	Research organization (Agriculture \ Fisheries)
Housing For Seasonal Firm Labor	Energy Installation
orphanage	Garden Center or Retail Nursery
Outdoor Religious Events (Eidgah)	Emergency Shelter
Playing Field	Sports and Recreation Club, Firing Range: Indoor
Satellite Dish Antenna	Fish Hatchery
NGO \ CBO Facilities	Aquatic Recreation Facility (Without Structure)
Special Dwelling (E.G. Dorm For Physically	Fishing Club
Temporary Shed \ Tent	Utility Lines
	Water Parks and water based recreational facilities
	Memorial Structure

11.5.2 Land use conditionally permitted in Conservation Zone

The following uses may be permitted or disallowed in this zone after review and approval by the authority/committee following appropriate procedure while the application meets the criteria mentioned in the requirement.

Table 11.8: Land use conditionally permitted in Conservation Zone

Conditional
Artisan's Shop (Potter, Blacksmith, and Goldsmith Etc.)
Motorized Recreation

11.5.3 Restricted Uses in Conservation Zone

All uses except permitted and conditionally permitted uses are restricted in this zone.

11.6 Mixed Use Zone

There are areas where the mixture of uses is such that they can't be segregated, the areas are declared as mixed use zone. Mixed-use development shall mean a development consisting of one or more lots developed as a cohesive project and designed with a blend of various compatible uses such as commercial, residential and industrial. This Zone will contain residential and limited commercial activities only such as small retail, general store, food kiosk etc. Industrial uses within the Mixed Use zone should be restricted to those uses that have a minimal amenity impact on adjoining uses and surrounding residential use. The main purposes of this type of land use classification are:

- To provide for a mixed use development centre in conjunction with the development plan for the overall development, and to provide for high-density residential development, and to identify, reinforce, strengthen and promote urban design concepts and linkages with the existing town centre activity areas so that the pressure on vacant land are minimized.
- The aim is to develop a zone scale retail development in a mixed use centre by densification of appropriate commercial and residential developments ensuring a mix of commercial, recreational, community, educational, civic, cultural, leisure, residential uses, urban streets and urban open spaces, while delivering a quality urban environment which will enhance the quality of life of resident, visitor and workers alike.
- Provide for a range of commercial and service activities at a scale that will protect the planned hierarchy of commercial centers and the Territory's preferred locations for office development.

11.6.1 Land use Permitted in Mixed Use Zone

The following uses in the tables are proposed to be applicable for this zone only.

Table 11.9: Land use Permitted in Mixed Use Zone

Permitted
Accounting, Auditing or Bookkeeping Services
Addiction Treatment Center
Billboards, Advertisements & Advertising Structure
Agricultural Sales and Services
Antique Store
Appliance Store
Art Gallery, Art Studio \ Workshop
Artisan's Shop
Assisted Living or Elderly Home
Auditorium, Coliseum, Meeting Halls, and Conference Facilities, Convention
Auto Leasing or Rental Office
Automobile Wash
Automobile Driving Academy
Confectionery Shop
Bakery or Confectionery Retail
Bank & Financial Institution
Barber Shop
Bicycle Shop
Billiard Parlor \ Pool Hall
Blacksmith
Boarding and Rooming House
Book or Stationery Store or Newsstand
Bus Passenger Shelter
Child Daycare \ Preschool
Cleaning \ Laundry Shop
Commercial Recreational Buildings
Communication Service Facilities
Communication Tower Within Permitted Height
Community Center
Condominium or Apartment
Correctional Institution
Courier Service
Cyber Café
Daycare Center (Commercial or Nonprofit)
Doctor \ Dentist Chamber
Employee Housing
Fabric Store

Fast Food Establishment \ Food Kiosk
Funeral Services
General Store
Grocery Store
Guest House
Hospital
Jewelry and Silverware Sales
Landscape and Horticultural Services
Mosque, Place Of Worship
Newspaper Stand
Nursery School
Photocopying and Duplicating Services
Pipelines and Utility Lines
Primary School
Project Identification Signs
Property Management Signs
Public Transport Facility
Resort
Satellite Dish Antenna
Shelter (Passers By)
Shoe Repair or Shoeshine Shop (Small)
Slaughter House
Social organization
Software Development
Special Dwelling
Toys and Hobby Goods Processing and Supplies
Training Centre
Transmission Lines
Utility Lines
Vehicle Sales & Service, Leasing or Rental
Warehousing
Woodlot
Children's Park
ATM Booth
Water Pump \ Reservoir
Social Forestry
Dormitory
Rickshaw \ Auto Rickshaw Stand

11.6.2 *Land use Conditionally Permitted in Mixed Use Zone:* The following uses may be permitted or disallowed in this zone after review and approval by the authority/committee.

Table 11.10: Land use conditionally permitted in Mixed Use Zone

Conditional	Commercial Office
Agricultural Chemicals, Pesticides or Fertilizers Shop	Project Office
Amusement and Recreation (Indoors)	Government Office
Beauty and Body Service	Hotel or Motel
Broadcast Studio \ Recording Studio (No Audience)	Household Appliance and Furniture Repair Service
Building Maintenance \ Cleaning Services, No Outside Storage	Indoor Amusement Centers, Game Arcades
Building Material Sales or Storage (Indoors)	Indoor Theatre
Graveyard \ Cemetery	Lithographic or Print Shop
Coffee Shop \ Tea Stall	Market (Bazar)
Computer Maintenance and Repair	Health Office, Dental Laboratory, Clinic or Lab
Computer Sales & Services	Musical Instrument Sales or Repair
Concert Hall, Stage Shows	Optical Goods Sales
Conference Center	Outdoor Café
Construction Company	Outdoor Fruit and Vegetable Markets
Construction, Survey, Soil Testing Firms	Painting and Wallpaper Sales
Cottage	Paints and Varnishes
Counseling Services	Patio Homes
Craft Workshop	Photofinishing Laboratory & Studio
Crematorium	Poultry
Plantation (Except Narcotic Plant)	Printing, Publishing and Distributing
Cultural Exhibits and Libraries	Psychiatric Hospital
Department Stores, Furniture & Variety Stores	Retail Shops Ancillary To Studio \ Workshop
Drug Store or Pharmacy	Radio \ Television or T&T Station With Transmitter Tower
Energy Installation	Refrigerator or Large Appliance Repair
Fitness Centre	Restaurant
Flowers, Nursery Stock and Florist Supplies	Retail Shops \ Facilities
Freight Handling, Storage & Distribution	Sporting Goods and Toys Sales
Freight Transport Facility	Sports and Recreation Club, Firing Range: Indoor
Gaming Clubs	Telephone Exchanges
Garages	Television, Radio or Electronics Repair (No Outside Storage)
Garden Center or Retail Nursery	

11.6.3 *Restricted Uses in Mixed Use Zone*

All uses except permitted and conditionally permitted uses are restricted in this zone.

11.7 Community Facilities

11.7.1 Land use Permitted in community facilities

The following uses in the tables are proposed to be applicable for this zone only.

Table No. 11.11: Land use Permitted in community facilities

Permitted	
Addiction Treatment Center	Nursery School
Billboards, Advertisements & Advertising Structure	Outdoor Religious Events
Art Gallery, Art Studio \ Workshop	Photocopying and Duplicating Services
Automobile Driving Academy	Post Office
Confectionery Shop	Primary School
Bus Passenger Shelter	Professional and NGO Office
Child Daycare \ Preschool	Project Identification Signs
College, University, Technical Institute	Property Management Signs
Communication Service Facilities	Public Transport Facility
Communication Tower Within Permitted Height	Satellite Dish Antenna
Conference Center	School (Retarded)
Correctional Institution	Scientific Research Establishment
Cultural Exhibits and Libraries	Shelter (Passers By)
Cyber Café	Specialized School: Dance, Art, Music & Others
Freight Transport Facility	Training Centre
General Store	Transmission Lines
Grocery Store	Utility Lines
High School	Vocational, Business, Secretarial School
Hospitals, Clinics and other kinds of health facilities	Woodlot
Lithographic or Print Shop	ATM Booth
Mosque, Place Of Worship	Water Pump \ Reservoir
Multi-Storey Car Park	Social Forestry
Graveyard / Crematorium	Dormitory
Newspaper Stand	
	Veterinary School \ College and Hospital

11.7.2 Land use conditionally permitted in community facilities

The following uses may be permitted or denied in this zone after review and approval by the authority/committee.

Table No. 11.12: Land use conditionally permitted in community facilities

Conditional	
Auditorium, Coliseum, Meeting Halls, and Conference Facilities, Convention	Drug Store or Pharmacy
Bank & Financial Institution	Fast Food Establishment \ Food Kiosk
Barber Shop	Flowers, Nursery Stock and Florist Supplies
Boarding and Rooming House	Gallery \ Museum
Book or Stationery Store or Newsstand	Garages
Coffee Shop \ Tea Stall	Indoor Theatre
Counseling Services	orphanage
Courier Service	Outdoor Café
Plantation (Except Narcotic Plant)	Parking Lot
Daycare Center (Commercial or Nonprofit)	Pipelines and Utility Lines
Doctor \ Dentist Chamber	Postal Facilities
	Psychiatric Hospital

11.7.3 Restricted Uses: in community facilities

All uses except permitted and conditionally permitted uses are restricted in this zone.

11.8 Administrative Zone

Administrative zone will provide some space for agglomeration of administrative structures to make a convenient communication among them. Here all of the important government or non government structures will be placed. The main purpose of this zone is to agglomerate the administrative structures within a certain boundary for convenience of people.

11.8.1 Land use Permitted

The following uses in the tables are proposed to be applicable for this zone only.

Table 11.13: Land use Permitted in Administrative Zone

Permitted	
Accounting, Auditing or Bookkeeping Services	Guest House
Billboards, Advertisements & Advertising Structure	Multi-Storey Car Park
Confectionery Shop	Newspaper Stand
Bus Passenger Shelter	Outdoor Religious Events
Civic Administration	Photocopying and Duplicating Services
Communication Service Facilities	Post Office
Communication Tower Within Permitted Height	Professional Office
Construction, Survey, Soil Testing Firms	Public Transport Facility
Cultural Exhibits and Libraries	Satellite Dish Antenna
Cyber Café	Scientific Research Establishment
Emergency Shelter	Shelter (Passers By)
Freight Transport Facility	Training Centre
General Store	Transmission Lines
Project Office	Utility Lines
Government Office	Woodlot
Grocery Store	ATM Booth
	Water Pump \ Reservoir
	Social Forestry

11.8.2 Land use conditionally Permitted Administrative Zone

The following uses may be permitted or denied in this zone after review and approval by the authority/committee.

Table 11.14: Land use conditionally permitted in Administrative Zone

Conditional	
Amusement and Recreation (Indoors)	Fast Food Establishment \ Food Kiosk
Auditorium, Coliseum, Meeting Halls, and	Flowers, Nursery Stock and Florist Supplies
Bank & Financial Institution	Freight Handling, Storage & Distribution
Boarding and Rooming House	Freight Yard
Book or Stationery Store or Newsstand	Gallery \ Museum
Coffee Shop \ Tea Stall	Garages
Conference Center	Police Box \ Barrack
Courier Service	Fire \ Rescue Station
Plantation (Except Narcotic Plant)	Lithographic or Print Shop
Daycare Center (Commercial or Nonprofit)	Mosque, Place Of Worship
Detention Facilities	Outdoor Café
Doctor \ Dentist Chamber	Parking Lot
Energy Installation	Parking Lot (Commercial)
	Pipelines and Utility Lines
	Postal Facilities

11.8.3 Restricted Uses n Administrative Zone: All uses except permitted and conditionally permitted uses are restricted in this zone.

11.9 Agricultural Zone

Agricultural Zone is the zone of ‘food production’ where agricultural production will be encouraged predominantly. Here any type of agricultural activity such as crop production; aquaculture etc. will be predominant and will be permitted to ensure food security. The Agricultural zone is intended to prevent scattered indiscriminate urban development and to preserve the agricultural nature within areas which are predominantly vacant and which presently show significant potential for development; thus are subject to preservation. Proposes of the zone are:

- To protect agricultural land from development that would restrict its use, and to provide for the development of existing established uses.
- To prevent the development of premature urban growth on un-serviced or unsuitable agricultural land.
- These zones intended to maintain agricultural use of those areas best suited to farming activity, and, recognizing that prime farm land is a non-renewable resource, to protect and preserve such land for agricultural usage.
- The intent is to provide for an environment of predominantly agricultural activity, wherein residential development is clearly an accessory and ancillary use to a farming operation.
- To conserve the Township’s agricultural lands and encourage the long term viability of agricultural operations and the supporting agricultural industry.

11.9.1 Land use Permitted in Agricultural Zone

The following uses in the tables are proposed to be applicable for this zone only.

Table No. 11.15: Land use Permitted in Agricultural Zone

Permitted	Animal Shelter
Food Grain Cultivation	Duckery
Vegetable Cultivation	Aquatic Recreation Facility (Without Structure)
Cash Crop Cultivation	Tree Plantation (Except Narcotic Plant)
Horticulture	Aquaculture
Arboriculture	Static Transformer Stations
Dairy Farming	Transmission Lines
Deep Tube Well	Utility Lines
Shallow Tube Well	Woodlot
Irrigation Facilities (Irrigation Canal, Culvert, Temporary Structure (Agricultural))	Social Forestry

11.9.2 Land use conditionally permitted in Agricultural Zone

Table 11.16: Land use conditionally permitted in Agricultural Zone

Conditional
Graveyard \ Cemetery
Communication Tower Within Permitted Height
Crematorium
Fish Hatchery
Garden Center or Retail Nursery
Poultry

11.9.3 Restricted Uses in Agricultural Zone

All uses except permitted and conditionally permitted uses are restricted in this zone.

11.10 Recreation Zone

The primary uses in these areas include playgrounds, parks, and other areas for outdoor activities, sports centers, sports pitches, outdoor recreation and landscaped areas. High standards of accessibility are essential in this zone. Accessibility standard is related to the use of that particular open space. For example, local amenity areas and playgrounds may require emphasis on access for pedestrians and cyclists. Sports Centers serving a wider catchments area will require accessibility by public transport and car users.

11.10.1 Land use Permitted in Recreation Zone: The following uses in the tables are proposed to be applicable for this zone only.

Table 11.17: Land use Permitted in Recreation Zone

Permitted	
Botanical Garden & Arboretum	Playing Field
Bus Passenger Shelter	Special Function Tent
Caravan Park \ Camping Ground	Tourist facilities
Carnivals and Fairs	Tennis Club
Circus	Transmission Lines
Plantation (Except Narcotic Plant)	Urban-Nature Reserve
Landscape and Horticultural Services	Utility Lines
Open Theater	Woodlot
Park and Recreation Facilities (General)	Zoo
Pipelines and Utility Lines	Roadside Parking
	Social Forestry
	Memorial Structure

11.10.2 Land use conditionally permitted in Recreation Zone

Table 11.18: Land use conditionally permitted in Recreation Zone

Conditional	
Communication Tower Within Permitted Height	Motorized Recreation
Trade Shows	Outdoor Recreation Facilities
Fitness Centre	Outdoor Recreation, Commercial
Flowers, Nursery Stock and Florist Supplies	Outdoor Sports and Recreation
Golf Course	Park Maintenance Facility
	Retreat Center
	Sports and Recreation Club, Firing Range: Indoor

11.10.3 Restricted Uses in Recreation Zone

All uses except permitted and conditionally permitted uses are restricted.

11.11 Education and Research Zone

11.11.1 Land Use Permitted in Education and Research Zone

The following uses in the tables are proposed to be applicable for this zone only.

Table 14.19: Land Use Permitted in Education and Research Zone

Permitted uses under Education &	
Addiction Treatment Center	Nursery School
Billboards, Advertisements & Advertising	Outdoor Religious Events
Art Gallery, Art Studio \ Workshop	Photocopying and Duplicating Services
Automobile Driving Academy	Post Office
Confectionery Shop	Primary School
Bus Passenger Shelter	Professional Office
Child Daycare \ Preschool	Project Identification Signs
College, University, Technical Institute	Property Management Signs
Communication Service Facilities	Public Transport Facility
Communication Tower Within Permitted Height	Satellite Dish Antenna
Conference Center	School (Retarded)
Correctional Institution	Scientific Research Establishment
Cultural Exhibits and Libraries	Shelter (Passers By)
Cyber Café	Specialized School: Dance, Art, Music & Others
Freight Transport Facility	Training Centre
General Store	Transmission Lines
Grocery Store	Utility Lines
High School	Vocational, Business, Secretarial School
Hospital	Woodlot
Lithographic or Print Shop	ATM Booth
Mosque, Place Of Worship	Water Pump \ Reservoir
Multi-Storey Car Park	Social Forestry
Newspaper Stand	Dormitory
	Veterinary School \ College and Hospital

11.11.2 Land Use Conditionally Permitted in Education and Research Zone

The following uses may be permitted or denied in this zone after review and approval by the authority/committee.

Table 11.20: Land Use Conditionally Permitted in in Education and Research Zone

Conditionally permitted uses under Education and Research Zone	
Auditorium, Coliseum, Meeting Halls, and Conference Facilities, Convention	Doctor \ Dentist Chamber
Bank & Financial Institution	Drug Store or Pharmacy
Barber Shop	Fast Food Establishment \ Food Kiosk
Boarding and Rooming House	Flowers, Nursery Stock and Florist Supplies
Book or Stationery Store or Newsstand	Gallery \ Museum
Coffee Shop \ Tea Stall	Garages
Counseling Services	Indoor Theatre
Courier Service	orphanage
Plantation (Except Narcotic Plant)	Outdoor Café
Daycare Center (Commercial or Nonprofit)	Parking Lot
	Pipelines and Utility Lines
	Postal Facilities
	Psychiatric Hospital

Restricted Uses: All uses except permitted and conditionally permitted uses are restricted in this zone.

11.12 Rural settlement Zone

Rural settlements are the hub of rural livelihood which contains traditional culture as well as ecology and generates agriculture production. Low density rural settlements are composite hub for rural livelihood. In this plan, the areas within 5 to 20 years return period inundation are proposed for rural settlement. Other than dwellings, agricultural and related facilities that enhance livelihood, nothing should be allowed in this area. As required amount of manpower is already available in the designated areas, no additional dwelling units (residential land) should be allowed in this area.

11.13 Designated Urban Areas

In this plan, the areas over 20 years return period inundation are proposed for urban and urban promotion. There are three Pourashavas in the project Area, namely Jessore, Jhikorgachha and Benapole. With much lower current density, it is expected that these areas would be able to host the increased population in the years to come. Plan of these urban centers are prepared to ensure safe, easily accessible, environmentally sustainable and healthy living environment. These areas are also the main centers of employment and economy with various types like higher order commercial establishments, specific non-polluting green industrial establishments, mixed/multiple uses in the concerned master plans, urban infrastructure etc. The corridor is supposed to have interchange of goods from one mode of transport to another mode of transport especially through these nodal points. The corridor would act as a transit hub among different modes of transport. Loading, unloading and related main and ancillary activities are to be in these uses.

11.14 Urban Promotion Zone

Apart from the designated urban areas within areas over 20 years return period inundation, there are many places where economic agglomeration can be observed. These areas have very high potentiality for future urban formation. These areas are relatively flood free. Detailed plan for these areas are not developed under this corridor plan, after the expiration of the current urban area plan (2027).

11.15 Restricted Zone

Jessore Cantonment is located on the west by the Jessore town. The Airport is also located by the west of the cantonment. The airport has some restriction over the surrounding lands in regards of building heights. On the other hand, the cantonment is a key point installation. For, this surrounding, land use should be kept a rural/agriculture/conservation.

11.16 Water Body Buffer Zone

According to water act for shore up to 50 meters of rivers within the planning area has been designated as no construction zone. In addition to other water bodies it is 10 meters. The buffer would preserve the conservation zone as well as water and environmental resources.

11.17 Border Buffer

The 'Joint India-Bangladesh Guide Lines for Border Authorities, 1975' suggests that the border security forces on both sides shall observe some simple rules to avoid possibility of unpleasant incidents, which includes defensive works of any nature within 150 yards on each side of the border. Within this zone any construction would require clearance from the border guard authority.

11.18 National Highway Buffer Zone

One of the prime development control measures for the planning area is to prohibit ribbon development in order to maintain efficient traffic carrying capacity of the national highway. On the other hand, any high intensity development in the existing urban centers or growth centers can easily be served with required utilities. For this the plan recommends to prohibit any high intensity development within 100 meters from both sides of the national highway.

PART 3
ACTION AREA PLAN

CHAPTER 12

ACTION AREA PLAN

12.1 Introduction

Preparation of Action Area Plan (AAP) is not enough for implementation of the plan. Often it requires significant amount of money that is not available in a country like Bangladesh. To minimize the implementation cost of development landowners need to be involved in the development process. Structure plan also suggests promoting participatory development. Several kinds of land development techniques are there to be adopted. Such initiative on one hand ease off the financial burden on the implementing authority, on the other hand major objective of participatory development can also be achieved.

12.2 Objectives of AAP

AAP deals with the projects as a part of implementation strategy. Usually, AAP translates the structure plan and Urban and Rural Area Plan through formulating projects and implementation procedure.

12.3 Duration of AAP

The AAP is derived based on the policies set in the Structure Plan and components consider in the Urban Area Plan for the fulfillment of the strategies identified in the Structure Plan. AAP is prepared for a duration of 05 (five) years. It will not be reviewed during its tenure.

12.4 Area Development Proposals

Implementation of the planning proposals will is not expected to start right now. There are several reasons behind the same, firstly, because of resource constraint of the implementing agencies, secondly, because of so many reasons, private sector investment is also very limited. Moreover, all the implementing agencies need come together to implement the plan. In most cases, mutual collaboration is missing. Moreover, government funding process is often a lengthy and complicated process. If the respective implementing agencies fails to come up with constructions within a reasonable time period, then the investment made in development of the infrastructure will not be meaningful. There is a possibility that the facilities will remain unutilized or underutilized for quite a long time. Thus while prioritizing any area for development, we need to be judicious supported by strong logic to make sure that the infrastructure is properly utilized. While prioritizing the areas, following criteria were considered:

- a) Connectivity and strength of the economic/activity hubs
- b) Trend of spatial growth and intensity of the area
- c) Governments policy, priorities and trend of investment (reflected through ADP) for the area
- d) Current condition and future of the utilities and services facilities (i.e. livability of the people)
- e) Importance of the area in terms of future public establishments

Considering the aforementioned criteria, the planning team apprehended that Benapole Pourashava and its vicinity should get highest priority for all kinds of development. Benapole pourashava fulfills all the required conditions and the criteria. Next area should be Jhikorgachha. As stated at different part of the report that this area is one of the oldest

habitation of the corridor. Availability of huge agricultural hinterland, connectivity with Jessore and Benapole, high potentiality of the river based navigation system (the Kapotakha River), already developed large scale poultry firm and some heavy industries in close proximity have made this pourashava one of the most potential places for future urban development. Sharsha Upazilla HQ and Goadkhali are also very potential for development.

Jessore being already developed and highly populous, there is nothing much to do in terms of new development. However the city is still low-rise in nature. It is expected that with the pace of time, high-rise buildings will evolve in this area that will definitely increase the population density, create tremendous pressure on the transportation system, utilities and services facilities. Moreover the corridor road will pass this city using Jessore City Bypass. It is expected that after full construction of the corridor road, Jessore will also be facing tremendous pressure of immigration of population from the southern part of Bangladesh. Thus, the planning team thinks that Jessore city should be the third most important place for future investment.

In terms of time, Benapole Pourashava should be prioritized immediately for development for the next 05 (five) years (2017-2022). During this period, it is also expected that the corridor road will be improved and remaining part of the said road to ensure connectivity with the capital will be constructed. It is also expected that initiatives will be taken to implement the proposed regional infrastructures.

Afterwards, Jhikorgacha's development will get utmost priority. This is because, once the corridor road is prepared, people will start moving towards the corridor to enjoy better economic prospects. Jhikorgacha being close to both Jessore and Benapole, people will prefer to live in this pourashava for cheap house rent and commute to both of these pourashavas for their day to day work. Jhikorgacha should be prioritized in the year 2023-2028.

Jessore should be the last in terms of physical development. Its development may take place between 2029-2034. As stated earlier, this pourashava is already developed. New intervention may be easier said than done. It is of utmost importance to adopt participatory development initiatives, especially for land related development.

12.5 Regional Infrastructures

The planning team has proposed a few regional level infrastructures for the sake of better functioning of the corridor road. A list of these infrastructures are presented in Appendix 12.1 that also includes area and location. Detailed design of these infrastructures are not prepared under this plan because of so many reasons. However, design criteria are presented below:

12.5.1 Bus Passenger's Resting Area

This area is proposed to be located at Sadirali Mouza of Goadkhali Union on an area of approximately 30 acre. There are several reasons behind choosing this location:

- a. Such resting places should be away from the corridor road to protect the passengers from the negative impact of sound and air pollution incurred by heavy traffic on the corridor road.
- b. The area is located by the Betna River. Thus the area has rich variety of natural elements.
- c. The area is located very close to Goadkhali Flower market and Jhikorgacha Pourashava. Touristic elements can be developed in these areas for income generation. Moreover, these areas will also provide urban amenities for the passengers.
- d. This location has sufficient amount of open space to provide all the required services

The resting area should be protected by wall. Visual materials should be used in such a way that would make the area aesthetically beautiful and attractive. The area should have the following facilities-

1. Police and Border Guard Bangladesh (BGB) station to provide security to the passengers
2. Fire safety equipment
3. Motel(s) for overnight stay
4. Clinic or other such kind of health facilities to respond to the emergencies
5. Tourist shop to represent the culture and heritage of Bangladesh
6. Shops and showrooms for showcasing the industrial products of Bangladesh
7. Tourist Information Center
8. Information counters of different Government offices like Board of Investments, Parjatan Corporation, Ministry of commerce and industries etc.
9. Service centers and mechanic's shops for the Buses
10. Restaurants and grocery shops
11. Small botanical garden to showcase the flora and fauna of Bangladesh
12. Parking area for different kinds of motor vehicles
13. Bathing and toilet facilities

12.5.2 Motorist's Parking Area (or Highway Resting Area)

Motorist's parking area is proposed for the truck drivers and other drivers. Such kinds of facilities should be available for every one hour's driving distance (at an interval of 80 km). It is expected that after crossing the border or before going to the border to enter into India, the truck drivers and other motorists will stay here, take rest and finish necessary security check. Location for the parking area has been chosen at Dhopakhola Mouza of Arabpur Union on an area of approximately 40 acre. The planning team recommend to develop the area in phases. Because, if the whole area is developed right not, it will remain underutilized. The reason behind selecting this site are as follows:

1. Such huge amount of land by the road is not readily available.
2. The site is located between Jessore and Jhikorgachha that makes the area relatively more accessible by the motorists.
3. The site is quite away from the railway line to minimize the negative impact of sound and vibration of the railway.
4. Because of gathering of huge amount of motor vehicles, there is a possibility that the people living close to such place may face tremendous negative impact of sound and air pollution. It is located at safe distance form nearest habitation. Thus it is safe.
5. The whole area can be compartmentalized for different kinds of usages (e.g. containized vehicles, trucks, and others), leaving some spaces common for all. A design need to be prepared for the full area keeping the implementation phases in mind. Following facilities should be available in this area-
6. Police and Border Guard Bangladesh (BGB) station to provide security to the motorists
7. Fire safety equipment
8. Motel(s) for overnight stay
9. Clinic or other such kind of health facilities to respond to the emergencies
10. Service centers, retail hardware shops and mechanic's shops
11. Information center (including all the facilities of Tourist Information Center)

12. Restaurants and grocery shops
13. Parking area for different kinds of motor vehicles (should be compartmentalized)
14. Bathing and toilet facilities
15. Customs houses (for contained vehicles)

Optional facilities may include:

1. Tourist shop to represent the culture and heritage of Bangladesh
2. Shops and showrooms for showcasing the industrial products of Bangladesh
3. Information counters of different Government offices like Board of Investments, Parjatan Corporation, Ministry of commerce and industries etc.
4. Small botanical garden to showcase the flora and fauna of Bangladesh

12.5.3 Agricultural storage facilities

As identified by the structure plan, the corridor is surrounded by huge agricultural hinterland. Farmers of this vast area will be using the services available within the corridor. Exact demand could not be identified because of lack of data. Thus it is recommended that these facilities must be developed in phases. Food and Agricultural Organization suggested that storage buildings must meet the following requirements-

- prevent the grain from getting wet;
- protect the grain from high temperatures;
- prevent the access of insects, rodents and birds to the storage places;
- facilitate monitoring of grain conservation;
- permit timely insecticide treatment of bags and premises;
- Facilitate the care of equipment used to move and transport the bags.

FAO in its report entitled “Agricultural engineering in development - Post-harvest operations and management of food grains” has also set forth the location choice criteria for the storage units. Effective protection of stored grain against atmospheric factors (sun, rain, humidity) and smooth operation of storage systems depend on good location and alignment of the buildings. In this respect, the buildings to be used for storage must be:

- located in relatively dry sites not prone to flooding; thus, low-lying areas, clayey or poorly drained soils, and proximity to streams and lakes must be avoided as much as possible;
- located outside towns and, if possible, in areas equidistant from agricultural production areas and near transport facilities;
- located, to the extent possible, near electricity and water distribution systems;
- aligned on a north-south axis so that the sides with the smallest area get the strongest sun.

The planning team have tried their best to identify the location accordingly. However, considering the spatial density of the agricultural products, some of the criteria are relaxed. A total of six ministorage facilities are proposed throughout the corridor in such a way that no area remains underserved or unserved. It is expected that the private investors will come forward to develop these facilities and the farmers will be using the same on rental basis. A list of these ministorage facilities is listed below with phasing.

Table 12.1: List of proposed ministorage facilities with implementation phasing

Sl no.	Union	Mouza	Area (Acres)	Plot no.	Phase
1	Benapole	Gayra	1.922	157- 160, 163	1 st
2	Ullashi	Lautara	0.782	3492	3 rd
3	Sharsha	Shibchandrapur	0.734	149 - 152	1 st
4	Chanchara	Mydia	0.468	4370 - 4373	2 nd
5	Diara	Diara	2.539	185, 186, 212 – 223, 230	2 nd
6	Jhikargacha	Mollikpur, Jhaudia	2.949	105-109, 115-123, 164, 187-191	1 st

Source: GIS Database, Development Plan for Benapole-Jessore Highway Corridor (2017-37)

In addition to the ministorage facilities for the local farmers, the planning team also proposed a CSD (Central Storage Depots) on an area of 15.36 acre at Buruz Bagan mouza at Sharsha Union. There are 5 Silos, 13 Central Storage Depots (CSD) and 600 Local Supply Depots (LSD) in Bangladesh. But other than a private LSD, there is no such facilities available in the corridor. The proposed CSD will not be required right now. It can be implemented between the year 2028-2033.



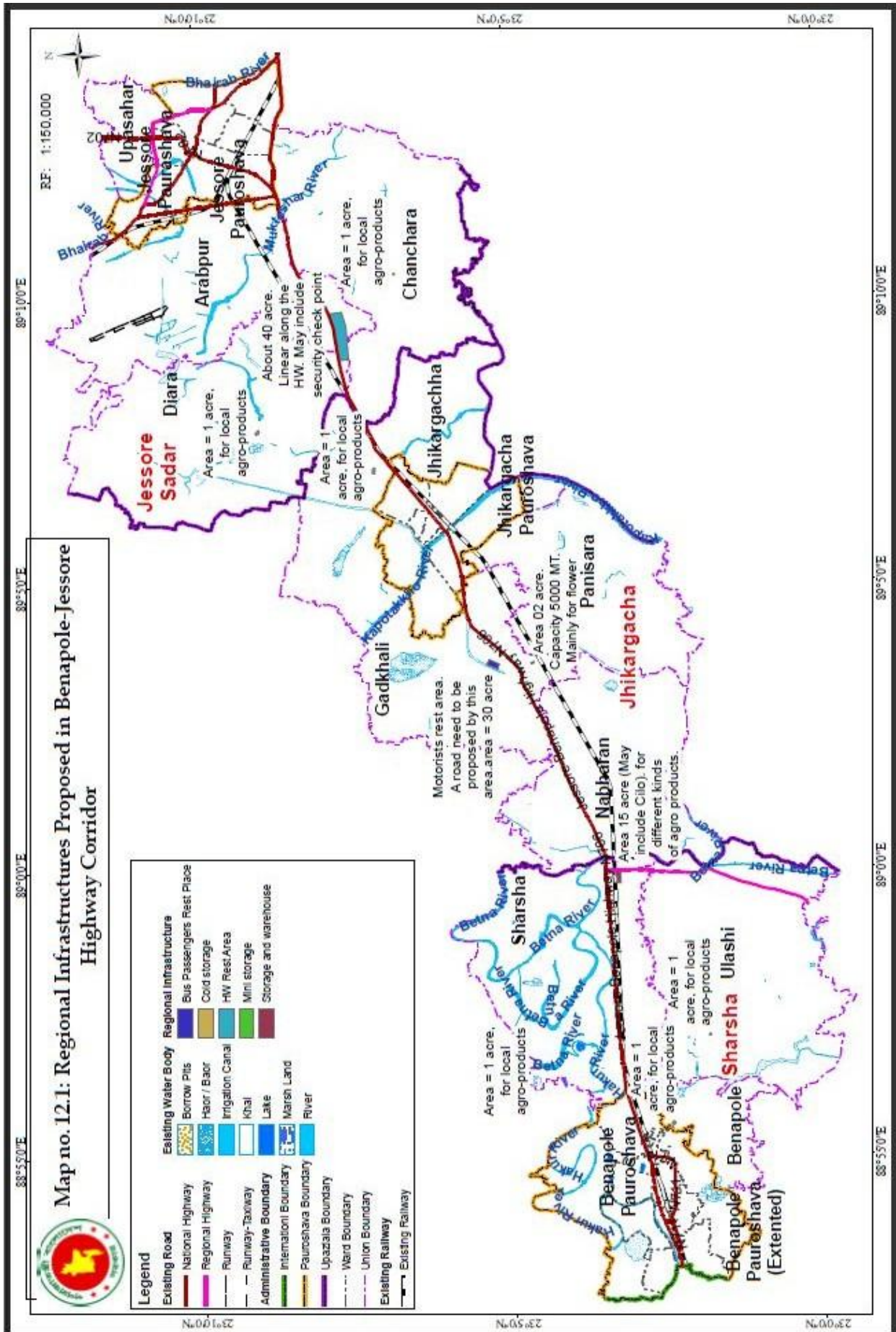
Photograph 12.1: Flower Market, Gadkhali, Jhikorgachha

In addition to all these facilities, the planning team have also proposed a cold storage unit close to Godkhali Flower Market at Patuapara Mouza of Godkhali union (Jhikorgacha Thana) on an area of about 02 acres. Godkhali Flower Market is one of the most important economic hubs of the corridor. Through PRA, it was identified that the farmers are suffering quite a lot because of lack of a cold storage. This project needs to be implemented on priority basis. It should be implemented at the first quarter of the plan (2017-2022). Details of the cold storage and CSD is shown in the following table-

Table 12.2: Proposed Storage facilities with implementation phasing

Sl	Facilities	Union	Mouza	Area (Acres)	Plot no.	Phase
1	CSD	Sharsha	Buruz Bagan	11.470	968, 971-999, 1042-1067, 1077	3 rd
2	Cold Storage	Gadkhali	Patuapara	0.872	268 - 272	1 st

Source: GIS Database, Development Plan for Benapole-Jessore Highway Corridor (2017-37)



12.6 Local Level Services

From field survey and PRA, several problems were identified. Later on, a team combining the planning team and officials of UDD also consulted with the public representative. Based on all the acquired knowledge, the planning team has set forth the sector wise priority for the local development. As the situation is same for all the pourashavas, the planning team recommends to follow the same priority for all the pourashavas. Following table (12.3) details out the priorities:

Table 12.3: Proposed priority sectors

Sl no.	Sectors	Priority	Implementing Agency	Funding Agency
1	Construction of road	1 st	LGED/Pourashava	GoB
2	Drain construction	2 nd	LGED/Pourashava	GoB
3	Provision of water supply including rain water harvesting	1 st	DPHE	GoB
4	Construction of culvert/bridge	1 st	LGED/Pourashava	GoB
5	Commercial activities	2 nd	Private sector / Pourashava	Private sector / Gob
6	Industrial erection	5 th	Private sector / BSCIC	Private sector / GoB
7	Educational facilities	2 nd	Education Board,	Private sector / Gob
8	Health	1 st	Directorate of Health,	Private sector / GoB
9	Recreation	4 th	Private sector / Pourashava	Private sector / GoB
10	Community facilities	3 rd	Pourashava	GoB
11	Transport facilities	2 nd	Pourashava	GoB

Location of all the required services is not demarcated through this plan. Area wise proposed facilities along with implementation priority (phasing) is stated below. Please see Map 12.2 for details about the proposed infrastructures of Benapole Pourashava.

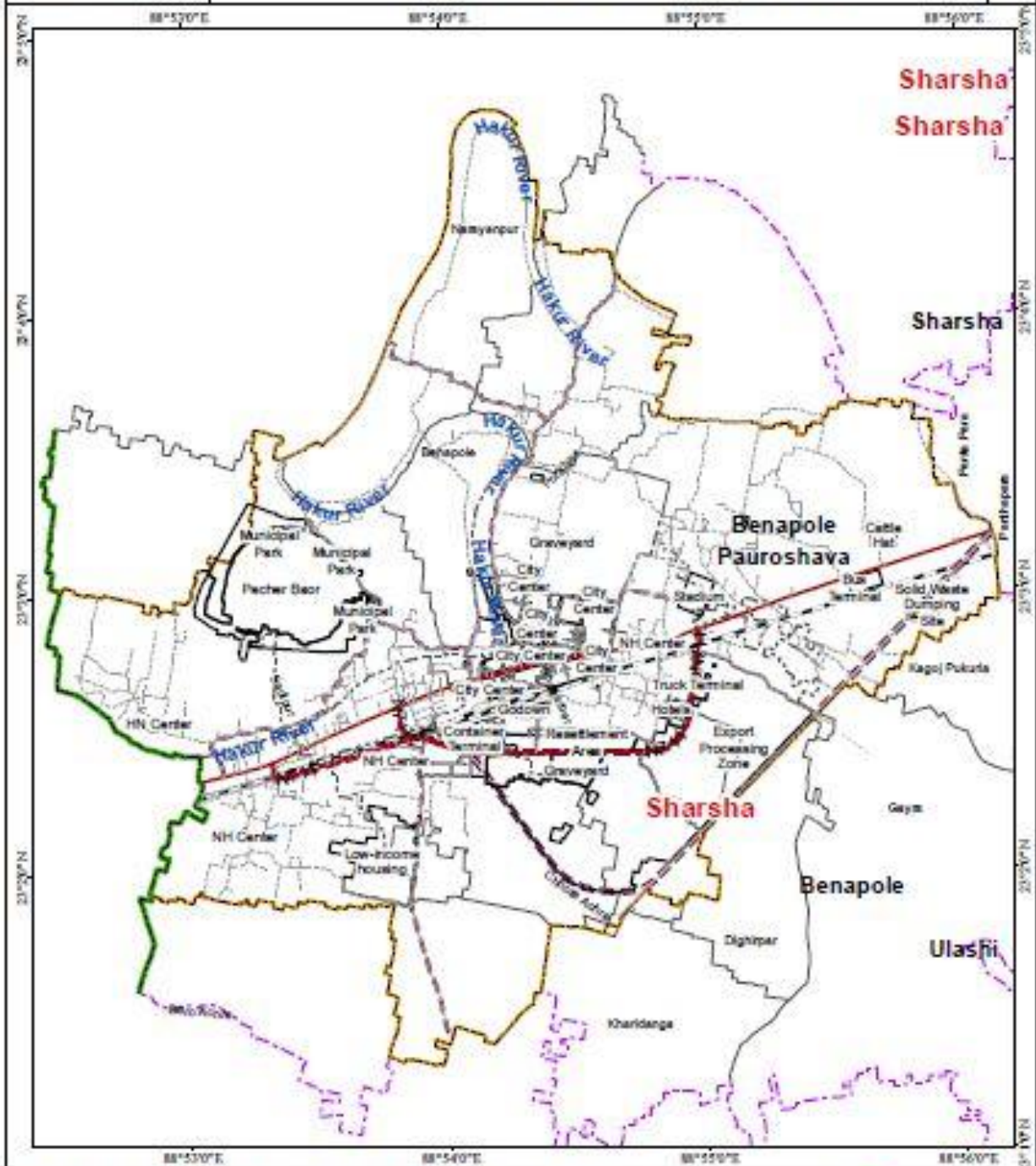
Table 12.4: Proposed Services and Facilities at Benapole Town

Sl no.	Facilities	Number	Area (acres)	Phase
1	Bus Terminal	1	5.080	1
2	Cattle Hat	1	5.392	2
3	Collage	1	8.169	3
4	Commercial (Dedicated to import-export activity)	1	16.655	3
5	Commercial area (Dedicated to industrial products)	1	5.942	3
6	Community Center	1	0.202	1
7	Container Terminal	2	18.045	1
8	Export Processing Zone	1	268.136	1
9	Godown	1	10.448	2
10	Golf Course	1	131.607	3
11	Graveyard	2	17.041	3
12	Grocery Market and Super Market	1	1.370	1
13	Health Complex	1	5.867	1
14	Hotel	4	49.907	1
15	Housing Estate	1	41.991	3
16	Low-income housing	2	56.386	2
17	NH Center	9	4.620	1
18	Open Space	2	24.720	1
19	Resettlement Area	1	21.500	3
18	Slaughter House	1	0.208	2
19	Solid Waste Dumping Site	1	4.142	3
20	Stadium	1	10.039	3
21	Truck Terminal	1	4.951	1
22	TTC	1	16.429	3
23	Wholesale market	1	4.679	3

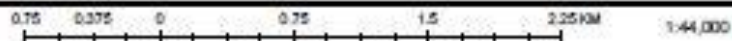
Source: GIS Database, Development Plan for Benapole-Jessore Highway Corridor (2017-37)

Map No.12.2

Urban Infrastructure of Benapole Town



"DEVELOPMENT PLAN FOR BENAPOLE-JESSORE HIGHWAY CORRIDOR PROJECT"



Legend

- Existing Road
- National Highway
- Regional Highway
- Local Road
- Street
- Railway-Trackway
- Existing Railway
- Existing Railway
- Administrative Boundary
- International Boundary
- Panchayat Boundary
- Upazila Boundary
- Ward Boundary
- Union Boundary
- Mousa Boundary
- Urban Infrastructure
- Proposed Transport Network



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About Map Data:

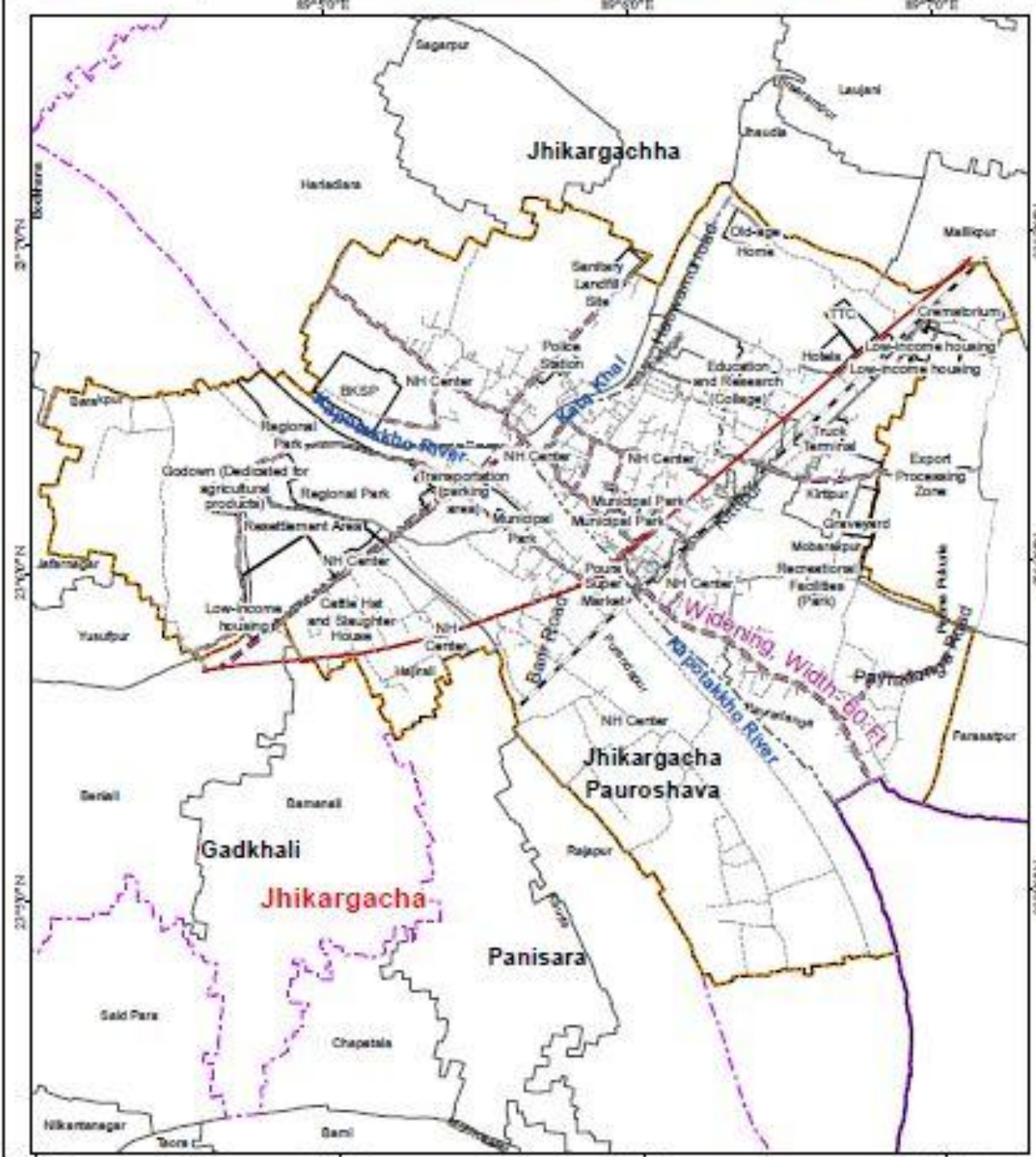
Satellite Image- Stereo Satellite Image, 07 April 2014,
0.5 meter (Source- DigitalGlobe)
Field Survey Period- October 2014-May 2015
Projection System: UTM Zone-45N
Reference Bench Mark- Survey of Bangladesh

Jhikorgachha Town is divided around nine segments by Kobadak river, Katakhal, National highway and Railway. As the town with peripheral area have huge flood free land some regional level services is provided here. Regional level services like Regional Park, Export Processing Zone, Regional Park, BKSP and Old Home are proposed in the urban area plan. On the other hand, space for public gathering and recreation was a prime requirement of local people which was seen during public hearing. After, consultation with the Mayor's office walkways by the *Katakhal* and Amphitheatre, Town Square, Tourist zone, Community centre by *Kobadak* was added in the urban area plan.

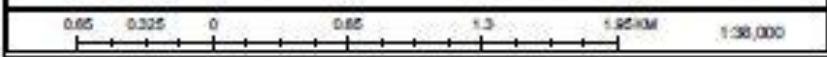
Table 12.5: Proposed Services and Facilities of Jhikorgachha Town

Sl no.	Facilities	Number	Area (acres)	Phase
1	BKSP	1	22.917	2
2	Cattle Hat and Slaughter House	1	4.925	1
3	College	1	10.450	2
4	Commercial (Dedicated to industrial production)	1	7.644	3
5	Convention Center	1	0.737	1
6	Crematorium	1	0.552	3
7	Education and Research (Collage)	1	10.462	1
8	Export Processing Zone	1	283.077	1
9	Fire Station	1	3.299	1
10	Godown (Dedicated for Agricultural Product)	1	11.667	2
11	Graveyard	1	9.172	3
12	Hotels	1	7.223	3
13	Low Income Housing	1	84.07	2
14	Municipal Park	1	6.115	1
15	NH Center	8	3.936	1
16	Community Centre	1	2.899	1
17	Town Square	1	2.147	3
18	Walk way by <i>Katakhal</i>	1	0.000	1
19	Amphitheatre	1	12.870	3
18	Tourist Zone	1	26.170	3
19	Old Home	1	6.067	3
20	Police Station	1	5.179	3
21	Poura Bhaban	1	1.019	1
22	Poura Super Market	1	1.673	1
23	Regional Park	1	70.356	2
24	Residential- Planned	5	103.789	3
25	Solid Waste Disposal Area	1	6.342	2
26	Stadium	1	9.372	3
27	Transportation (parking area)	4	2.236	1
28	Truck Terminal	1	6.348	1

Source: GIS Database, Development Plan for Benapole-Jessore Highway Corridor (2017-37)



"DEVELOPMENT PLAN FOR BENAPOLE-JESSORE HIGHWAY CORRIDOR PROJECT"



- Legend**
- Existing Road
 - National Highway
 - Regional Highway
 - Local Road
 - Railway
 - Railway-Service
 - Existing Railway
 - Existing Railway
 - Administrative Boundary
 - International Boundary
 - Paurashava Boundary
 - Upazila Boundary
 - Ward Boundary
 - Union Boundary
 - Mousa Boundary
 - Urban Infrastructure
 - Proposed Transport Network



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Projection System: UTM Zone 45N
Reference Bench Mark- Survey of Bangladesh

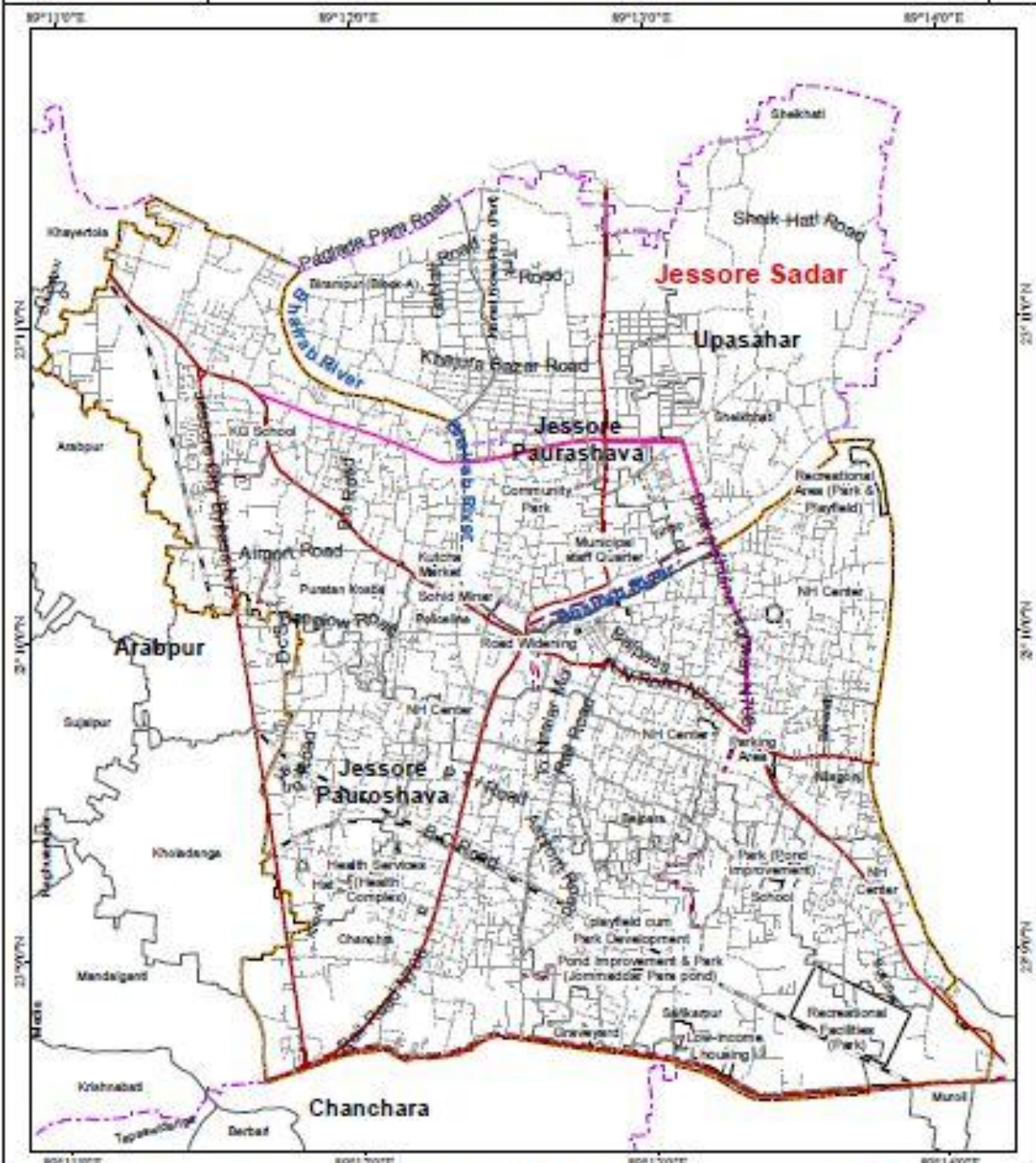
As a low rise horizontally spread old town, vacant land is not available in the northern part of Jessore. So, exiting infrastructures were proposed to be upgraded in this segment. As northern part of the town is low and flooded, major part of new open space is proposed in the northern part. After public consultation with the Jessore Mayors office six residential area improvement project for Cleaners (Old *pouroshava Horizon Polli, Rail bazaar polli, Arobpur math para horizon polli, Gorapara horizon polli, Taltola horizon polli, Talikhola Daspara Horizon polli*) was in the urban area plan.

Table 12.6: Proposed Services and Facilities in Jessore Town

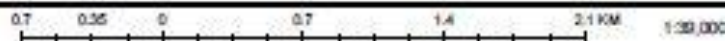
Sl no.	Facilities	Number	Area (acres)	Phase
1	Boro Bazar (Market Improvement)	1	0.169	1
2	Community Center	1	0.386	1
3	Community Services (Hat)	1	2.909	1
4	Education and Research (School)	1	0.587	2
5	Fish Market (Market Improvement)	1	0.093	1
6	Graveyard	1	1.014	3
7	Grocery Bazar	2	0.999	1
8	Health Services (Health Complex)	1	3.437	1
9	Low-income housing	1	9.145	1
10	Municipal staff Quarter	1	0.672	2
11	NH Center	6	1.354	1
12	Parking Area	1	0.209	1
13	Playfield cum Park Development	1	1.136	1
14	Recreational Facilities (Park)	1	58.602	2
15	Residential (Resettlement area)	1	4.002	1
16	School	1	2.769	4
17	Slaughter House	1	0.066	3
18	Super Market	1	1.467	1
19	TTC (currently <i>Sarothi</i> School)	1	1.484	1

Source: GIS Database, Development Plan for Benapole-Jessore Highway Corridor (2017-37)

Upashahar, the only planned residential area of the project area, located in Kimat Noapara Union Porishod, has been included in the Jessore urban area plan. Please see Map 12.4 for details about the proposed infrastructures of Jessore Pourashava. In addition, boundary of Jessore Cantonment was slightly readjusted after consultation with Jessore Cantonment and Military Estate Office.



"DEVELOPMENT PLAN FOR BENAPOLE-JESSORE HIGHWAY CORRIDOR PROJECT"



- Legend**
- | | |
|------------------|----------------------------|
| Existing Road | Administrative Boundary |
| National Highway | International Boundary |
| Regional Highway | Neighbour's Boundary |
| Local Road | Upazila Boundary |
| Runway | Ward Boundary |
| Runway-Service | Union Boundary |
| Existing Railway | Mousa Boundary |
| Existing Railway | Urban Infrastructure |
| | Proposed Transport Network |



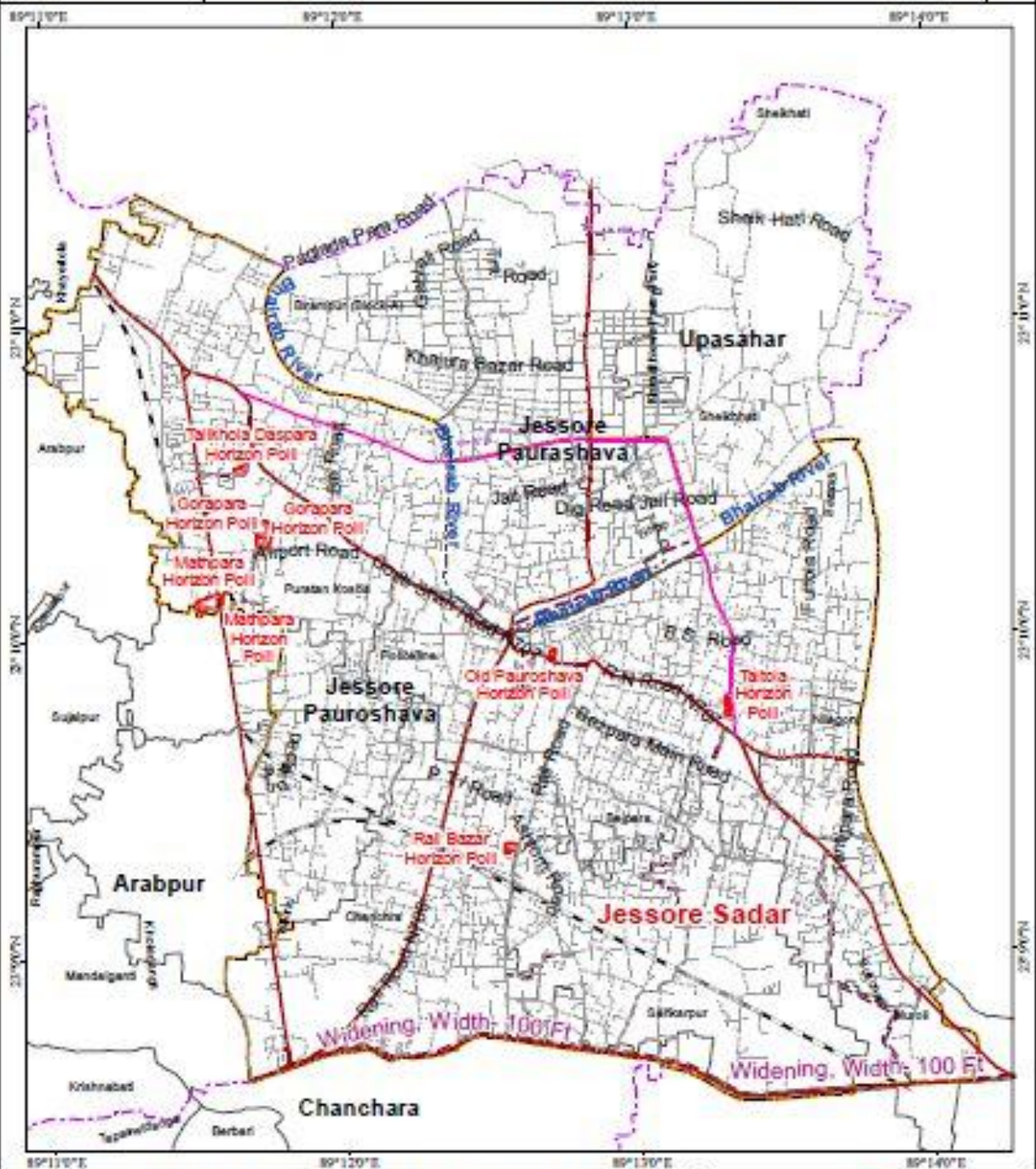
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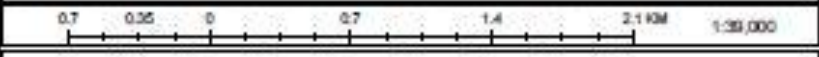
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"DEVELOPMENT PLAN FOR BENAPOLE-JESSORE HIGHWAY CORRIDOR PROJECT"



- Legend**
- Widening Road
 - National Highway
 - Regional Highway
 - Local Road
 - Railway
 - Railway Facility
 - Widening Railway
 - Sticking Railway
 - Administrative Boundary
 - International Boundary
 - Paurashava Boundary
 - Upazila Boundary
 - Ward Boundary
 - Union Boundary
 - Mousa Boundary
 - Horizon Polli
 - Proposed Transport Network

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12.7 Rehabilitation and Resettlement Procedure

It is expected that the development of the corridor will gear up in the coming years responding to the need. As a result, need for resettlement cannot be avoided. Till date, we do not have any resettlement policy. Acquisition and Requisition of the Immovable Properties Act, 1982 plays the most vital role in this regard. There are many internationally acceptable guidelines for resettlement which can be followed. Resettlement areas are proposed within the three urban area plans. But it is to be noted here that, resettlement area should be located close to the project implementation site. Longer distance from the resettles original home would result in the form of social exclusion, loss of livelihood, mental stress etc.

Requirement for resettlement areas cannot be determined beforehand, it depends on the nature and volume of the project. The infrastructure development proposals of this plan were carefully placed to avoid unnecessary eviction. The planning team has proposed the resettlement areas within the jurisdiction of three urban centers.

12.8 Development Financing

Financing development projects is one of the most crucial issues in Bangladesh. Often the local government organizations are dependent on the central government for funding. Securing fund from the government is a complicated and lengthy process. Political influence also cannot be overlooked. However, the planning team suggests to explore other avenues of funding for project implementation.

Public-Private Partnership (PPP): PPP schemes are becoming more and more important nowadays. There are so many forms of PPP. However, in the most popular process, the private investors use the public property for infrastructural development. In return, the private investors collect fees from the users of the infrastructure for certain period of time to recover his investment for the infrastructure. The private investor also maintains the infrastructure for certain period. After the stipulated time, the infrastructure is handed over to the local organizations. Large scale investment through PPP in Bangladesh is very rare. However, this scheme is becoming popular for small projects.

Private investment: This is the most popular investment in Bangladesh. People usually purchases land, then develops the same. Following this process, agricultural and other low intensity land uses are converted to residential land use. Often this process results in creating sprawl and spontaneous development. However, through proper land use management, this investment can be channelized to ensure compact development. To do this, in addition to the planning, strict vigilance is also required.

Community based investment: This is a new trend in Bangladesh. Two trends can be observed in community based / driven investment. Lower Income groups forms Community Development Committee (CDC). CDC members then develop community bank through their little investment in monthly installments. After certain period of time, the CDC can invest the money for any purpose that they deem essential.

Another approach is becoming more and more popular in the urban areas where land value is relatively very high. Several persons can come together to build apartments on a land parcel. Through sharing total cost, they reduce the per-head cost.

CHAPTER 13

GOVERNANCE AND INSTITUTIONAL ARRANGEMENT

13.1 Introduction

Globally, over the years, it has been observed a shift on the prominence of development strategies for promoting economic growth in such a way that may lead equitable growth to satisfy the basic and sustenance needs of the urban dwellers. Restructuring city governance was a major element of such transformation (Devas, 2001). In this context, this chapter discusses the issues of governance for implementing the Development Plan for Benapole-Jessore Highway Corridor. Developing nations see good governance as decentralized, legitimized, and participatory government: that is, mainly focused on pursuing development through empowering people, eradicating corruption, ensuring legally binding and accountable administrations to achieve pro- people developments, which ultimately boost economic growth through the highest use of development by the people (Andrews & Shah, 2003). Urban development planning also seeks good urban governance.

Urban development planning can be defined as a process that combines policy making process, planning system and plan implementation process (Devas, 2001). This concept of planning system also complies with the basic notion of good governance. Therefore in this chapter, governance has been conceptualized as a move towards decentralization, whereby the shift from government to governance can be paralleled with the change from centralization to decentralization. In addition to this notion of governance the form of organizational arrangement that will be useful for implementing the Development Plan for Benapole-Jessore Highway Corridor has been developed on the basis of democratic decentralization process. It is important to recognize that decentralization alone cannot ensure the formation of governance, although governance can be supported and affected by the decentralization process and its mechanisms (Rumbach, 2015).

Moreover, urban decentralization vests greater authority in local governments and officials, with the goal of improving city governance. It is mainly argued that decentralization can help central government be closer to its citizens because it gives the government better information about citizens' preferences and give more opportunities for citizens to easily monitor government officials' performance. Therefore the organizational arrangement for ensuring good governance in implementing the Development Plan for Benapole-Jessore Highway Corridor will follow the democratic decentralization process that really caters for active citizen participation.

13.2 Essence of Governance in Ensuring Sustainable Urban Development

To develop the good governance framework in ensuring sustainable urban development by implementing the Development Plan for Benapole-Jessore Highway Corridor this chapter advocates for the concept of good urban governance developed by UND-TUGI in 2006. The UNDP- TUGI (2006) has adopted the 11 principles of good urban governance put forwarded by the UNDP and the UN-Habitat Global Campaign on Good Urban Governance. These are participation; rule of law; responsiveness; consensus orientation; equity; effectiveness and efficiency; accountability; security; subsidiarity; strategic vision; and security (UNDP, 2004). Laquain (1995) suggests that the governance of metropolitan regions needs to achieve the following main factors: efficiency in the delivery of urban services; equity in urban society; economic development; and environmental sustainability.

Based on innovative views supported by Laquain (2005), good governance is a process in which the problems of urban society in various physical, social, economic and managerial sectors can be solved and settled by collective efforts depending on public power. Moreover Good Governance is an all-embracing concept with sustainable urban development as its central objective. The following framework summarizes the link between governance and sustainable urban development.

Figure 13.1: Interrelationship of Good Governance and Sustainable Urban Development



Source: Modified from Hall and Pfeiffer, 2000

13.3 Critical Issues and Future Challenges

This section of this chapter describes the critical issues and future challenges for implementing the Development Plan for Benapole-Jessore Highway Corridor. The issues and challenges were identified through different PRA sessions in three municipalities and six union parishads. The issues and challenges have been grouped together based on four key indices: Effectiveness, Equity, Participation and Accountability. In terms of effectiveness issues the following tables summarizes the critical issues and future challenges:

Table 13.1: Critical Issues and Future Challenges

Local Government Institutions	Local government revenue	Published performance delivery standards	Existence of vision statement
Jessore Municipality	Dependency on central government	Municipality determines basic services and their quantity	Exist a comprehensive plan
Jhikorgacha Municipality	Dependency on central government	Municipality determines basic services and their quantity	Exist a comprehensive plan
Benapole Municipality	Dependency on central government	Municipality determines basic services and their quantity	Exist a comprehensive plan
Union Parishads	Dependency on central government	Determined by central government and its ministries	There is no planning guideline

The aforementioned table indicates that effective service provision depend on the willingness of central government as the local government institutions are dependant on the grant of central government. Though the municipalities under the Development Plan for Benapole-Jessore Highway Corridor have their own comprehensive plan but the union parishads have no provision for ensuring planned urban development. Therefore in effectiveness perspective the major challenges associated with implementing the Development Plan for Benapole-Jessore Highway Corridor are as follows:

- Lack of essential mechanisms to mobilize non-governmental resources;
- Ambiguities in identification of urban land;
- Legal contradictions between the authorities involved.

In terms of equity issues the following tables summarizes the critical issues and future challenges:

Table 13.2: challenges in terms of equity issues

Local Government Institutions	Citizens Charter	Women's participation in the decision making process	Pro-poor pricing policies for urban services
Jessore Municipality	Existence of general directives	Quota based participation of Women councilors	There is no special pricing policy
Jhikorgacha Municipality	Existence of general directives	Quota based participation of Women councilors	There is no special pricing policy
Benapole Municipality	Existence of general directives	Quota based participation of Women councilors	There is no special pricing policy
Union Parishads	Existence of general directives	Quota based participation of Women councilors	There is no special pricing policy

The aforementioned table indicates that equity of service provision also depends on the decision making process of central government. The citizen charters are the existence of general directives that address citizens' rights to access basic services developed and prepared by central government. Notwithstanding this, there are no formal publications of context specific standards that tackle citizens' right of access to basic services. The quota based participation of Women councillors addresses the extent of women's participation in the decision making process and deals with gender equity. In fact, to some extent the establishment of such quota was an evolutionary mechanism for including women in the urban decision-making process in Bangladesh. By considering the price of the urban services across different municipalities and union parishads, it is apparent that the existing pricing policy does not provide an appropriate measure of equity, and that prices do not follow the correspondence between location and socio-economic characteristics. Therefore in equity perspective the major challenges associated with implementing the Development Plan for Benapole-Jessore Highway Corridor are as follows:

- Lack of essential mechanisms to develop pro-poor pricing policies for urban services;
- Ambiguities in identification of context specific standards that tackle citizens' right of access to basic services.

In terms of participation the following tables summarizes the critical issues and future challenges:

Table 13.3: Challenges in Terms of Participation Issues

Local Government Institutions	Elected council	Public forum	Civic associations
Jessore Municipality	Councils are elected	Existence of Town Level Coordination Committee (TLCC) and Ward Level Committee	Strong presence of NGOs
Jhikorgacha Municipality	Councils are elected	Existence of TLCC and WLCC	Number of NGOs is insignificant
Benapole Municipality	Councils are elected	Existence of TLCC and WLCC	Strong presence of NGOs
Union Parishads	Councils are elected	Existence of WLCC	Number of NGOs is insignificant

The aforementioned table indicates that people's participation in decision making process is patronized by the existing legal structure. It has been observed during the PRA sessions that citizens are participating in decision making process through Ward Level Coordination Committee and Town Level Coordination Committee. However citizens' skeptical attitudes about the effectiveness of participation and their limited knowledge of government process have been observed. It has been also identified that citizen participation is limited largely because citizen feel that this participation would ultimately be ineffective in helping them influence local decision making which is highly influenced by political factors. However the culture of transparent and democratic decision making process can be found in the municipalities and union parishads. Therefore in perspective of participatory planning the major issues associated with implementing the Development Plan for Benapole-Jessore Highway Corridor are as follows:

- Incorporating TLCC and WLCC in the implementation of the Development Plan for Benapole-Jessore Highway Corridor;
- Establishing an institutional framework based on the localities to represent the voice of TLCC and WLCC along with the elected representatives.

In terms of accountability the following tables summarizes the critical issues and future challenges:

Table 13.4: challenges in terms of accountability issues

Local Government Institutions	Formal Publication of contracts/ tenders budgets	Codes of conduct	Facility for citizen complaints
Jessore Municipality	The practice exists	Local Government (Municipalities) Act 2009	Established grievance redress mechanism
Jhikorgacha Municipality	The practice exists	Local Government (Municipalities) Act 2009	Established grievance redress mechanism
Benapole Municipality	The practice exists	Local Government (Municipalities) Act 2009	Established grievance redress mechanism
Union Parishads	The practice exists	Local Government (Union Parishad) Act 2009	No specialised provision

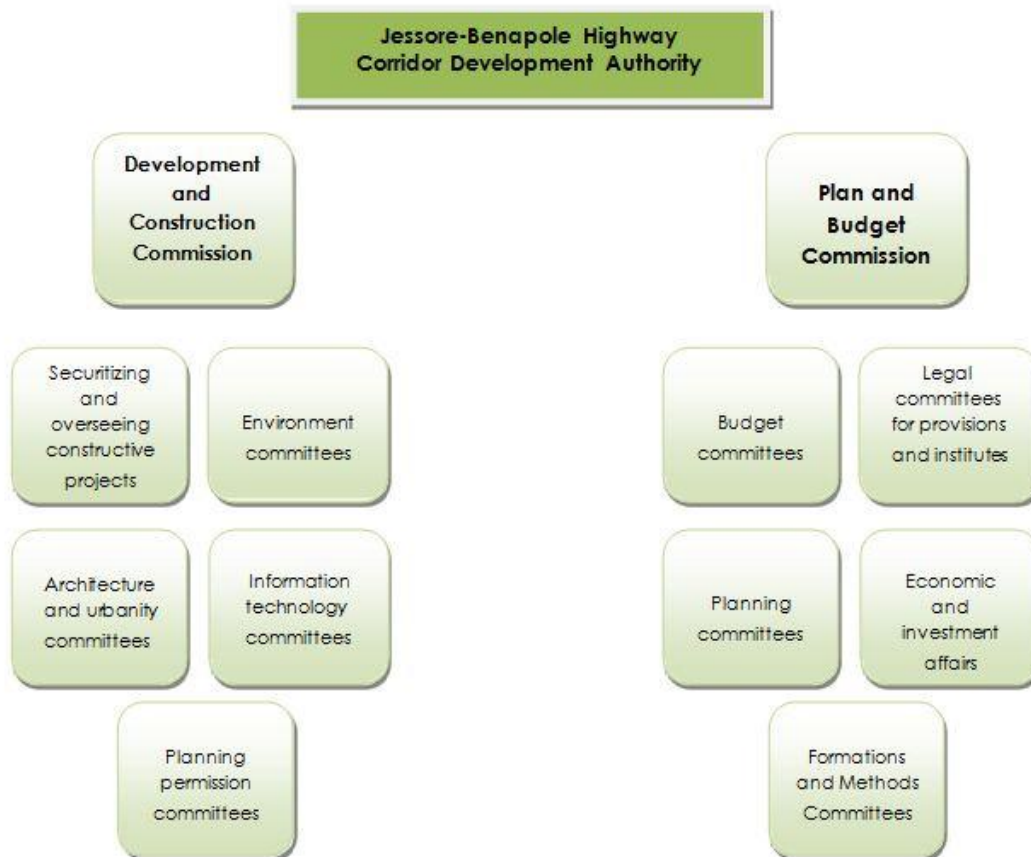
It has been observed that responsibility sharing is a major planning problem, particularly, overlapping of functions in urban areas. The main reason for such a situation is that each organization is working under a separate law, which may affect the development plan having the absence of role casting principle. Therefore in perspective of accountability issues for ensuring better coordination among different local government organizations to implement the Development Plan for Benapole-Jessore Highway Corridor the major issues are as follows:

- Establishing a coordination board that will be represented with different governments, civil society, private and community organizations;
- Enhancing the capacity of the union parishads for implementing the Development Plan for Benapole-Jessore Highway Corridor.

13.4 Proposed Corridor Development Authority

Based on the aforementioned issues and challenges this plan proposes to formulate a corridor Development Authority. Within Jessore-Benapole highway corridor, a number of urban local government institutions such as Jessore Paurashava, Benapole Paurashava and Jhikorgacha Paurashava and also rural local government institutions are existed. Among these local government institutions, Jessore and Benapole Paurashava have been responsible for implementing urban development functions in a limited scale. But, Jhikorgacha Paurashava and other rural government institutions lack the capacity in terms of administrative, manpower and institutional arrangements to implement physical development activities.

Figure 13.2: Administrational and Functional Pattern of Proposed Jessore-Benapole Highway Corridor Development Authority



In addition, institutional coordination problems will be arisen between the urban and rural local government institutions in charge of implementing corridor development plan particularly in control of land and responsibility for planning and monitoring physical development in the Jessore-Benapole Highway Corridor areas. Thus, it is necessary to establish a 'Corridor Development Authority'. The situation will be changed with the establishment of separate 'Jessore-Benapole Highway Corridor Development Authority' having responsibility for planning and controlling physical development. This authority can act as a delegated authority under the Ministry of Public Works and Housing.

The aforementioned proposed structure of Jessore-Benapole Highway Corridor Development Authority has to be institutionalized by specific law and the charter of duties of each commission and committees have to be specified. This plan recommends for incorporation elected representatives and the members of TLCC and WLCC in the committees. In the commission level this plan recommends for appointing urban planner to coordinate the activities of the committees under the commissions. The Jessore-Benapole Highway Corridor Development Authority must follow the section 50 of Local Government (Paurashava) Act, 2009 for effective coordination with Jessore Paurashava, Benapole Paurashava and Jhikorgacha Paurashava. The planning committees and planning permission committees will work together with the municipalities and union parishads. The application for planning permission for land use clearance will be submitted to the respective local government institutions based on their jurisdiction. Then the recommendations of the local government institutions will be addressed by planning permission committee under the development and construction commission of the proposed Jessore-Benapole Highway Corridor Development Authority.

CHAPTER 14

PLAN FOLLOW UP

14.1 Introduction

The current chapter aims at describing some important follow-up actions to be carried out after approval of the plan. Among the other, this chapter includes additional projects to be prepared, monitoring, updating and review of the plan, rules of plan deviation etc.

14.2 Project Plan Preparation

Current plan proposes a large number of a large number of infrastructure development proposals from regional to local level. As usual, huge number of development projects can be prepared from these development proposals. As it is a burdensome and time-consuming task, instead of developing these projects, the planning team left these tasks for the future. Chapter 12 portrayed some design guidelines for regional infrastructures. Following these guidelines, implementing agencies are expected to develop detailed design. However, as custodian of this plan, UDD will disseminate and encourage other line agencies to develop infrastructures following this plan. UDD should also take necessary action against all possible plan violation.

14.3 Duration of the Plan

As stated at different parts of the plan, different components of this plan has different duration. Structure plan has a duration of 20 years, Urban and Rural Area Plan is prepared for 10 years and the Action Area Plan has a total duration of 05 years.

14.4 Monitoring, Review and Updating of the Plan Components

Planning is always a continuous process. Once a plan is prepared, it has to be monitored to identify its potential impact, tendency of the stakeholders to violate plan and its reason, hurdles faced by the line agencies to follow the plan (problems of plan implementation) etc. UDD being the custodian of this plan should always monitor the implementation of the plan. Till the development of the Corridor Development Authority, UDD should prepare and publish implementation progress report at every six months. UDD should also take necessary action to convey the summary of the plan to appropriate authority (e.g. planning commission) so that the infrastructures and policies of the plan can be accommodated in the Five Year Plans and Annual Development Programs. This will significantly boost up the implementation process of the plan.

14.5 Rules of Plan Deviation

Deviation of the plan proposals should always be discouraged. However, in a resource constraint country like Bangladesh, it is very much unexpected that all the proposed infrastructures will be constructed immediately after the plan is accepted. Situation of the proposed sites for different kinds of infrastructures may change drastically by the time of the execution of the proposed infrastructures. Thus, because of numerous numbers of variables, it is not always possible to develop infrastructures following the marking on the mouza map. Moreover, there will be deviations during land acquisition for many unforeseen reasons. There can be new developments in the site which might raise development cost if the land is acquired including the structure. So many local issues may also influence the executing agencies to change the location.

If the situation is completely unavoidable, deviations from the actual plan is sometimes also inevitable. In such situation, some deviations may be allowed on flexibility principle upholding the spirit of the plan, which is to ensure sustainable development of the corridor. As long as spirit of the plan is there deviations in plan execution may be allowed.

14.6 Circulation of the Plan Documents

Strength of statutory plan is yet to be established among the stakeholders including common citizens and the public sector development agencies. As the custodian of the plan, UDD will be responsible to disseminate and establish the true spirit of the plan. UDD will remain responsible to inform all the government organization that a statutory plan has been prepared for the corridor, because of its statutory nature; it has to be followed by all. It should be adhered by them while taking up development programmes and projects within the jurisdiction of the plan area.

To achieve the objective of the plan, it has to be disseminated among all the government agencies. Copies of the plans including maps and reports will have to be sent to them with a letter stating under what legal authority the plan has been prepared.

The plan would be uploaded in the UDD website so that people can download, study and be aware of the plan. In addition, hard copies of the document would be made available for sale at reasonable price. UDD can also contact the line agencies through letter to make them aware about the projects proposed under this plan and the role of the respective line agencies to implement the same.

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