



GOVERNMENT OF THE PEOPLE'S REPUBLIC OF BANGLADESH
MINISTRY OF LOCAL GOVERNMENT, RURAL DEVELOPMENT AND CO-OPERATIVES
Local Government Engineering Department (LGED)
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Final Report on Study-03
'My Village -My Town' -Technical Assistance Project
“Feasibility Study for Rural Connectivity including Multi-Modal Transport
System in Char and Haor Areas”

Kasba Upazila, B. Baria



July, 2022

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GLOSSARY

Hard-to-reach Villages mean in the Study those villages that are not connected by any paved road with the respective Upazila HQ and/or Union Parishad, and to the nearest economic activity hub and social service centres. The following explanations are important for the concept of hard-to-reach villages.

- In haor areas, Villages connected with submersible roads dry season and connected with Riverine/haor routes in the monsoon season have been considered accessible and excluded from hard-to-reach villages.
- Within Upazila, Villages that need a bridge to connect have not been considered hard-to-reach villages.
- In the case of island Upazilas, villages that are accessible with paved roads from Upazila HQ have been considered accessible and excluded from hard-to-reach villages.
- In the case of villages that are connected with HBB (Herring-Bone-Bond) or Brick flat soling routes have been considered hard-to-reach villages

Mauza Mauza is normally the geographical expression of a unit of landmass for revenue settlement and revenue collection, whereas, the village is a human settlement within a Mauza with a strong social bond. Within a Mauza there could be more than one village.

Union Bangladesh has 3-tiers local government systems: District, Upazila, and Union. Union is the lowest level of local government below Upazila Parishad

Upazila Sub-district; the third level of government administration below division and district.

Hat Synonym of Bazar or market

Walking Trail means in the Study the village pathway or access used for walking by commuters, in most cases does not have gazetted or established or commonly used alignment, and to the most, passable by bicycle or motorbike. These village trails are not passable by motorized jeeps or mini trucks or emergency service vehicles or not even any three-wheelers.

Unpaved Roads have no pavement or surface material. They are usually earthen roads.

Vulnerability is the human dimension of risk that is defined as conditions determined by physical, social, economic, environmental, political, cultural, and institutional factors or processes that increase the likelihood of an individual or a community to the impacts of shocks and hazards.

Climate-Resilience is expressed as the ability of a community to resist, absorb, adapt to and recover better from the impacts of disasters like floods and landslides in a sustainable way.

ABBREVIATIONS

ADB	– Asian Development Bank
BBS	– Bangladesh Bureau of Statistics
BC	– Bitumen Carpeting
DatEx	– Data Expert (Pvt.) Limited
DECL	– Delight Engineers and Construction Ltd.
DoE	– Department of Environment
DPHE	– Department of Public Health Engineering
DPP	– Development Project Proposal
FGD	– Focus Group Discussion
GIS	– Geographic Information System
GOB	– Government of Bangladesh
HBB	– Herring-Bone-Bond
HQ	– Headquarter
HTRV	– Hard-to-Reach Village
JV	– Joint Venture
KII	– Key Informant Interview
LGD	– Local Government Division
LGED	– Local Government Engineering Department
LGI	– Local Government Institute
MVMT	– My Village My Town
NGO	– Non-Government Organization
PD	– Project Director
PMO	– Project Management Office
RCC	– Reinforced Concrete
RHD	– Roads & Highways Department
SDGs	– Sustainable Development Goals
TA	– Technical Assistance Project
UE	– Upazila Engineer
UNDP	– United Nations Development Programme
UNO	– Upazila Nirbahi Officer
UNR	– Union Road
UP	– Union Parishad
UPZ	– Upazila Road
VRA	– Village Road A
VRB	– Village Road B

BACKGROUND

Context of the Project

The Government of Bangladesh made massive plans to ensure equitable development around the country. Under this development philosophy, the GoB requirements are to reduce the rural-urban divide to foster developmental benefits for all citizens. As part of this, the government declared an election manifesto on the eve of the national parliament election 2018 uniting the theme **Bangladesh on the March Towards Prosperity** aiming at transforming Bangladesh into a developed nation by 2041. Under this, villages have been considered the basic unit of prosperity for building a developed nation.

This firm commitment was declared following the light of the philosophy of the Father of the Nation Bangabandhu Sheikh Mujibur Rahman to build ‘Sonar Bangla’ (Golden Bangla) through inclusiveness, balanced, and development for all.

Following the philosophy of the Father of the Nation, the government declared its election manifesto 2018 titled ‘My Village-My Town’- Extension of Modern Civic Amenities in Every village. The Local Government Division under the Ministry of Local Government, Rural Development and Cooperatives has prepared a comprehensive work plan to make this election commitment a reality. The Local Government Division with its two agencies, the Local Government Engineering Department (LGED) and Department of Public Health Engineering (DPHE) has undertaken a technical assistance project named ‘My Village-My Town’- Technical Assistance Project. Under this project, 36 studies and 30 guidelines are being developed on eight thematic components related to the mandate of the Local Government Division. The eight thematic components are Rural Communications, Growth Centre and Hat Bazar, Rural Water Supply and Sanitation, Rural Waste Management, Community Space and Recreation Facilities, Upazila Masterplan, Rural Housing and Capacity building of Upazila and Union Parishad. Besides this, a coordination framework is being developed among the other ministries involved in the implementation of the My Village-My Town election manifesto. It is notable to mention that a coordination committee has been formed comprising 21 ministries to implement the program in a coordinated way under the leadership of the Minister of Local Government, Rural Development, and Co-operatives.

Context of the Report

This report is a part of the study of the component ‘Rural Connectivity’. Rural connectivity is the basic of all amenities in the villages. Rural connectivity works as the conduit that can supply a number of bare necessities such as access to the market, health, education, employment etc. In general, Bangladesh has remarkable progress in rural connectivity. Instead of this, a number of regions of the country are geographically sensitive where rural connectivity is not easy and has a lot of challenges. These regions are -Haor, Beel, Hills, Chars, islands etc. The people residing in these regions have considerably low access to civic amenities compared to other villages of the country. Therefore, the study and plan development of improvement of rural connectivity is one of the important assignments of the technical assistance project. The project undertook an Upazila-based special study on the villages of these geographically sensitive regions that are mentioned before.

This report contains the rural connectivity status and priority plan of the **Kasba** Upazila of **Brahmanbaria** District.

1 DESCRIPTION OF THE UPAZILA

1.1 GEOGRAPHY AND DEMOGRAPHY

The geographical area of Kasba Upazila is 209.77 square kilometers and has 10 unions, 164 mauzas, and 225 villages. The Upazila is 25km away from the district headquarters of Brahmanbaria. Kasba is covered by no major haors/ wetlands area and there exist 4(four) rivers flowing over the Upazila. The total population of Upazila is 319000 of which 152000 are male and 167000 females, the total number of households are 60919 and the average household size is 4.99 with a population density of 1593 (as per population census 2011).

1.2 EDUCATION FEATURES

According to the information of the relevant local government offices, there are 93 government & 74 non-government primary schools in the Upazila. On the other hand, Kasba has 39 non-government with 2 government high schools, 8 private colleges, and 22 madrasahs. The literacy rate for the Upazila is 50.7% as per BBS 2011.

1.3 RURAL ROAD COMMUNICATIONS

Bangladesh scored in the rural accessibility index at around 87 percent among South Asian and some other African countries. Generally, the people of Bangladesh get all-weather within 2 kilometers adjacent to their living places. But the feature of rural road communications in Kasba Upazila is contrasted. There are many villages, disconnected from the developed paved road network that brings huge suffering for the people of the villages. The total rural road network of Kasba is 540.51 km and out of which, 400.92 km are paved and 139.60 km earthen.

1.4 AGRICULTURE, FOOD PRODUCTION, AND FISHERIES

The driving force of Kasba's economy is largely dependent on Haor and agriculture. Abundant fish are available in Haor which can meet the country's demand to a large extent. Besides, jute, paddy and many other vegetables are produced in Kishoreganj which meet the needs of the country and are exported abroad. There are 41634 acres of arable land in Upazila. In the fiscal year 2010-11, the Rice production was 1740.91, 26550.71 & 50485.31 metric tons for Aus, Aman & Boro seasons respectively. The Upazila also produced 61 metric tons of Wheat, 760.5 metric tons Jute, 159 metric tons oil seed, and 2794 metric tons of Potato in the same fiscal year 2010-11. A notable quantity of vegetables is also produced here in this Upazila.

According to the BBS (2011) data, Kasba has 3330 acres of haor, pond & dighee that produced 8602.28 metric tons of fish. There also exist 37 poultry & 53 dairy farms.

All the agricultural products are adequate to meet the demand of the Upazila and surpluses are sold outside of Kasba.

1.5 GROWTH CENTRE AND HATBAZAR

Growth Centre and Rural Hatbazar are one of the main centers of the rural economy. Hatbazar is like the heart of the development of the rural economy. Rural Hatbazar plays a role in increasing production and creating employment impacting the supply chain of agriculture and non-agriculture products. There are 26 Hatbazar and 4 growth centers in Upazila. The structural

development of Hatbazar and its growth is pivotal to boosting the rural economy. Details of the growth center & hatbazar of the Upazila have been attached in Annexure-1.

2 LOCATION OF THE UPAZILA

Kasba Upazila of Brahmanbaria district in the North-Eastern part of the country. The location has been shown on the map. The Upazila is situated at the foothill of the Indian border.

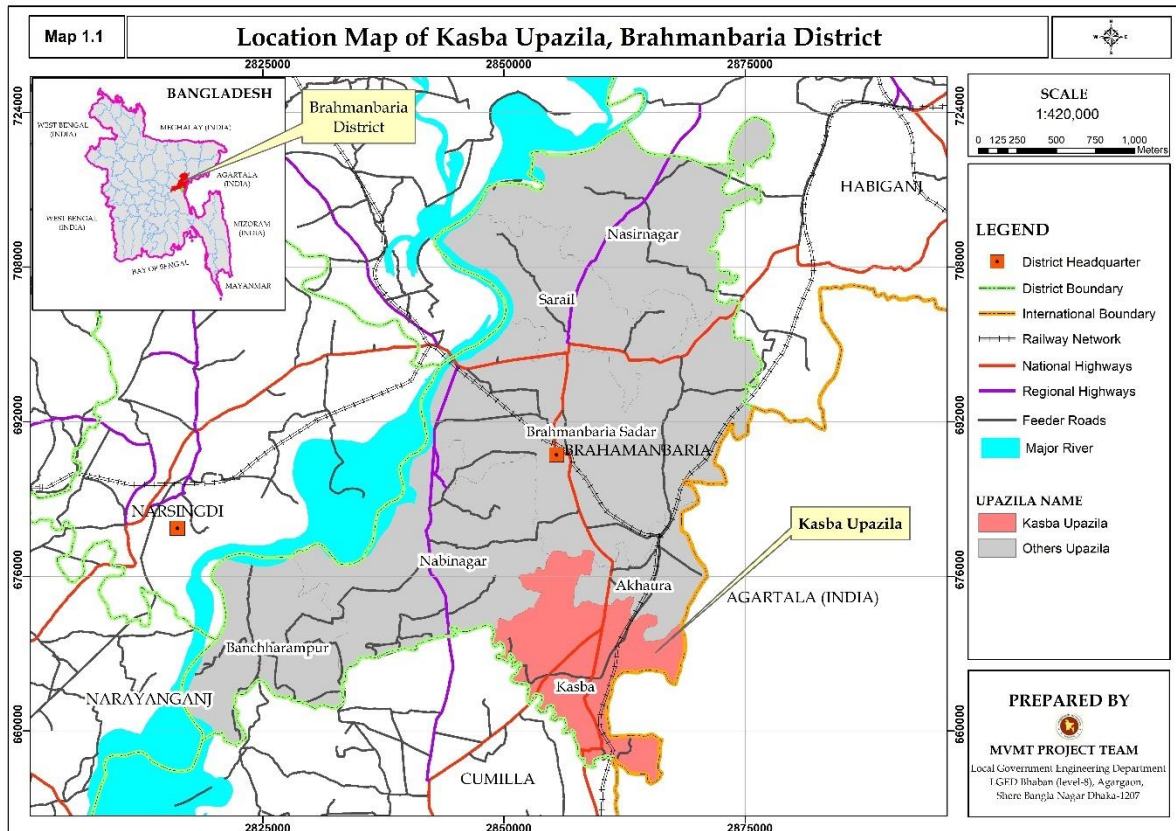


Figure 1: Upazila Location Map

3 APPROACH & METHODOLOGY

3.1 STUDY TEAM COMPOSITION

A team consisting of Senior Rural Road Infrastructure Specialist, Associate Rural Infrastructure Specialist, and Assistant Engineer engaged by the Project Management Office (PMO) conducted the study. On the other hand, A team consisting of Deputy Team Leader cum Rural Infrastructure Engineer, Junior GIS expert, and Junior Engineer engaged by consulting firm (datEx & DECL JV) conducted the study. A participatory approach to review the database and identify priority transport infrastructure needs (‘sub-projects) was instrumental. At the stakeholder consultation meeting held in each district, the database was reviewed, and priority needs were identified and mapped working together with the LGI representatives and LGED technical team. LGED and LGI representatives surveyed each Upazila for the collection of detailed observations and validations of the proposed priority needs.

Stakeholder Consultation Meeting

- Hard-to-reach Village Database and database of sub-projects reviewed
- Prioritization of sub-projects for each Upazila with LGI and LGED representatives
- Hard-to-reach villages and priority sub-projects mapped in the LGED GIS Map

3.2 STUDY AREA

The study was conducted in 72 Upazilas of haor areas, 3 Upazilas of Beel areas, 8 Upazilas of Char areas, and 4 Upazilas of Island areas during the period from December 2021 to June 2022. Apart from this, the PMO team conducted the study in 50 Upazilas of Haor areas, and the rest of the Upazilas of Haor, Beel, Char, and Island areas are conducted by the consulting firm team. The Upazila technical staff of LGED supported in organizing stakeholder consultation meetings and in database review and mapping the Hard-to-reach villages and population during this study period. They also supported the field work and authentication check by visits to the sub-projects in their respective Upazila and looking at the feasibility of some proposed sub-projects from technical, social, and environmental perspectives.

3.3 DATABASE REVIEW AND ANALYSIS

The study applied both qualitative (e.g., focused group discussions and in-depth case study fieldwork) and quantitative (structured and semi-structured interviews) approaches and methods in reviewing and conducting fieldwork in all the haor areas to understand the need and impact of rural accessibility in remote village contexts. The most applied methods in the reviewing and conducting fieldwork were:

- Key Informants Interview (KII)
- Focus Group Discussion (FGD)
- Case Study for authentication check and individual sub-project feasibility study.

- ❖ Review the Hard-to-reach village database at the ‘Stakeholder consultation meeting’ participated by local government representatives such as the UP chairman and members, Upazila chairman, vice-chairman, and UNO.
- ❖ FGD and KII were conducted using a checklist. Composition in the FGD included local community people: male and female, teachers, local farmers, traders, and students depending on availability.
- ❖ KIIs of Union Chairman, Upazila chairman, UNO male and female, and teacher depending on availability.
- ❖ Authentication and feasibility check by visits to the sub-projects reviewed and listed for the 40 selected case study unions under the MVMT project.
- ❖ Survey with GPS machine and Google apps in collecting Hard-to-reach village locations, landmarks, chainage at gaps, village road at sections vulnerable to land erosion damage, narrow existing width or sharp slope location.

3.4 PRIORITIZATION CRITERIA OF SUB-PROJECTS

Prepare a priority list of sub-projects by Upazilas that includes gazette ID roads and non-gazette roads (No ID) with attributes like name and number of villages and population. The criteria used in the prioritization are described below.

- Population, travel time needed from the remotest villages to the Upazila HQ, road type, and cost per km per 1000 population are the indicators weighted giving a value in a formula.
- Priority is given to single connection with no alternative transport road and multi-modal transport route to connecting the villages with Upazila HQ and Union Parishad, growth centre and important markets and social service centres; villages with a higher population and travel time get higher weightage;
- Priority is given to roads, ghats, and collection points that will facilitate agricultural diversification, reduce transportation costs, ensure a fair price and create a farm and non-farm employment and income;
- Priority is given to roads development and inland waterways dredging that will enable year-round mobility of the general public and villagers, in particular, health workers, teachers and students, and tourists to facilitate tourism development, quality education, and better health service in the district and region;
- Special priority is given to sub-projects of roads, Riverine routes/inland waterways that will mainstream deprived communities living in the hard-to-reach villages;
- Identified sub-projects with more cost-effectiveness than others using per km per 1000 population cost for each sub-project;
- Every sub-project(s) is to be climate-resilient, sustainable, and cost-effective.

3.5 WEIGHTAGE DISTRIBUTION FOR PRIORITIZATION

The approaches and methodologies of the Study for reviewing database and prioritization are synthesized in the diagrams below, noting that the proposed sub-projects of roads in the databases are prioritized based on weightage calculated on the set criteria (as shown in the diagram). People’s demands and local needs are reflected in the prioritization which was

determined by the Study, working together with LGI representatives and LGED field-level technical staff at the stakeholder consultation meetings held in each Upazila.

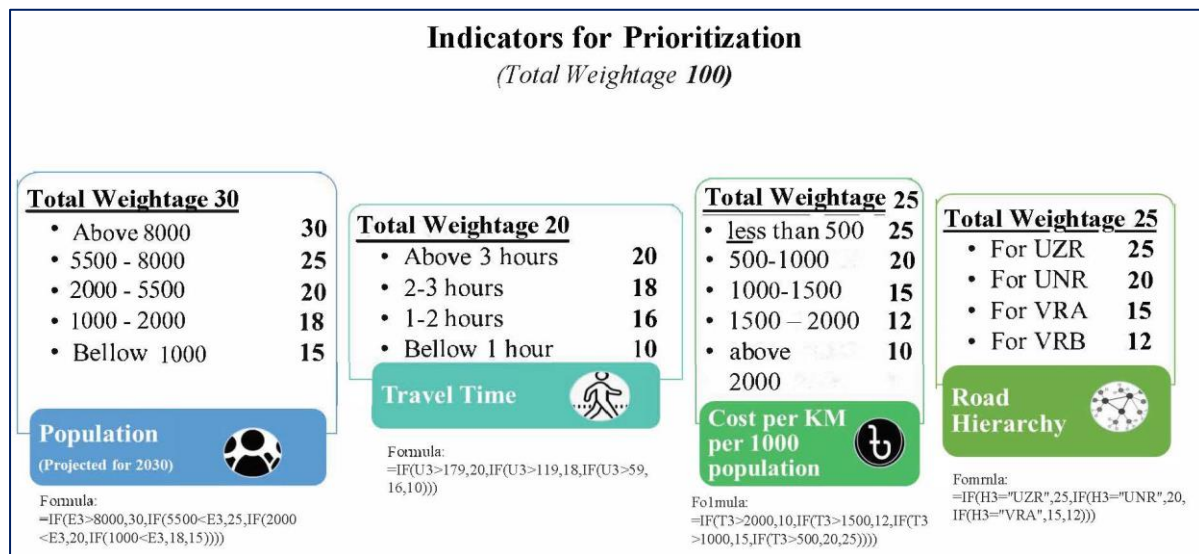


Figure 2: Prioritization indicators & their weightage values

3.6 MAPPING HARD-TO-REACH VILLAGES & POPULATION

- With the active support of LGED technical staff, first, draw every priority listed MVMT roads and Hard-to-reach villages on the LGED GIS map in presence of the union Chairman and members who know the sub-project and are the best. This was not in scale but approximation was reached by triangulation. Then digitized on screen using GIS, validate with Google map, and checked with data and information on important features and points collected using GPS during field visits.
- There were challenges in deciding on starting node and/or zero chainage of the non-gazette (No ID) road because not all non-gazette sub-projects were visited and surveyed by the Study team.

3.7 WRAP UP MEETING

Wrap up the fieldwork progress at each district holding a meeting chaired by the Executive Engineer, LGED, and participated by all Upazila engineers of the respective district. On completion of the fieldwork, this was conducted to share issues and updates to the district Executive Engineer for feedback and action, as necessary.

3.8 VALIDATION WORKSHOP

On completion of data analysis and drafting of the database and mapping, the Study outputs were shared with the respective districts and Upazilas for final review. The later validation workshop was held at the respective district on the Draft Report to share and validate the findings. This was participated by the LGED Division, District and Upazila officials, and technical staff.

3.9 NATIONAL WORKSHOP

The Draft Report is finalized, incorporating comments received from the validation workshop, LGED head office staff, and the PMO office. A National Level workshop was held at LGED HQ for sharing and disseminating the results of the Study.

4.2 HAOR/ WETLAND CATEGORY

Bijna River is flowing through the middle of the Upazila. Therefore, road or other infrastructure development in this Upazila does not have any major environmental consequences.

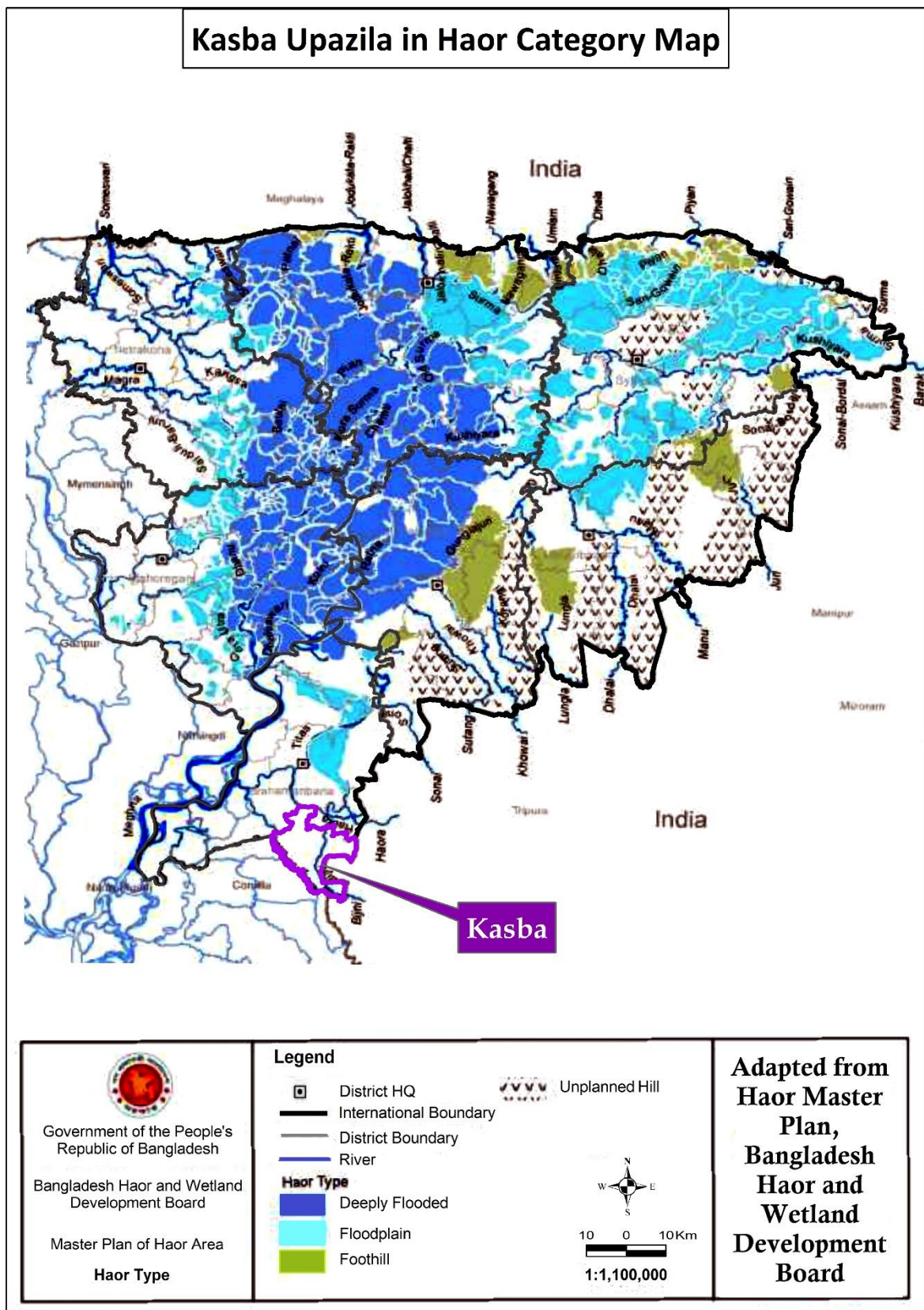
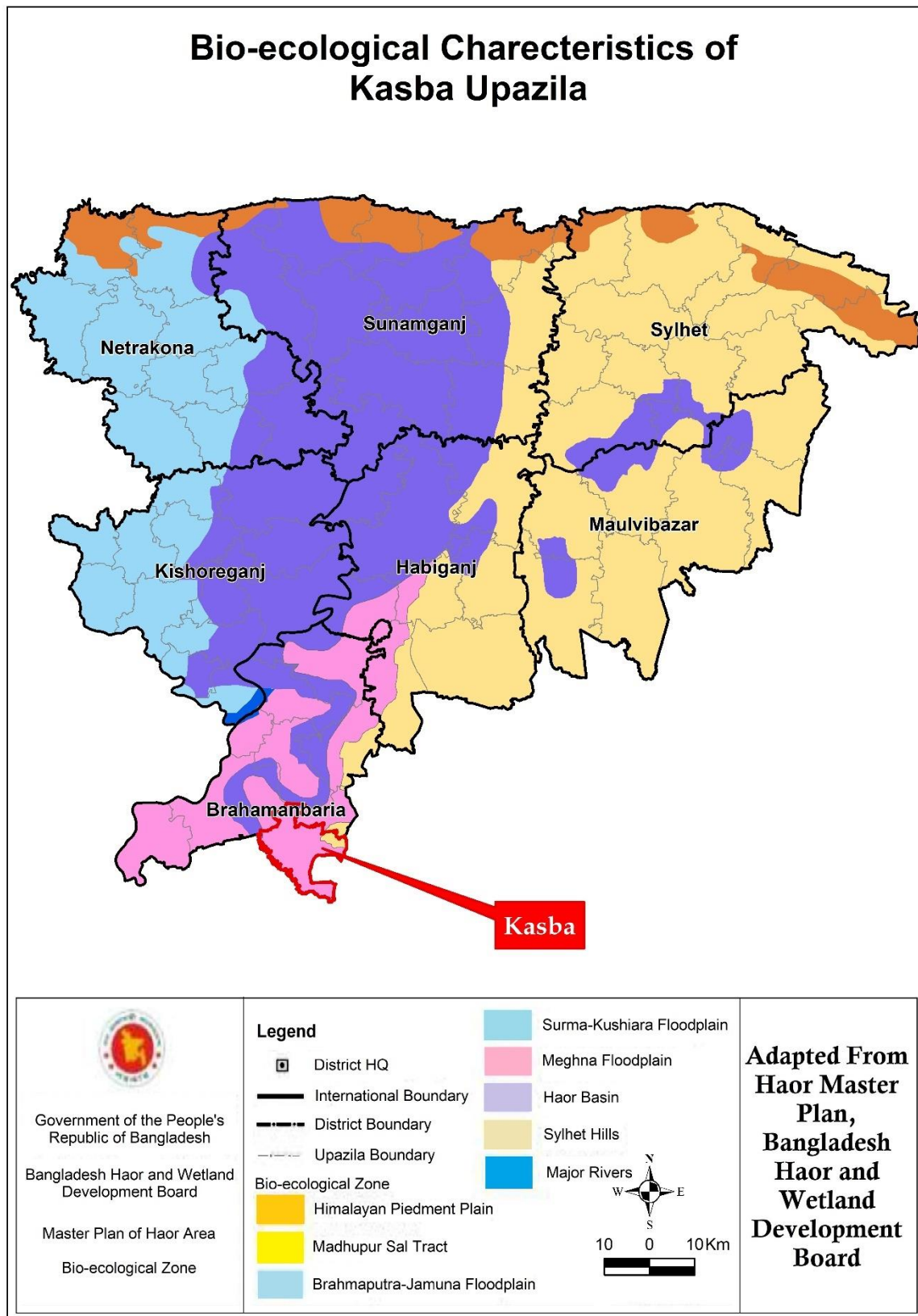


Figure 4: Haor Category Map.

4.3 BIO-ECOLOGICAL CHARACTERISTICS

The Bio-ecological characteristics map of the Upazila has been shown below. The whole Upazila is within the meghna floodplain range.



5 RURAL ROAD CONNECTIVITY TO THE VILLAGES

5.1 SUMMARY OF THE VILLAGE CONNECTIVITY

The feature of rural road communications in Kasba Upazila is contrasted. Out of 204 villages, 18 are disconnected from the developed paved road network which brings huge suffering for the people of those village. The total rural road network of Kasba is 540.51 km and out of which, 400.92 km are paved and 139.60 km earthen.

Table 1: Total villages in the unions and their connectivity

SL No	Union	No of Villages	Connected Villages	Hard-to-Reach Villages
1	Badair	8	8	0
2	Bayek	32	29	3
3	Binauti	22	22	0
4	Gopinathpur	39	32	7
5	Kaimpur	28	26	2
6	Kasba	6	6	0
7	Kherera	14	13	1
8	Kuti	27	23	4
9	Mehari	11	11	0
10	Mulgram	17	16	1
Total		204	184	18

5.2 VILLAGES AND THEIR CONNECTIVITY – UNION LEVEL

Out of 204 villages, 18 are disconnected from the developed paved road network which brings huge suffering for the people of those villages.

Table 2: Union-wise connected & Hard-to-Reach Villages and their population

Union	Sl.No	Connected Villages	Population 2021 (Based on BBS 2011)	Hard-to-Reach Villages	Population 2021 (Based on BBS 2011)
Badair	1	Badair	4031		
	2	Barni	697		
	3	Haturbari	2417		
	4	Jamsherpur	925		
	5	Kalsar	571		
	6	Mandarpur	5686		
	7	Nurullahpur(Padua)	317		
	8	Shikarpur	3368		
	Sub Total		18012		
Bayek	1	Badalia	260	Dhopakhala	586
	2	Baliahura	920	Nischintapur	149
	3	Barabayek	175	Sagartala	568
	4	Barikhola	90		
	5	Bayek	2953		
	6	Beltali	1019		
	7	Bridhyanagar(Austajangal)	1104		
	8	Chandkhola	684		
	9	Charua	2671		
	10	Dhanrajpur	355		
	11	Gaurangala	786		
	12	Gopinagar	1685		
	13	Haripur	1133		
	14	Joydebpur	380		
	15	Kaikhala	690		
	16	Kandarpara	775		
	17	Kashirampur	792		
	18	Khadla	1404		
	19	Konaghata	2014		
	20	Kulla Pathar	1350		
	21	Mirjapur	161		
	22	Nandan Nagar (Madla)	2255		
	23	Naya Para	520		
	24	Nayanpur	1368		
	25	Putia	931		
	26	Raghurampur	797		
	27	Rajballabpur	306		
	28	Sastapur	253		
	29	Shyampur	797		
	Sub Total		23890		1303

Union	Sl.No	Connected Villages	Population 2021 (Based on BBS 2011)	Hard-to-Reach Villages	Population 2021 (Based on BBS 2011)
Binauti	1	Adra	225		
	2	Anantapur	1809		
	3	Bhora Jangal	712		
	4	Binauti	1809		
	5	Brahmangram	1788		
	6	Chak Chandrapur	2621		
	7	Chandaisar	607		
	8	Chapia	1530		
	9	Damsar			
	10	Durain	1100		
	11	Gabbari	976		
	12	Hajipur	338		
	13	Khidirpur	1264		
	14	Mainchang	280		
	15	Majlishpur	2055		
	16	Namtabad	3418		
	17	Noapara	1166		
	18	Rauthhat	2223		
	19	Rauthhat Bazar	307		
	20	Saidabad	6365		
	21	Tigharia	757		
	Sub Total		31350		
Gopinathpur	1	Alampur	205	Bhollabari	418
	2	Alikhara	147	Ganakmura	287
	3	Bahadurpur	232	Jagannathpur	1797
	4	Bahthsala	2480	Kaziatala	288
	5	Baratuta	1106	Manikmura	372
	6	Bishnauri	1270	Ramnagar	291
	7	Chandidar	499	Saidpur	670
	8	Dajanagar	2006		
	9	Daulatpur	193		
	10	Dighirpar	75		
	11	Enayetpur	2021		
	12	Fatehpur	845		
	13	Gopinathpur	6236		
	14	Goshaipur	236		
	15	Gunpur	674		
	16	Hariaibaha	590		
	17	Haripur	244		
	18	Jetuamura	1831		
	19	Kashipur	421		
	20	Khirmal	588		
	21	Khuiapania	1043		

Union	Sl.No	Connected Villages	Population 2021 (Based on BBS 2011)	Hard-to-Reach Villages	Population 2021 (Based on BBS 2011)
	22	Lakshmipur	836		
	23	Latuamura	1925		
	24	Madhupur	508		
	25	Mrijatpur	163		
	26	Noapara	801		
	27	Patharia Dara	501		
	28	Rajnagar	394		
	29	Rampur	1459		
	30	Royermura	563		
	31	Saidpur	29		
	32	Sutarmura	1017		
	Sub Total		31138		4123
Kaimpur	1	Chatakhola	691	Ganganagar	678
	2	Dighirpar	542	Kalinagar	195
	3	Girishnagar	636		
	4	Gobindapur	1348		
	5	Hosnpur(Noagaon)	1664		
	6	Jagannathpur	590		
	7	Jajishar	2674		
	8	Jikra	338		
	9	Kaimpur	5705		
	10	Kalta	830		
	11	Kalyanpur Chak Basta	1021		
	12	Kamalpur	2969		
	13	Khurisher	158		
	14	Krishnapur(D.chakbasia)	368		
	15	Lakshmipur	886		
	16	Mainpur	4285		
	17	Mandabagh	2756		
	18	Mandabagh Bazar	9		
	19	Nakahura	238		
	20	Noapara	404		
	21	Omarpur	150		
	22	Paniarup (Shyampur)	1887		
	23	Rajballabhpur	596		
	24	Ramkhola	245		
	25	Routhkhola	575		
	26	Sreepur	681		
	Sub Total		32246		873
Kasba	1	Bilghar	422		
	2	Dakshin Sahapur	4873		
	3	Kaliara	578		
	4	Kollabari	1042		

Union	Sl.No	Connected Villages	Population 2021 (Based on BBS 2011)	Hard-to-Reach Villages	Population 2021 (Based on BBS 2011)
	5	Mir Pukurpar	428		
	6	Mirtala	2699		
	Sub Total		10042		
Kherera	1	Bugair	422	Keair	642
	2	Damsar	1160		
	3	Deli	2774		
	4	Dharmapur	1627		
	5	Ganesh Pukurpar	507		
	6	Gazaria	527		
	7	Golasar	801		
	8	Kherera	4598		
	9	Madhabpur	99		
	10	Mandasair	2159		
	11	Pataisar	505		
	12	Radhanagar	616		
	13	Sonargaon	1656		
	Sub Total		17451		642
Kuti	1	Bagair	496	Atkha Para	522
	2	Baisar	924	Kailasnagar	263
	3	Bhairabnagar	1254	Rampura	773
	4	Bilghar	1247	Shasansar	364
	5	Bishnupur	3167		
	6	Chandinagar	116		
	7	Dakshinkhar	2159		
	8	Ganganagar	1067		
	9	Gauripur	1224		
	10	Gunsagar	1168		
	11	Jajira	2753		
	12	Kaisanagar	155		
	13	Kalamuria	1019		
	14	Kashinagar	186		
	15	Kuti	6933		
	16	Lesiara	5163		
	17	Maijkhari	3276		
	18	Maniknagar	460		
	19	Pukurpar	495		
	20	Raniara	2953		
	21	Shantipur	425		
	22	Sharatnagar	690		
	23	Taranagar	399		
	Sub Total		37729		1922
Mehari	1	Baherhata	879		
	2	Ballabpur	1295		

Union	Sl.No	Connected Villages	Population 2021 (Based on BBS 2011)	Hard-to-Reach Villages	Population 2021 (Based on BBS 2011)
	3	Bamutia	385		
	4	Chhabpur	2066		
	5	Esan Nagar	1158		
	6	Jamuna	2133		
	7	Kheora	3253		
	8	Mehari	3770		
	9	Purkuil	1061		
	10	Simrail	9747		
	11	Tilarpur	588		
	Sub Total		26335		
Mulgram	1	Amkhar	343	Shyamnagar	3489
	2	Bahadurpur	1405		
	3	Baurkhanda	1676		
	4	Chandrapur	3301		
	5	Chargachh	3019		
	6	Debirghar	1710		
	7	Joypur	842		
	8	Labkhar	632		
	9	Mulgram	4065		
	10	Niamatpur	3053		
	11	Nibra	1744		
	12	Nimbari	2008		
	13	Pukurpara	576		
	14	Roytala	2785		
	15	Sherpur	1739		
	16	Shyambari	3045		
	Sub Total		31943		3489

5.3 MAP OF HARD-TO-REACH VILLAGES & PROPOSED ROADS

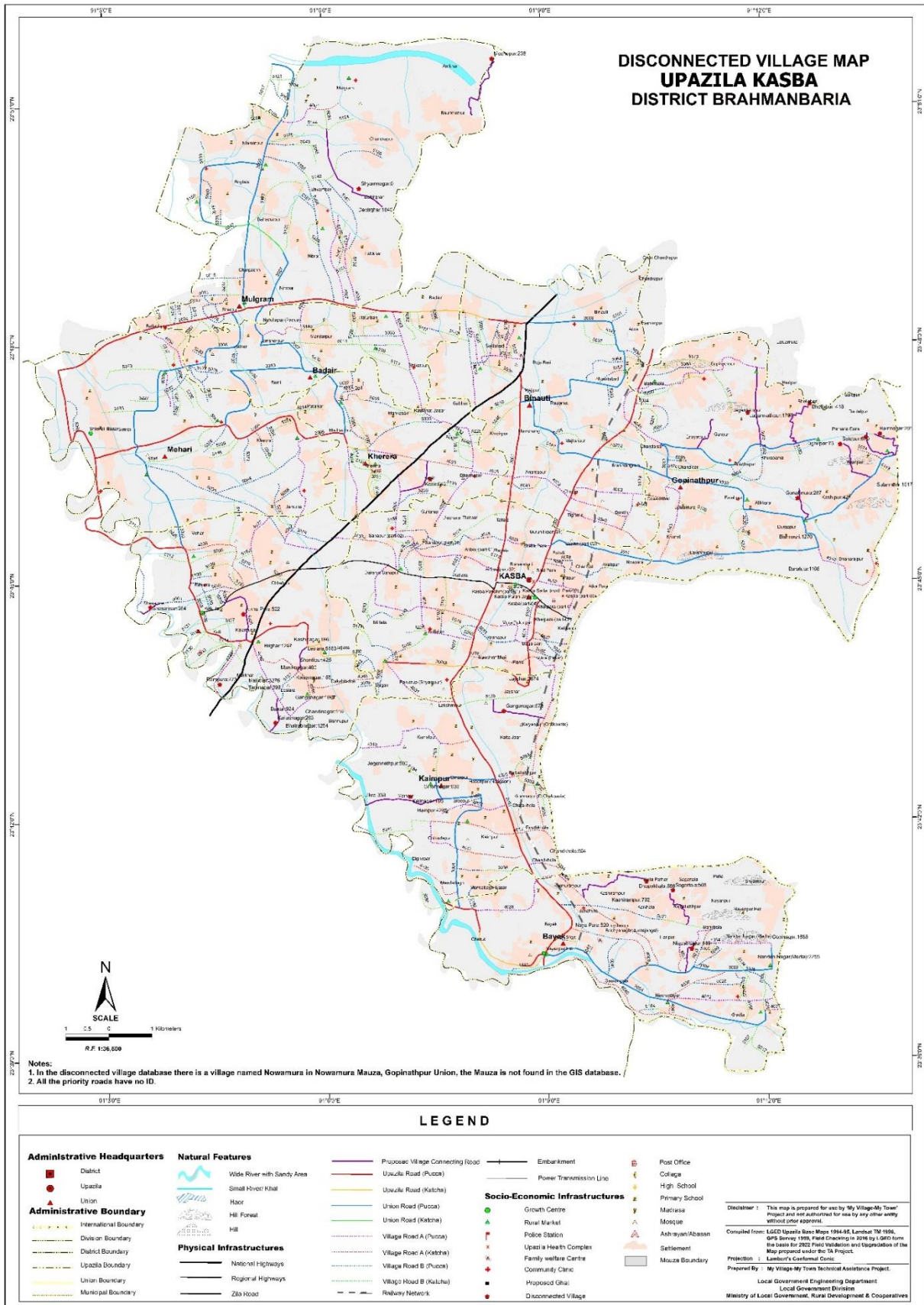


Figure 6: Upazila Map

6 DATA COLLECTION & ANALYSIS

The consultant team collected data from the field on Hard-to-Reach Villages. Data were collected from those villages including population, road alignment information (*type, length, condition*), travel time, a structure required on the alignment, potential Riverine routes that can be used for a multi-modal transport system etc. The data were then analyzed, categorized, and finally used to obtain a priority list along with a map (*Figure:5*) showing prioritized roads and Hard-to-Reach Villages. The proposed Riverine & road connectivity by the UE office have been discussed in this section.

6.1 PROPOSED ROADWAY FOR HARD-TO-REACH VILLAGES:

At present, roads are the most dominant mode of transportation. Most of the structures were built on the rivers to make road communication effective.

Table 3: Summary of the rural roads in the Upazila

Total Road Length of the Upazila (KM)	Paved Length (KM)	Unpaved Length (KM)	Length of unpaved roads of Hard-to-Reach Villages (KM)
540.51	400.92	139.60	26.80

6.1.1 PROPOSED ALL-WEATHER ROUTES:

There are 7 all-weather roads proposed to connect the HTRV within the Upazila. The road name, ID, road condition, and the length of the unpaved roads are as bellow;

Table 4: Proposed all-weather roads in the Upazila

Sl. No	Road Name	Road ID	Road Condition	Unpaved length (Km)
1	Lasiara-Atkha Para road	412634029	All Weather	1.20
2	Barai- Bhollabari road	No ID	All Weather	1.50
3	Kashirampur-Dhopakhala road	No ID	All Weather	1.50
4	Ganakmura village road	No ID	All Weather	0.80
5	Jajishar-Ganganagar road	No ID	All Weather	1.60
6	Bari-Jagannathpur-Konapara road	No ID	All Weather	1.80
7	Kailasnagar village road	No ID	All Weather	1.000
8	Kaimpur- Kalinagar- Jikra road	No ID	All Weather	2.50
9	Boromura -Kaziatala road	No ID	All Weather	1.00

Sl. No	Road Name	Road ID	Road Condition	Unpaved length (Km)
10	Daragabari- Keair-Kherera Road	No ID	All Weather	0.80
11	Modhupur- Mulgram (Kasba) Connected Road	No ID	All weather	2.00
12	Horipur-Nischintapur road	No ID	All Weather	1.00
13	Nowamura road	No ID	All Weather	0.90
14	Boromura-Ramnagar road	No ID	All Weather	1.00
15	Raniara- Rampura Road	No ID	All Weather	1.50
16	Petrobangla- Sagartala road	No ID	All Weather	1.20
17	Sutarmura- Saidpur Road	No ID	All Weather	1.20
18	Jajiara-Shasansar road	No ID	All Weather	1.00
19	Debirghar-Shyamnagar- Moidagonj road	No ID	All Weather	2.50

6.1.2 PROPOSED ROADS FOR HARD-TO-REACH VILLAGES HAVING NO ID:

There are 7 roads proposed to connect the HTRV within the Upazila that have no ID yet. The road name, ID, and the length of the unpaved part are as bellow;

Table 5: Proposed roads for Hard-to-Reach Villages having No ID

Sl. No	Road Name	Road ID	Unpaved length (Km)
1	Barai- Bhollabari road	No ID	1.50
2	Kashirampur-Dhopakhala road	No ID	1.50
3	Ganakmura village road	No ID	0.80
4	Jajishar-Ganganagar road	No ID	1.60
5	Bari-Jagannathpur-Konapara road	No ID	1.80
6	Kailasnagar village road	No ID	1.00
7	Kaimpur- Kalinagar- Jikra road	No ID	2.50
8	Boromura -Kaziatala road	No ID	1.00
9	Daragabari- Keair-Kherera Road	No ID	0.80
10	Modhupur- Mulgram (Kasba) Connected Road	No ID	2.00

Sl. No	Road Name	Road ID	Unpaved length (Km)
11	Horipur-Nischintapur road	No ID	1.00
12	Nowamura road	No ID	0.90
13	Boromura-Ramnagar road	No ID	1.00
14	Raniara- Rampura Road	No ID	1.50
15	Petrobangla- Sagartala road	No ID	1.20
16	Sutarmura- Saidpur Road	No ID	1.20
17	Jajiara-Shasansar road	No ID	1.00
18	Debirghar-Shyamnagar- Moidagonj road	No ID	2.50

6.1.3 PRIORITY FOR ROAD DEVELOPMENT

Considering resources constraint, benefited a group of people, the time required to travel & road hierarchy, a priority list has been developed (Annexure- 2) for the HTRV (Hard to Reach Villages). The priority score has been determined according to following

Table 6: Considered weightage values for the prioritization

Criteria	Weightage
Population	30
Travel Time	20
Cost per 1000 Population	25
Road Type	25
Total=	100

It has been observed that there are a number of roads that bear the same score. In these cases, the minimum budget required for providing connectivity to thousands of people- will get more priority compared to more budget-required roads. The roads bearing ID will have higher priority than the roads without ID.

7 CONCLUSION & RECOMMENDATIONS

- Kasba Upazila is located within the *Middle Meghna Flood Plain zone*. There are 4 (four) major Rivers that dominate the ecosystem, and transport system of the Upazila. During monsoons, these Rivers carry a huge volume of flood water. Though the Upazila has a number of Rivers, Riverine transport is available only along the Meghna River.
- As the Upazila is heavily flooded during monsoon, rural roads and structures are highly vulnerable in this Upazila.
- The Upazila has a total number of 19 Hard-to-Reach Villages. To develop rural connectivity, there are proposals for both all-weather and submersible roads. This report contains a list of roads with their priority. The priority has been determined based on Population, Travel Time, Cost per KM/1000 people & Road Hierarchy.
- This Upazila is highly vulnerable to disasters. Due to climate change, vulnerability is getting intense. The year 2022 has shown catastrophic flood that was not seen over the last 18 years (*last in 2004 similar to 1998 & 1988*). Therefore, it is highly recommended to study the road alignments before going for investment.
- Case-by-case design of roads in this Upazila considering different aspects such as exposure to floods, erosion etc. is highly recommended. A special study regarding the road and structure design of the Kasba Upazila in Brahmanbaria district is highly recommended.

ANNEXURE - 1

DETAILS OF GROWTH CENTER & HATBAZAR

Sl. No.	Union	Market Name	Market Category (GC=Growth Center, HB=Hat Bazar)	Market Listed? (Yes/No)	Market Category (General/Special/Collection center)	Market Category (Wholesale/Retail/both)	Hat Day	Chandina Viti (Number)	Chandina Viti (Land)	Chandina Viti (Shop)	Land Area (Acre)			Lease/Khas Collecti on BDT (2020)	Lease/Khas Collecti on BDT (2019)
											Toha	Khas	Private		
1	Badair	Badair bazar	HB	Yes	General Market	Wholesale	1	42	0.21	42			0.00	7000	10875
2	Bayek	Nayanpur poshur bazar	HB	Yes	Special Market	Wholesale	1			0				3480000	3150000
3	Bayek	Nayanpur toha bazar	GC	Yes	General Market	Both	1	73	0.37	73			0.00	308500	216500
4	Bayek	Haripur bazar	HB	Yes	General Market	Wholesale	1			35				18000	10000
5	Bayek	Khadla maktijodda bazar	HB	Yes	General Market	Wholesale	1			40				2000	7758
6	Bayek	Madhla bazar	HB	Yes	General Market	Wholesale	1			30				2000	4226
7	Binauti	Raouth hat bazar	HB	Yes	General Market	Wholesale	1			180				4400	6500
8	Binauti	Nematabad bazar	HB	Yes	General Market	Wholesale	1			25				800	2400
9	Binauti	Syadabad bazar	HB	Yes	General Market	Wholesale	1			85				600	2400
10	Gopinathpur	Gopinathapur pashur bazar	HB	Yes	Special Market	Wholesale	1			0				605000	625000
11	Gopinathpur	Joynagar bazar	HB	Yes	General Market	Wholesale	1			135				60060	70000
12	Gopinathpur	Gopinathapur toha bazar	HB	Yes	General Market	Both	1			180				8000	167000
13	Gopinathpur	Gopinathpur uttar-purba chak bazar	HB	Yes	General Market	Wholesale	1			31				5000	5400
14	Gopinathpur	Chandidwar bazar	HB	Yes	General Market	Wholesale	1			150				3600	37000
15	Kayempur	Mandabhag bazar	HB	Yes	General Market	Both	1			130				39500	138500
16	Kayempur	Paniarup bazar	HB	Yes	General Market	Wholesale	1			45				2000	7500

Sl. No.	Union	Market Name	Market Category (GC=Gro with Center, HB=Hat Bazar)	Market Listed? (Yes/No)	Market Category (General/Special/Collection center)	Market Category (Wholesale/Retail/both)	Hat Day	Chandina Viti (Number)	Chandina Viti (Land)	Chandina Viti (Shop)	Land Area (Acre)			Lease/Khas Collecti on BDT (2020)	Lease/Khas Collecti on BDT (2019)
											Toha	Khas	Private		
17	Kayempur	Moinpur bazar	HB	Yes	General Market	Wholesale	1			76				120000	63000
18	Kayempur	Kaipur bazar	HB	Yes	General Market	Wholesale	1			80				8000	7000
19	Kharera	Deli bazar	HB	Yes	General Market	Wholesale	1			235				1500	3150
20	Kharera	Monkashair bazar	HB	Yes	General Market	Wholesale	1			200				2000	39721
21	Kharera	Kharera bazar	HB	Yes	General Market	Wholesale	1			150				1500	10100
22	Kuti	Maizkhar bazar	HB	Yes	General Market	Wholesale	1			70				4000	3000
23	Kuti	Kuti toha bazar	GC	Yes	General Market	Both	1			750				40000	37530
24	Mehari	Shimrail bazar	GC	Yes	General Market	Wholesale	1			135				3000	3160
25	Mehari	Khewra bazar	HB	Yes	General Market	Wholesale	1	41	0.21	41			0.00	4000	3000
26	Mulgram	Shambari bazar	HB	Yes	Collection Center	Wholesale	1			95				2500	5000
27	Mulgram	Maydagang bazar	HB	Yes	Collection Center	Wholesale	1			18				1000	2000
28	Mulgram	Mulgram bazar	HB	Yes	Collection Center	Wholesale	1			230				1500	3000
29	Mulgram	Chargach bazar	HB	Yes	General Market	Both	1			837				3000	5000
30	Kasba	Kasba Puran Bazar	GC												

ANNEXURE - 2

PRIORITY LIST FOR ROAD DEVELOPMENT

SL No	Upazila	Connecting Union	Connecting Village	Village Population BBS 2011	Population 2021 (Based on BBS 2011)	Road Name	Road ID	Road Type	Road Type by Surface Condition	Total Road Length	Paved length (Km)	HBB Length (km)	Unpaved length (Km)	Total Road Length to be Developed	HBB + Unpaved in (km)	Approx. Cost of Road (Lac)	Structure/ Gap (Meter)	Cost of Structure (in Lac)	Total Cost (in lac) (Roads + Structures)	Population /KM	Tentative Budget/1000 Population (in lac)	Travel Time (in min)	Weightage for Population	Weightage for Travel Time	Weightage for Cost per 1000 Pop	Weightage for Road Type	Total Weightage	Priority
1	Kasba	Mulgram	Shyamnagar	3045	3489	Debirghar-Shyamnagar-Moidagonj road	No ID	VRB	All Weather	2.50			2.50	2.50	2.50	300.00	0.00	0.00	300.00	1396	85.99	37.50	20	10	25	12	67	1
2	Kasba	Mulgram	Modhupur (Aharand)*	2435	2790	Modhupur- Mulgram (Kasba) Connected Road	No ID	VRB	All weather	2.00			2.00	2.00	2.00	240.00			240.00	1395	86.02	30.00	20	10	25	12	67	2
3	Kasba	Gopinathpur	Jagannathpur	1797	2059	Bari-Jagannathpur-Konapara road	No ID	VRB	All Weather	1.80			1.80	1.80	1.80	216.00	0.00	0.00	216.00	1144	104.91	27.00	20	10	25	12	67	3
4	Kasba	Kuti	Atkha Para	522	598	Lasiara-Atkha Para road	4029	VRA	All Weather	1.20			1.20	1.20	1.20	144.00	0.00	0.00	144.00	498	240.77	18.00	15	10	25	15	65	4
5	Kasba	Gopinathpur	Nowamura	801	918	Nowamura road	No ID	VRB	All Weather	0.90			0.90	0.90	0.90	108.00	0.00	0.00	108.00	1020	117.68	13.50	15	10	25	12	62	5
6	Kasba	Gopinathpur	Saidpur	670	768	Sutarmura- Saidpur Road	No ID	VRB	All Weather	1.20			1.20	1.20	1.20	144.00	0.00	0.00	144.00	640	187.58	18.00	15	10	25	12	62	6
7	Kasba	Kuti	Rampura	773	886	Raniara- Rampura Road	No ID	VRB	All Weather	1.50			1.50	1.50	1.50	180.00	0.00	0.00	180.00	590	203.24	22.50	15	10	25	12	62	7
8	Kasba	Bayek	Sagartala	568	651	Petrobangla- Sagartala road	No ID	VRB	All Weather	1.20			1.20	1.20	1.20	144.00	0.00	0.00	144.00	542	221.27	18.00	15	10	25	12	62	8
9	Kasba	Kaimpur	Ganganagar	678	777	Jajishar-Ganganagar road	No ID	VRB	All Weather	1.60			1.60	1.60	1.60	192.00	0.00	0.00	192.00	486	247.16	24.00	15	10	25	12	62	9
10	Kasba	Kherera	Keair	642	736	Daragabari- Keair-Kherera Road	No ID	VRB	All Weather	1.60		0.80	0.80	1.60	1.60	192.00	0.00	0.00	192.00	460	261.02	24.00	15	10	25	12	62	10
11	Kasba	Bayek	Dhopakhala	586	671	Kashirampur-Dhopakhala road	No ID	VRB	All Weather	1.50			1.50	1.50	1.50	180.00	0.00	0.00	180.00	448	268.09	22.50	15	10	25	12	62	11
12	Kasba	Kuti	Shasansar	364	417	Jajiara-Shasansar road	No ID	VRB	All Weather	1.00			1.00	1.00	1.00	120.00	0.00	0.00	120.00	417	287.73	15.00	15	10	25	12	62	12
13	Kasba	Gopinathpur	Ganakmura	287	329	Ganakmura village road	No ID	VRB	All Weather	0.80			0.80	0.80	0.80	96.00	0.00	0.00	96.00	411	291.94	12.00	15	10	25	12	62	13
14	Kasba	Gopinathpur	Ramnagar	291	333	Boromura-Ramnagar road	No ID	VRB	All Weather	1.00			1.00	1.00	1.00	120.00	0.00	0.00	120.00	333	359.91	15.00	15	10	25	12	62	14
15	Kasba	Gopinathpur	Kaziatala	288	330	Boromura -Kaziatala road	No ID	VRB	All Weather	1.00			1.00	1.00	1.00	120.00	0.00	0.00	120.00	330	363.66	15.00	15	10	25	12	62	15
16	Kasba	Gopinathpur	Bhollabari	418	479	Barai- Bhollabari road	No ID	VRB	All Weather	1.50			1.50	1.50	1.50	180.00	0.00	0.00	180.00	319	375.84	22.50	15	10	25	12	62	16
17	Kasba	Kuti	Kailasnagar	263	301	Kailasnagar village road	No ID	VRB	All Weather	1.00			1.00	1.00	1.00	120.00	0.00	0.00	120.00	301	398.23	15.00	15	10	25	12	62	17
18	Kasba	Bayek	Nischintapur	149	171	Horipur-Nischintapur road	No ID	VRB	All Weather	1.00			1.00	1.00	1.00	120.00	0.00	0.00	120.00	171	702.91	15.00	15	10	20	12	57	18
19	Kasba	Kaimpur	Kalinagar	195	223	Kaimpur- Kalinagar- Jikra road	No ID	VRB	All Weather	2.50			2.50	2.50	2.50	300.00	800.00	7200.00	7500.00	89	33568.52	37.50	15	10	10	12	47	19

*** Cost for Roads & Structures; (All Weather Rd= 120 lac/km, Submersible= 180 lac/km, Structure= 9 lac/m)
 *** Weightage Values; (Population = 30, Travel Time= 20, Cost per KM/1000 people= 25, Road Hierarchy= 25)