

**Preparation of  
Development Plan for  
Benapole-Jessore  
Highway Corridor**

# **Preparation of Development Plan for Benapole-Jessore Highway Corridor**

## **Final Report On Transport Planning**

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## 1. Introduction to Development Corridor:

Development corridors are agglomeration of economic activities within a geographic area having integrated infrastructure network. It may evolve to an extent that enhances only the flow of goods and people (a transport corridor), or to an extent that supports trade (a trade corridor), or development of a particular sector of the economy (e.g. an agricultural corridor). It might evolve to an extent that supports wider social development and economic growth of a subnational region or cross-border region (i.e. a fully-fledged economic corridor). The linear process considers corridors commencing as transport routes with one or more modes of transport being developed through provision of hard infrastructure to become a transport corridor (Hope and Cox, 2015). The next stage of evolution requires improvements to the so-called “soft infrastructure” of transport services and transport logistics. But evolution into a full-fledged economic corridor requires broader investments in the area served by the corridor (Figure 1).

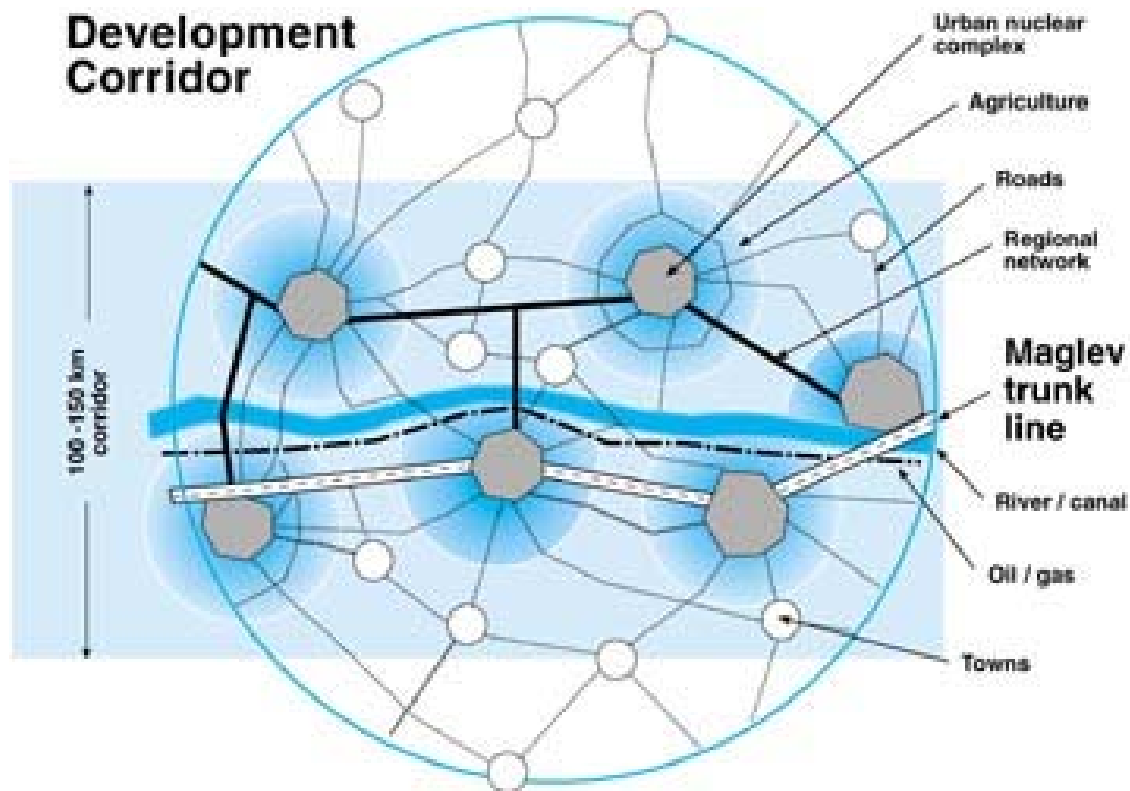


Figure 1: Concept of Infrastructure Development Corridor (<http://www.schillerinstitute.org/economy/maps/maps2.html>)

## Evolutionary stages of development corridors

Ultimately, development of a corridor is driven by economics. The economic potential of a basic transport route is confirmed via feasibility studies and the hard infrastructures of one or more transport modes is developed into a transport corridor. As more freight and people move along the corridor, the soft infrastructure (logistics and institutions) also needs to improve in order to maintain, or increase, efficiency. Efficient corridor operations encourage further economic activity that leads to further investment and, ultimately, the corridor evolves into an “economic corridor” (Figure 2 and Figure 3).

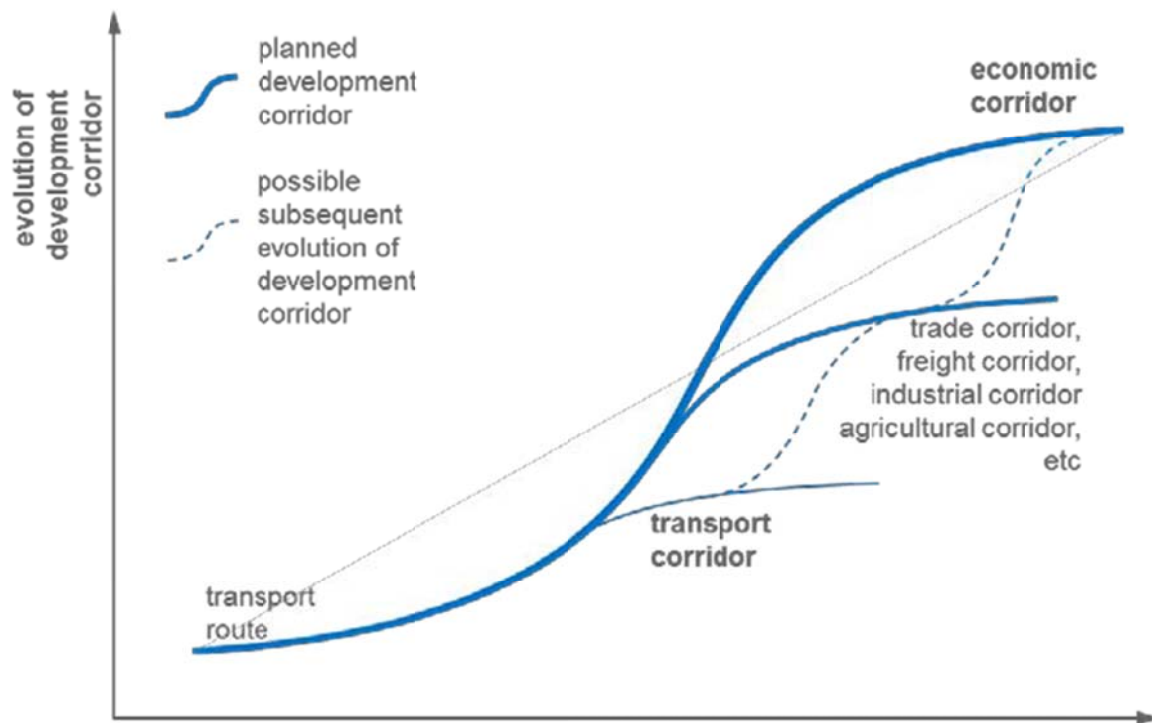


Figure 2: Types of Development Corridor (Source: Hope and Cox, 2015)

Moving freight along a corridor may involve crossing national borders. Cross-border checkpoints are frequently a bottleneck in transport corridors. Facilitating efficient movements across borders requires significant soft infrastructure improvements, including harmonisation of policies, legislation and efficient customs procedures. Efficient border crossings are a vital component of development corridors which is very relevant for Benapole-Jessore Highway Corridor as well.

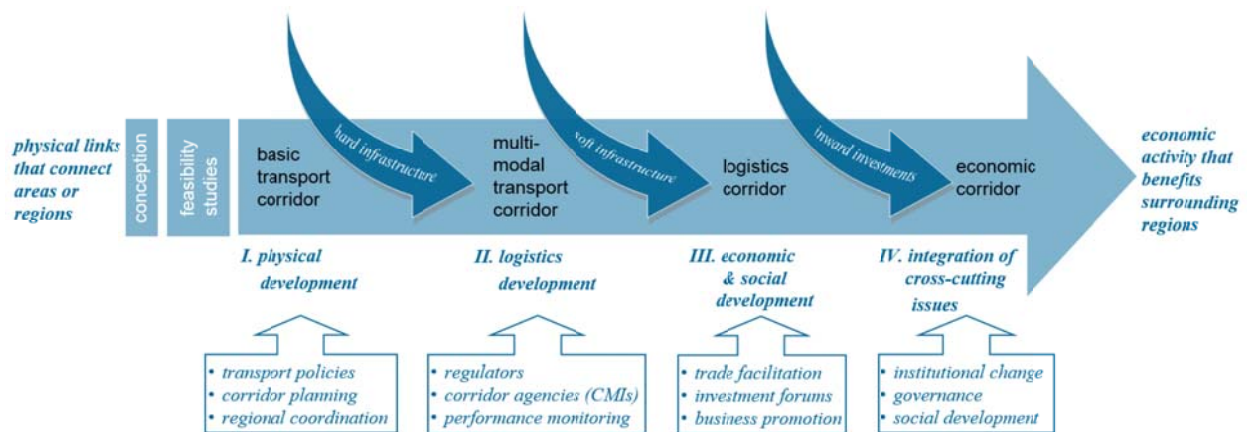


Figure 3: Evaluation Stage of Development Corridor (Hope and Cox, 2015)

## 2. Benapole-Jessore Corridor :

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 development along with increasing trade through Benapole border will enlighten the Benapole-Jessore Corridor and its development.

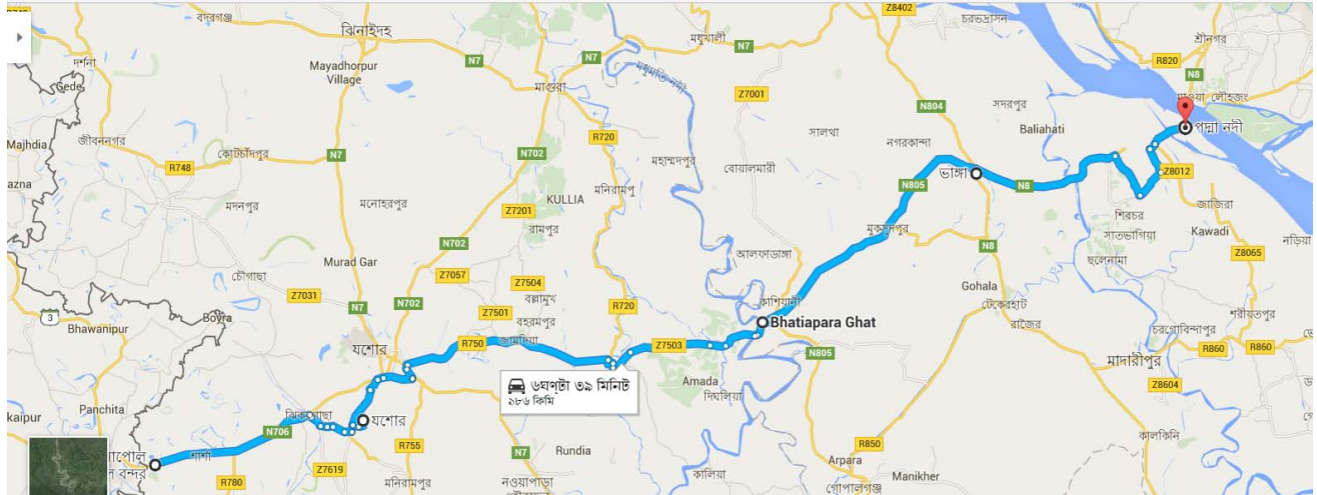


Figure 4: Alignment of Benapole to Padma Bridge Highway (part of AH1)

This potential connection link between Benapole to Padma bridge is currently taking nearly 7 hours (Figure 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.

### 3. 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 Paurashava 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 Jhikargachha 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. Goals and Objectives

This project aims to prepare a Development Plan for Benapole Municipality & Land Port area, Sharsha & Jhikargachha Upazila Town and Jessore District Town along with the Jessore-Benapole Highway Corridor namely ‘Development Plan for Jessore-Benapole Corridor’ project.

Development Plan for Jessore-Benapole Corridor aims to achieve the following objectives:

- i.* Transformation of National policies at Jessore-Benapole highway corridor.
- ii.* Formulation and Integration of different sectoral strategies for Jessore-Benapole highway corridor.
- iii.* Spatial interpretation of sectoral strategies for Jessore-Benapole highway corridor.

- iv. Formulation of Conservation Plan, Development Plan and Development Control Plan for Jessore-Benapole highway corridor.

## 5. Assigned Task

Major tasks for transportation sector are:

- i. To study the existing transportation system of the region
- ii. To prepare guidelines for improved transport system, affordable to the people
- iii. To study the existing land port
- iv. Prepare land use matrix and land use planning guidelines for the highway corridor

## 6. Scope of the Work

Within the outcome of ‘Development Plan for Jessore-Benapole Corridor’ project, there is immense opportunity to develop the area as an economic zone keeping Benapole port as the hub. This project has been given emphasis on the existing land port facility at Benapole so that it could be upgraded with more efficiency. These require improvement in current rail and road plan integrated with surrounding landuse planning. In addition, this project wants to develop guidelines for insuring that Jessore would be and should be the main administrative hub of national and international communication network having road, rail, river and air network at a single point whereas Nabharan and Jhikargachha, both could have possibilities to become a national level multi--modal transportation hub where road, rail and river have integrated together.

## 7. 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 intersection on it which often hamper its efficiency to act as a major export-import corridor (Figure 5).

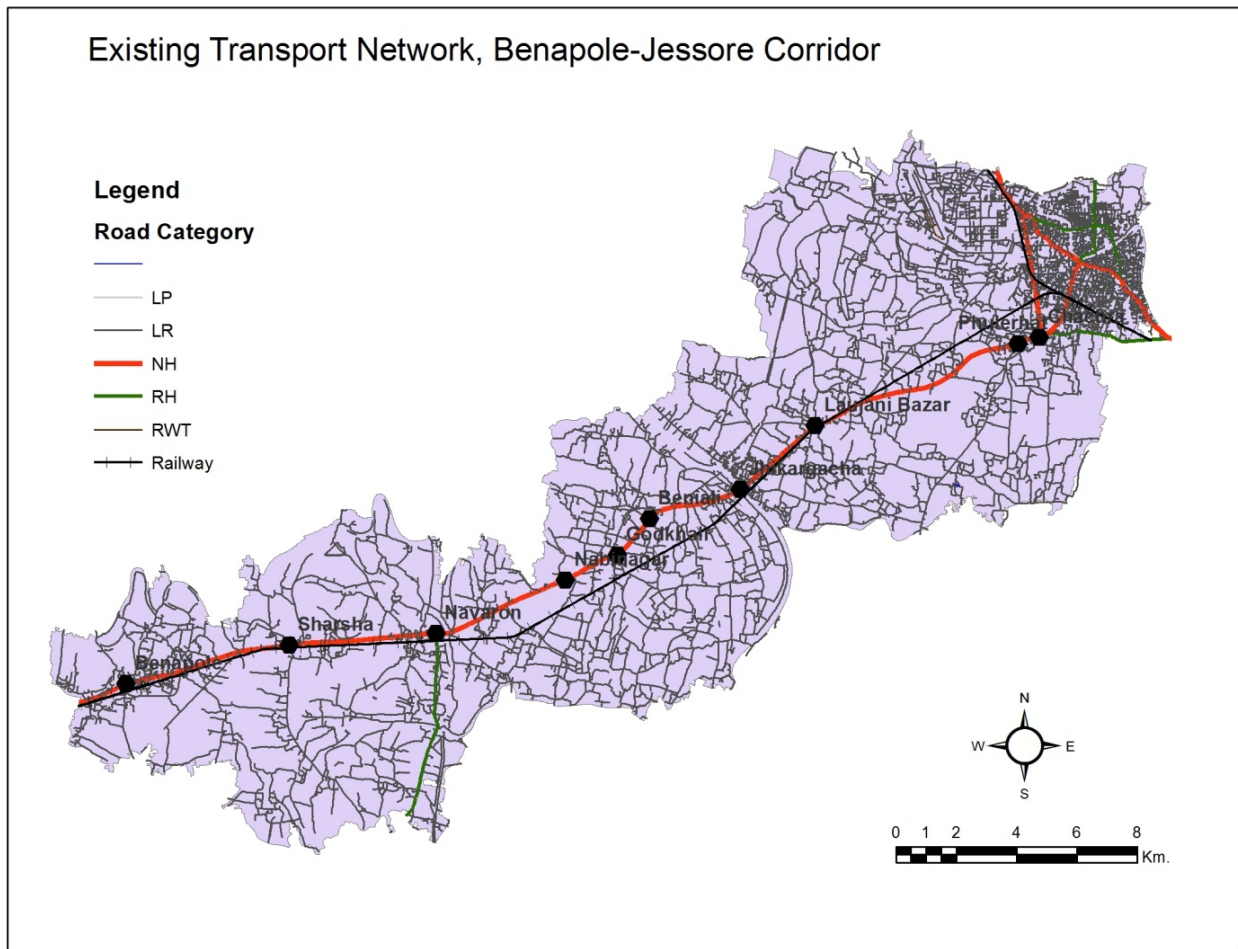


Figure 5: Existing Transport Network

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 (Figure 6).

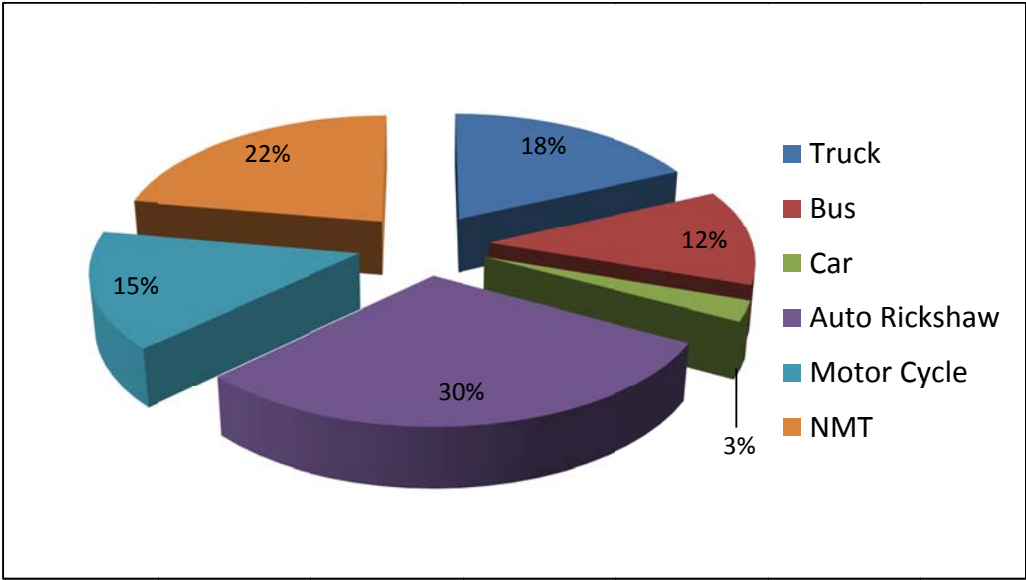


Figure 6: Modal Share on Benapole-Jessore Highway

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 bus are below 15 Km/Hr (Figure 7). Frequent stoppage, congestion around stoppage, slow vehicle on the same lane are some of the causes for such slow movement.

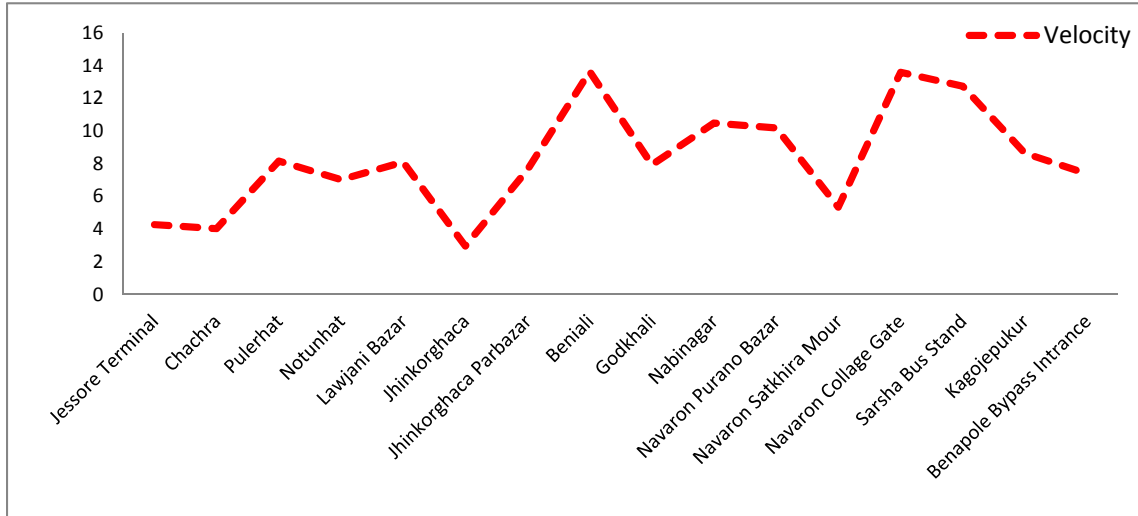


Figure 7: Velocity (m/s) of public Bus from Jessore to Benapole

## 8. Landuse Transport Interaction and Trend of Traffic

Landuse and transport has a well-recognized reciprocal relationship. Nature of traffic on a road largely depend on the landuse and its intensity of the places it connects and its surrounding landuse 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.

Figure 8 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. 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.

## Settlements in Benapole-Jessore Highway Corridor

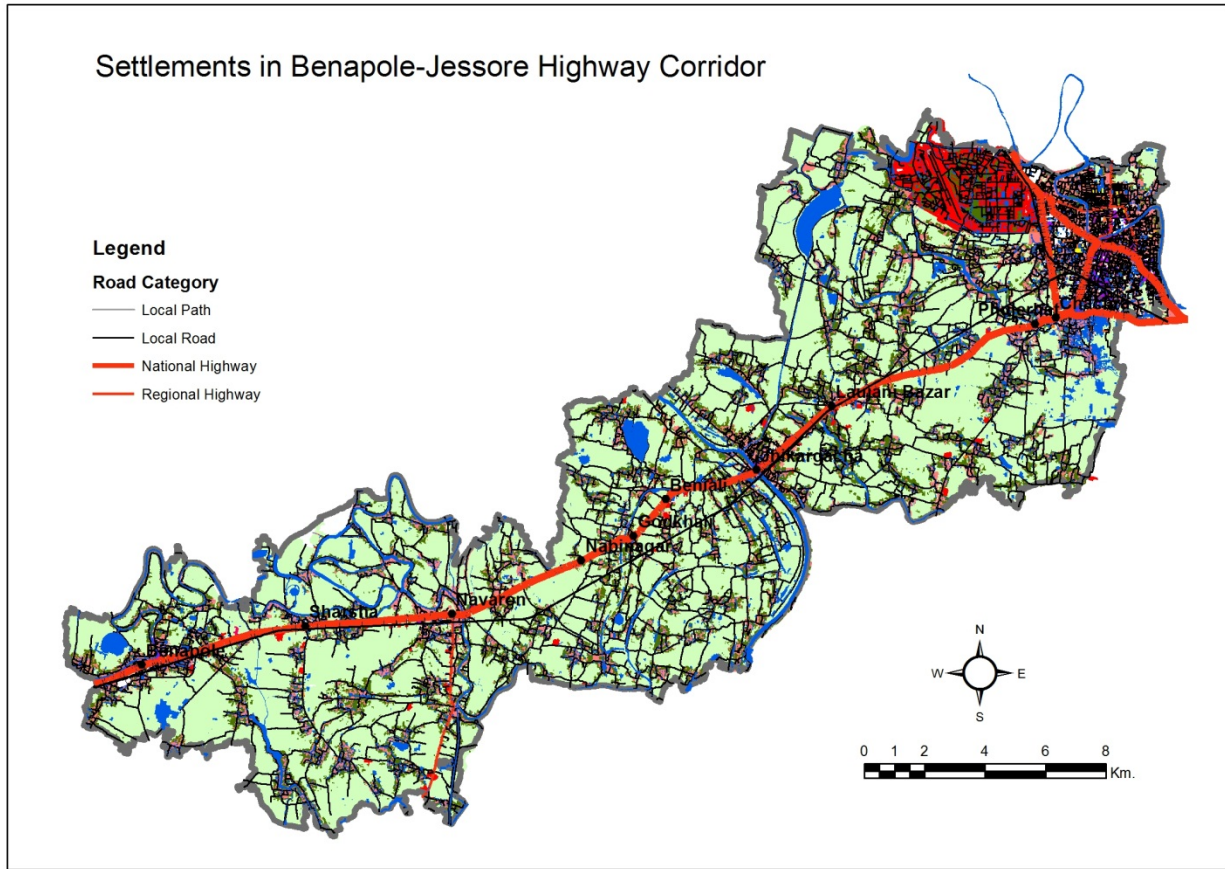


Figure 8: Settlement Pattern in Benapole-Jessore Corridor

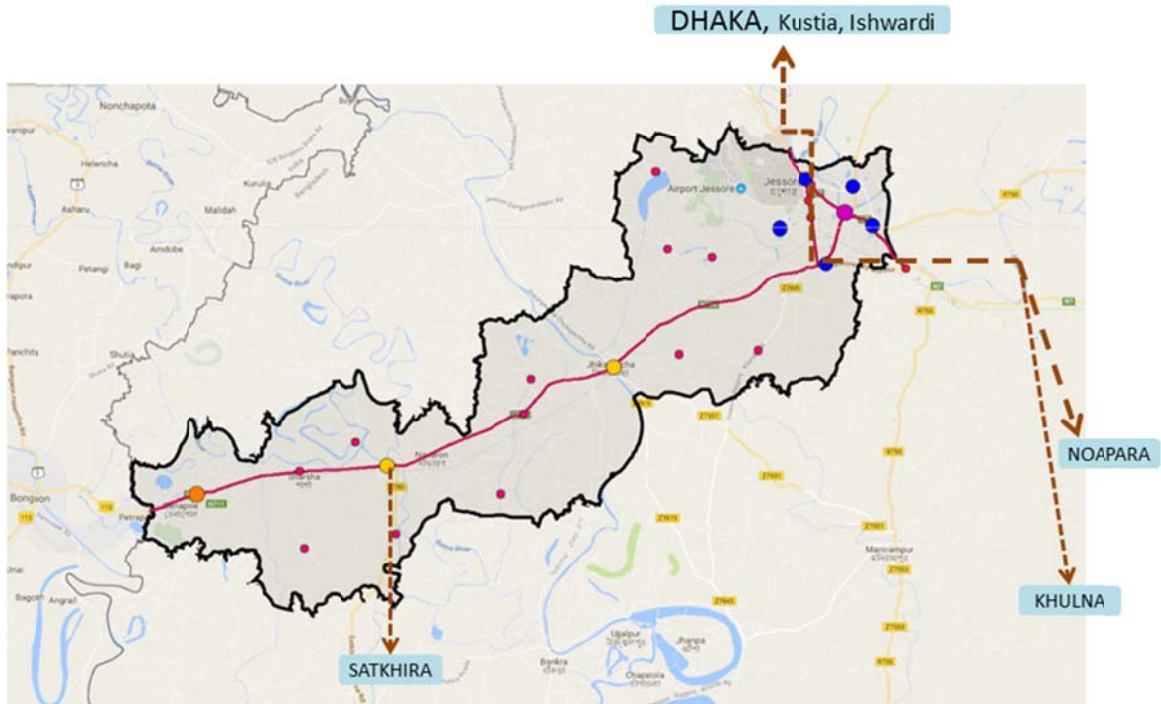


Figure 9: Connectivity of Benapole-Jessore Highway

## 9. Issues to Address

- Only two lane highway. In sufficient for current traffic. Several bazar are located near roads and cause congestion
- Movement of heterogeneous traffic on same lane make it overall slow and inefficient
- Public transport service is poor; in term of service quality, reliability, safety and comfort.
- Lack of bus-bay or stoppage facility.
- Too many opening to national highway. Many local roads are directly connected to the national highway
- No effective road hierarchy.
- Uncontrolled traffic movement. Lane violation, driving speed, overtaking, stop on lane – all are practiced.
- Congestion on important intersection

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
- Ensuring access for local habitat to:
  - employment
  - schools / colleges
  - community facilities
- to provide access to market for agriculture practices
- reduce dependency of local residents on the N706 for local purpose (school, shopping etc)

## 10. 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.



Figure 10: 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 these 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

## 11. Future Plan

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

### 11.1. 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 challenge for the planners to divert these 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.

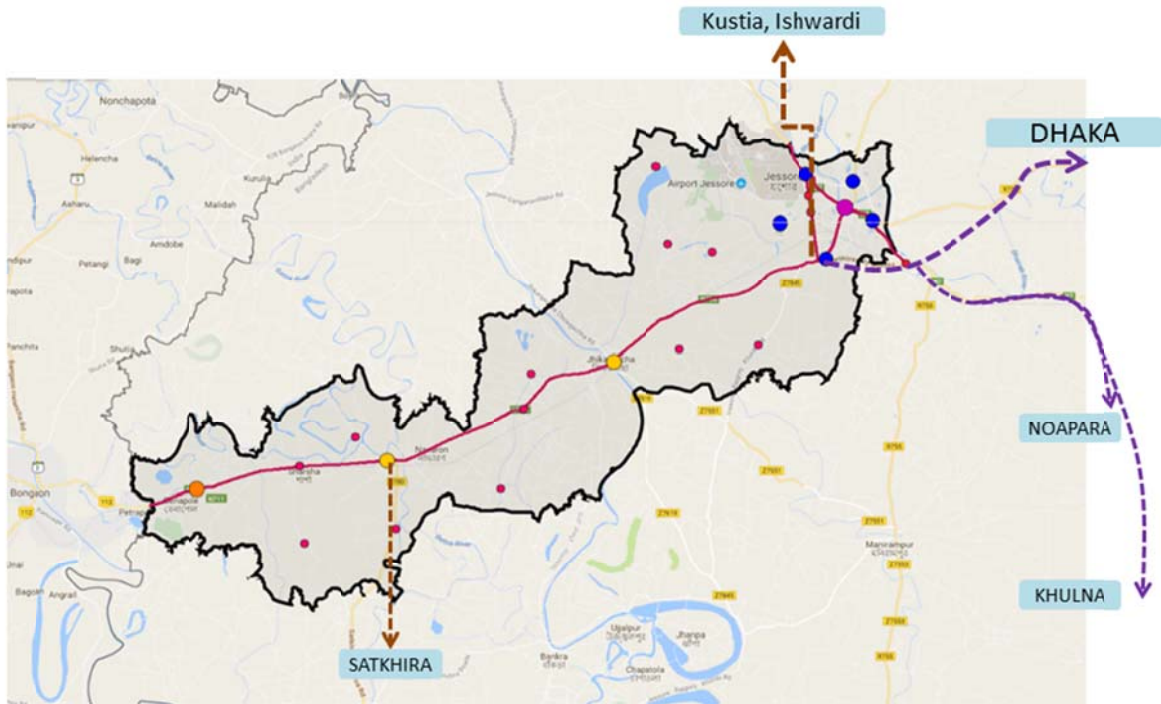


Figure 11: Proposed connectivity

There are three municipal areas located within this corridor (Figure 12). 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. Benapole 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.

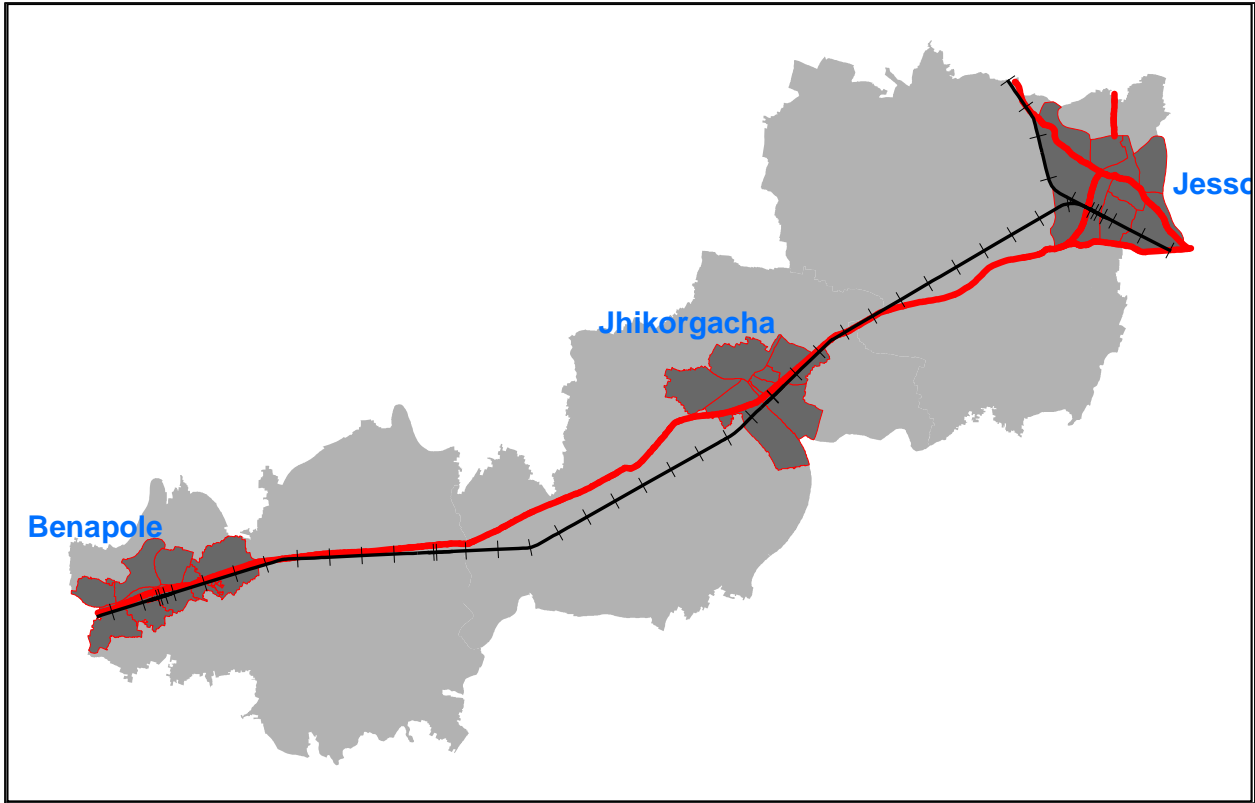


Figure 12: Municipal Areas with in Benapole-Jessore corridor

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 13). Location of job and economic activity is the central theme for any growth centre. Figure 13 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.

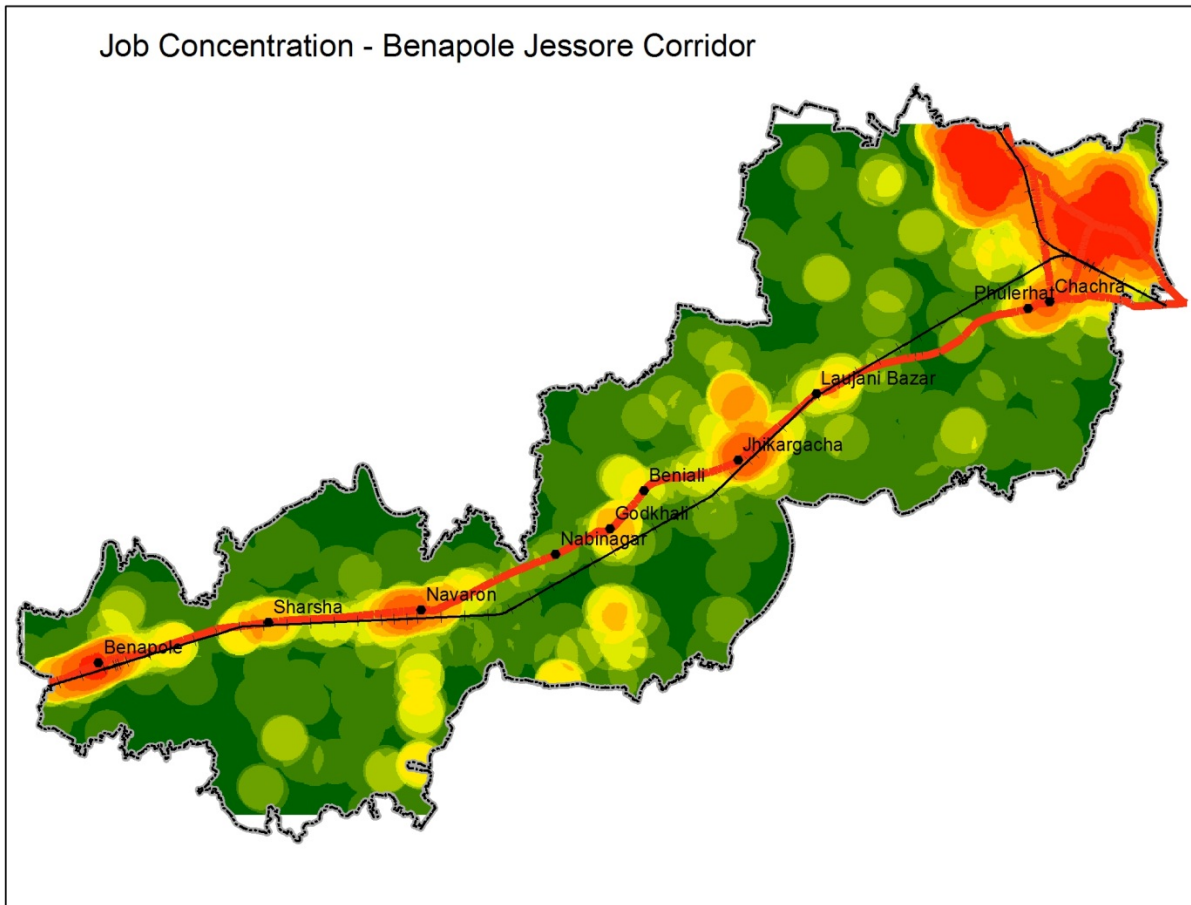


Figure 13: Concentration of economic activities

Figure 14 present an urban development strategy for the corridor. A significant portion of Benapole, Sharsha, Navaran and Jhikargacha 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 Benapol 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.

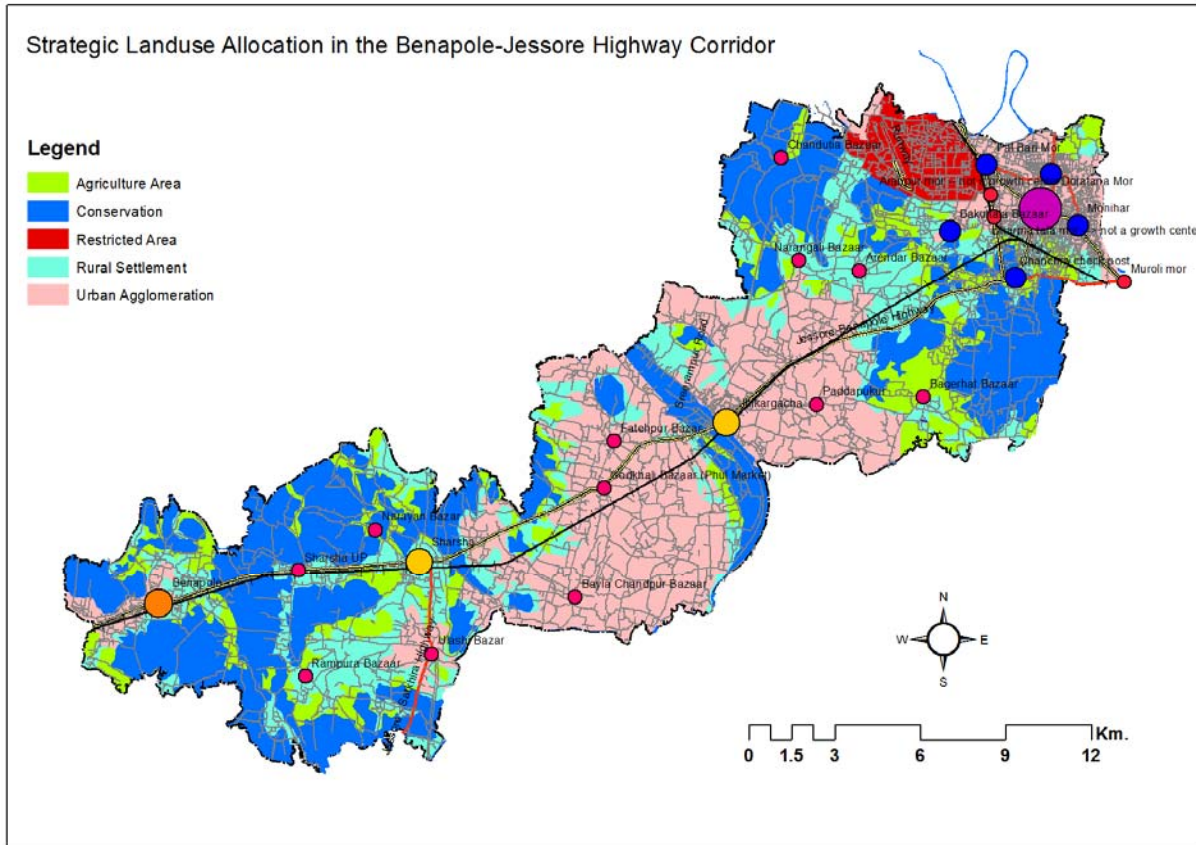


Figure 14: Proposed Urban Development Strategy

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 15 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.

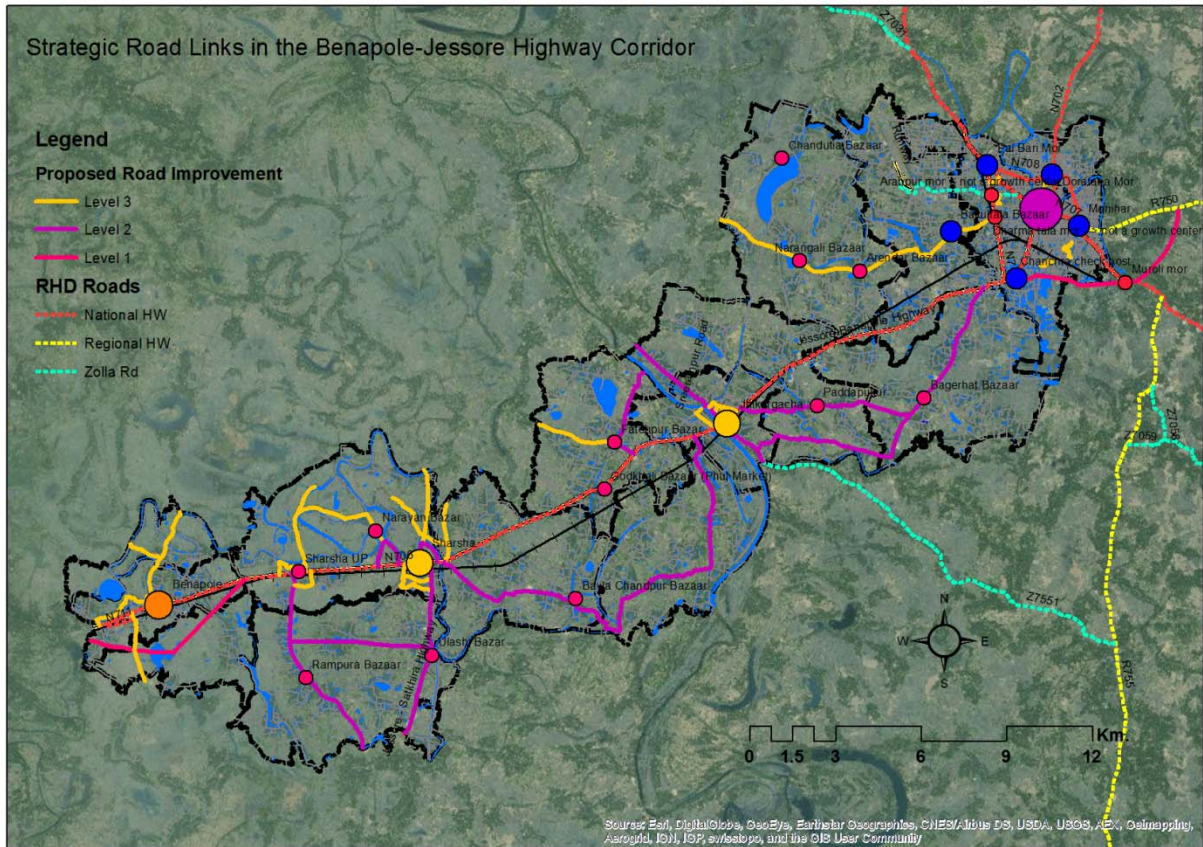


Figure 15: Proposed Road Hierarchy for the Corridor

## 11.2. 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.

## 12. Transport Management Plan

Transport management of this corridor have components:

- i) To ensure easy movement for freight and passenger from and to port
- ii) Connecting small, local settlement to provide access to education, business, health and other urban services
- iii) 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.

### 12.2. 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.

### 12.3. 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

#### **12.4. 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.

### **13. Implementation Strategy**

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

- Road widening – 6 lanning 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.

### 13.1. 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 16). 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.

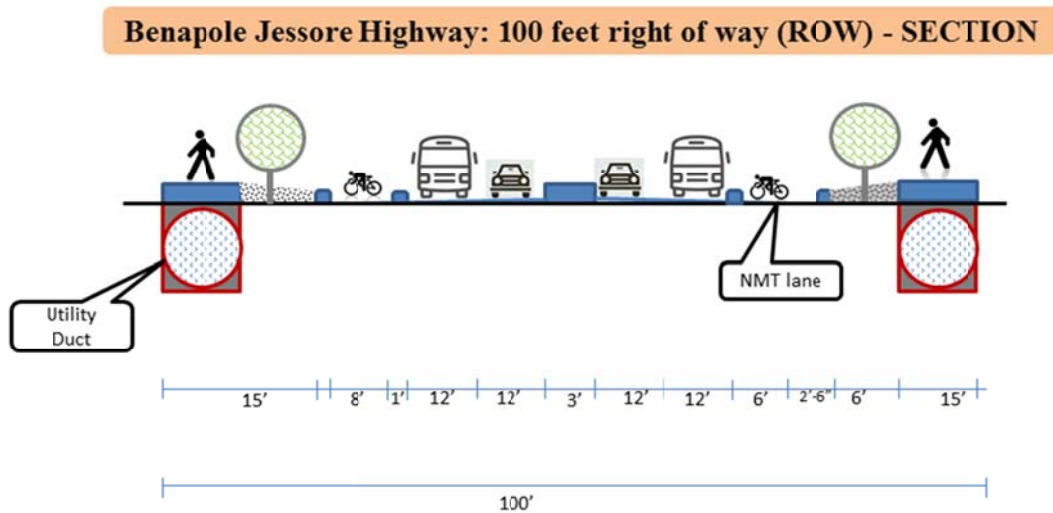


Figure 16: Conceptual lanning of Benapole-Jessore Highway

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.

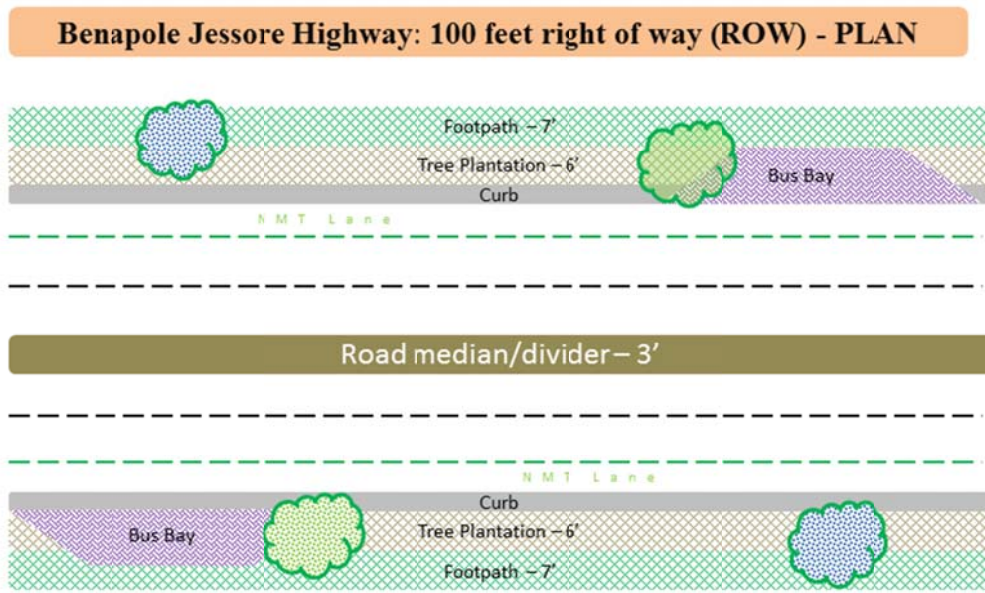


Figure 17: Plan of the proposed Highway

### 13.2. Link for External Destination

Widening of Khulna bypass from Chachrar more to Muroli more has been proposed with the same highway geometry (100 feet). At the same time, a new highway link is recommended for construction (Figure 18).

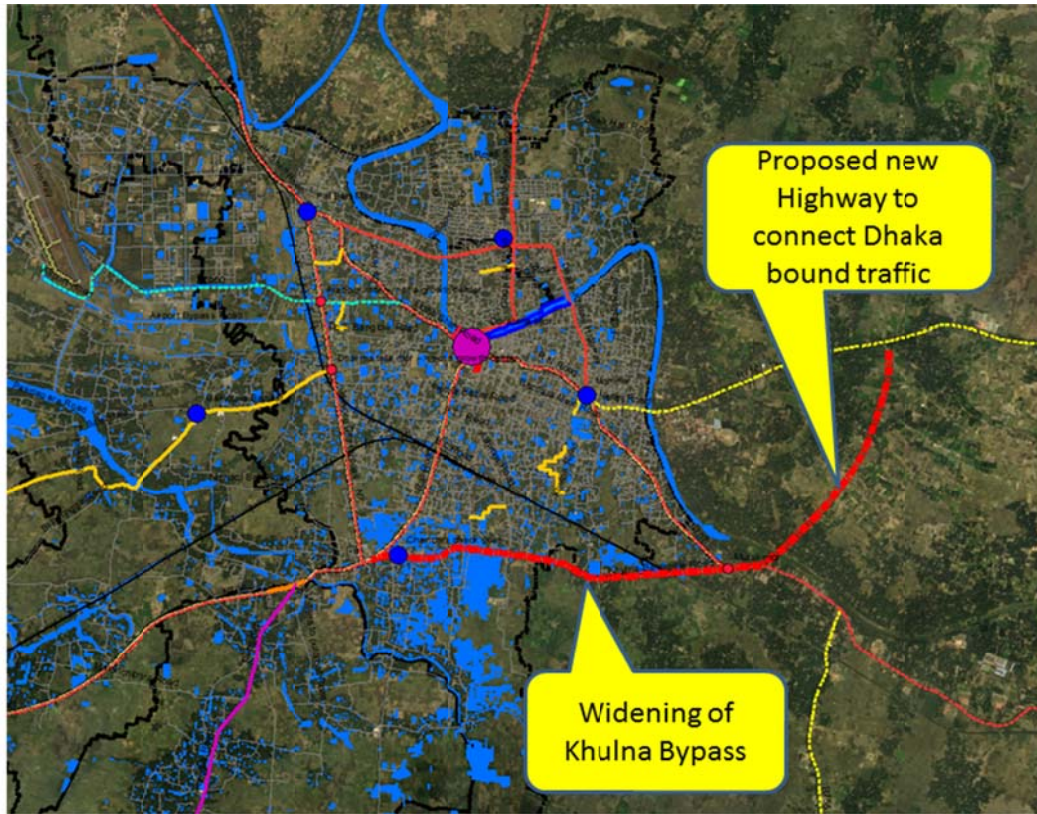


Figure 18: Proposed improvement of external links

### 13.3. 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.

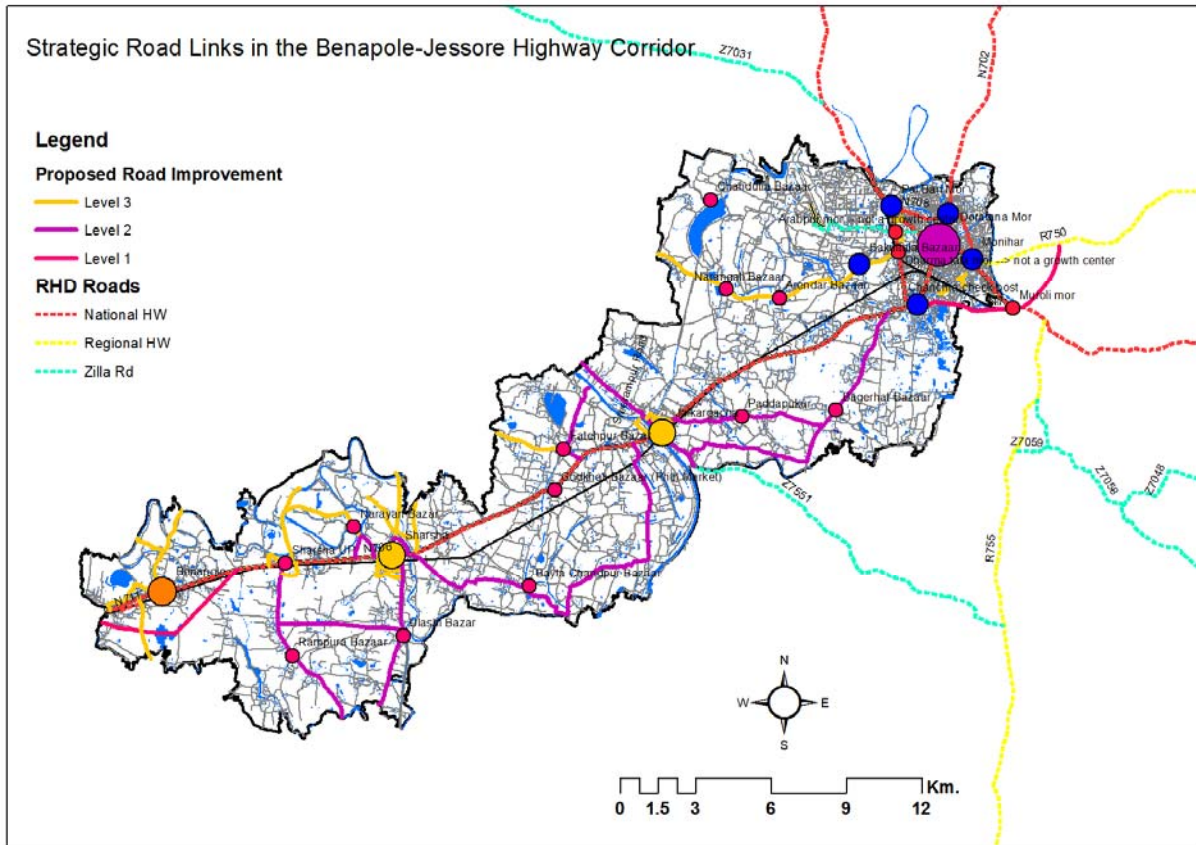


Figure 19: Proposed road hierarchy

### 13.4. 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.

Location of Service Roads in the Benapole-Jessore Highway Corridor

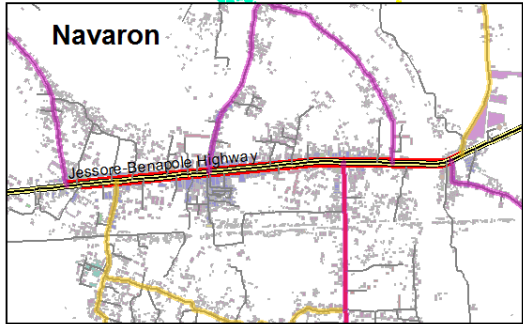
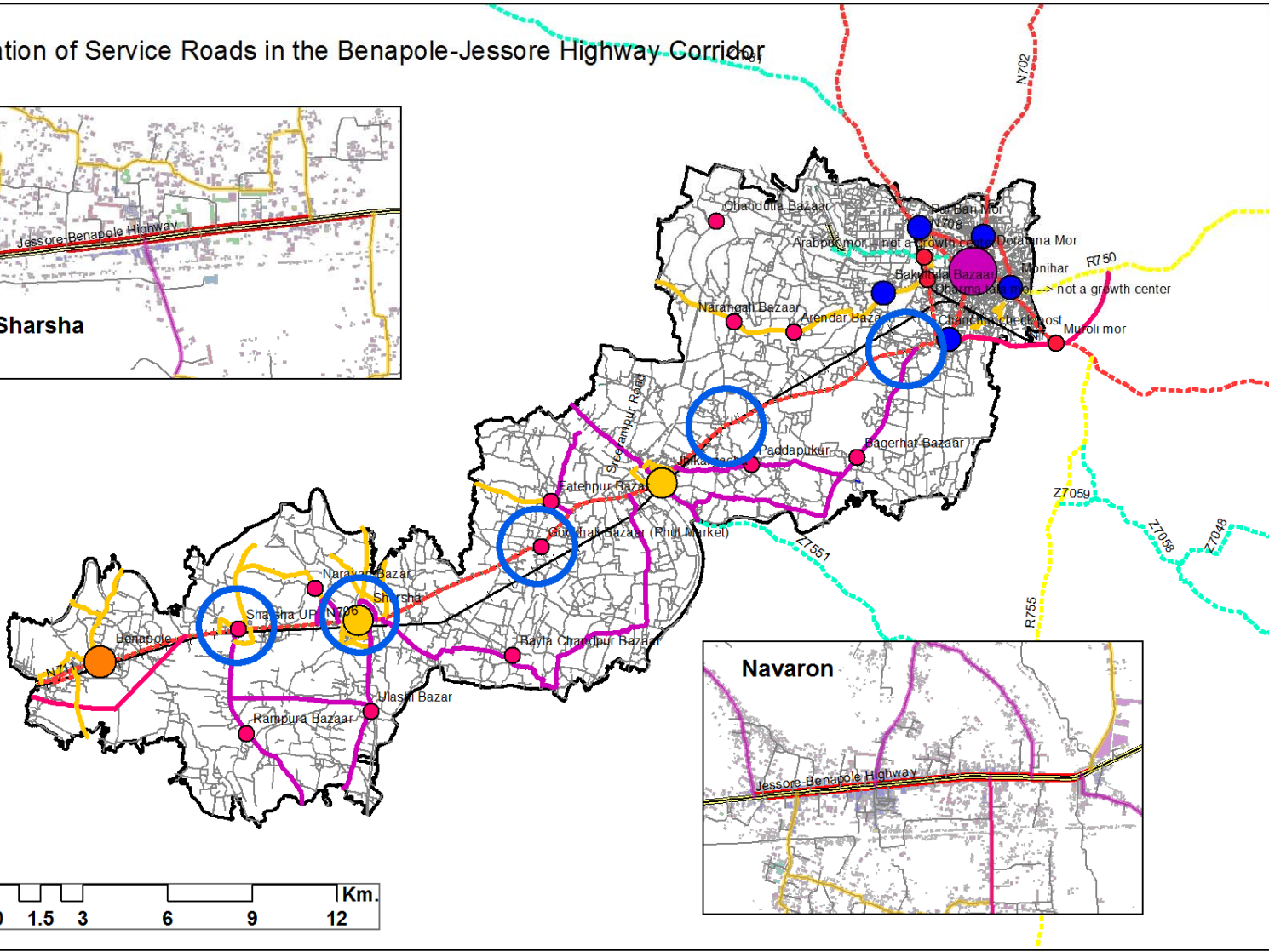
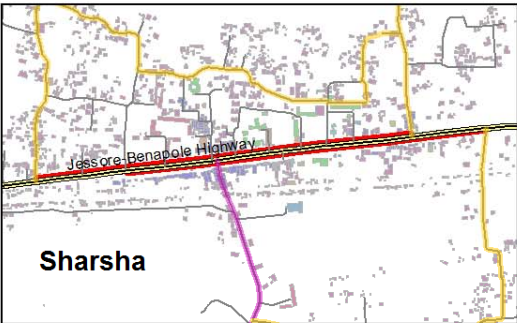


Figure 20: Service Road

### 13.5. 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 21: Bus bay

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## 14. Transport Policies

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 landuse 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.

- 1. Benapole Jessore Highway:** 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.
- 2. 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.
- 3. Service Road:** 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 this 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 barket/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.
- 4. Bus-bay:** The ten major bus stops also cause congestion and delay on highway. Construction of bus-bays are recommended on these location.
- 5. Railway Development:** Benapole-Jessore Railway is very much under consideration for development as part of “Corridor-3” in railway master plan 2013. Direct train between Kolkata and Dhaka has drawn significant attention. It is expected that completion of Padma Railway bridge and railway connectivity with Mongla port will generate heavy

traffic on railway along N706. The stations along this segment especially Sharsha require to undergo a severe development to cater its increasing passenger and role being the last rail stop in Bangladesh.

- 6. Regional Connectivity and Diverted Traffic:** most traffic travelling through this corridor do not destined to it or to Jessore. It goes to Kustia, Khulna, Dhaka, 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 to cross the 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 Monglaport south part of Jessore City Bypass can be widened.

## 15. 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.

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