



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”

Bijohnagar 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 **Bijoynagar** Upazila of **Brahmanbaria** District.

1 DESCRIPTION OF THE UPAZILA

1.1 GEOGRAPHY AND DEMOGRAPHY

The geographical area of Bijoy Nagar Upazila is 221.17 square kilometers and has 10 unions, 164 mauzas, and 225 villages. The Upazila is 28km away from the district headquarters of Brahmanbaria. Bijoy Nagar is covered by few major haors/ wetlands areas and there exist 5(five) rivers flowing over the Upazila. The total population of Upazila is 257000 of which 125000 are male and 132000 females, the total number of households are 48617 and the average household size is 5.28 with a population density of 1163 (as per population census 2011).

1.2 EDUCATION FEATURES

According to the information of the relevant local government offices, there are 61 government & 35 non-government primary schools in the Upazila. On the other hand, Bijoy Nagar has 25 non-government with no government high schools, 1 school & college, 1 private colleges, and 8 madrasahs. The literacy rate for the Upazila is 48.2% 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 Bijoy Nagar 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 Bijoy Nagar is 633.43 km and out of which, 227.68 km are paved and 405.75 km earthen.

1.4 AGRICULTURE, FOOD PRODUCTION, AND FISHERIES

The driving force of this Upazila'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. In the fiscal year 2010-11, the Rice production was 193.52, 11599 & 58449.6 metric tons for Aus, Aman & Boro seasons respectively. The Upazila also produced 2.78 metric tons of Wheat, 169.75 metric tons Jute, 35 metric tons oil seed, and 446 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, Bijoy Nagar has 2874 Acres of haor, pond & dighee that produced 4600 metric tons of fish. There also exist 16 poultry & 45 dairy farms.

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

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 16 Hatbazar and 03 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

Bijoy Nagar Upazila of Brahmanbaria district in the Eastern part of the country. The location has been shown on the map. The Upazila is situated at the foothill of the Indian border and causes flash floods during monsoon, resulting in waterlogging within the haor basin. Flash floods induce severe impacts on both the built and the natural environment. The effects of flash floods can be catastrophic and show extensive diversity, ranging from damages to buildings and infrastructure to impacts on vegetation, human lives, and livestock.

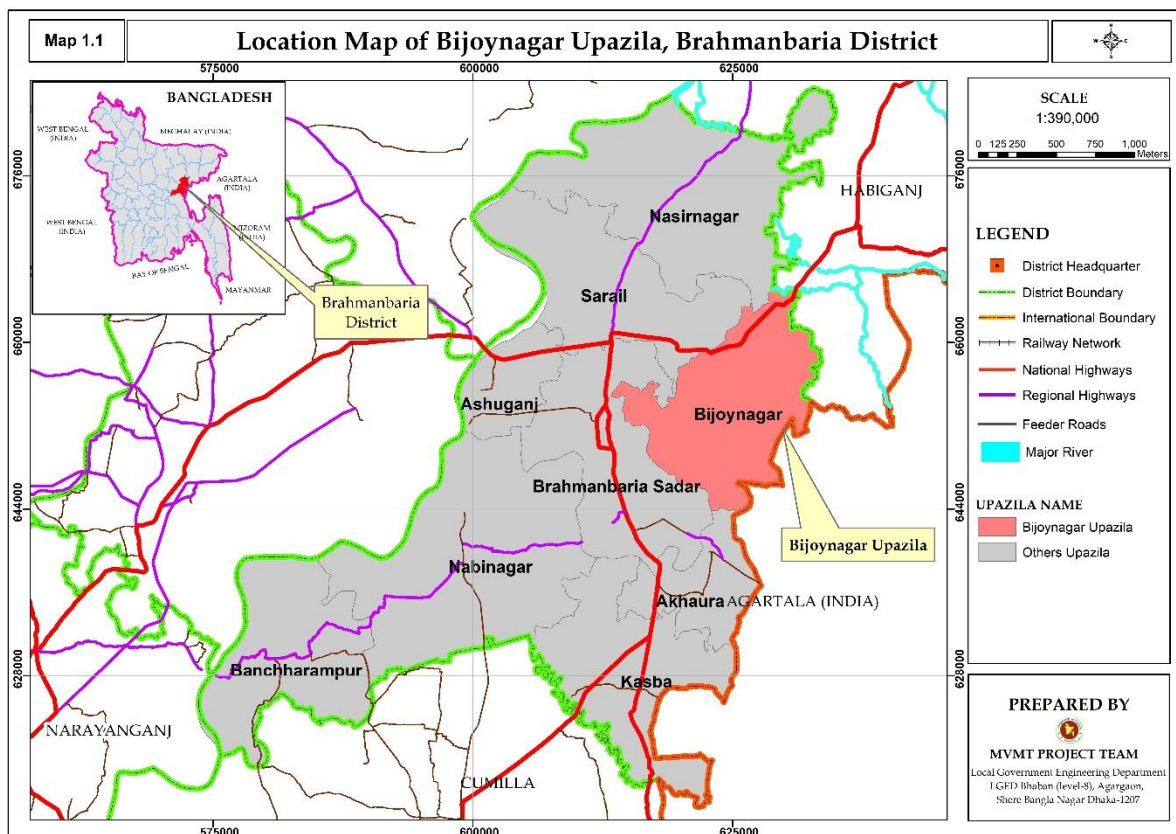


Figure 1: Upazila Location Map

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.

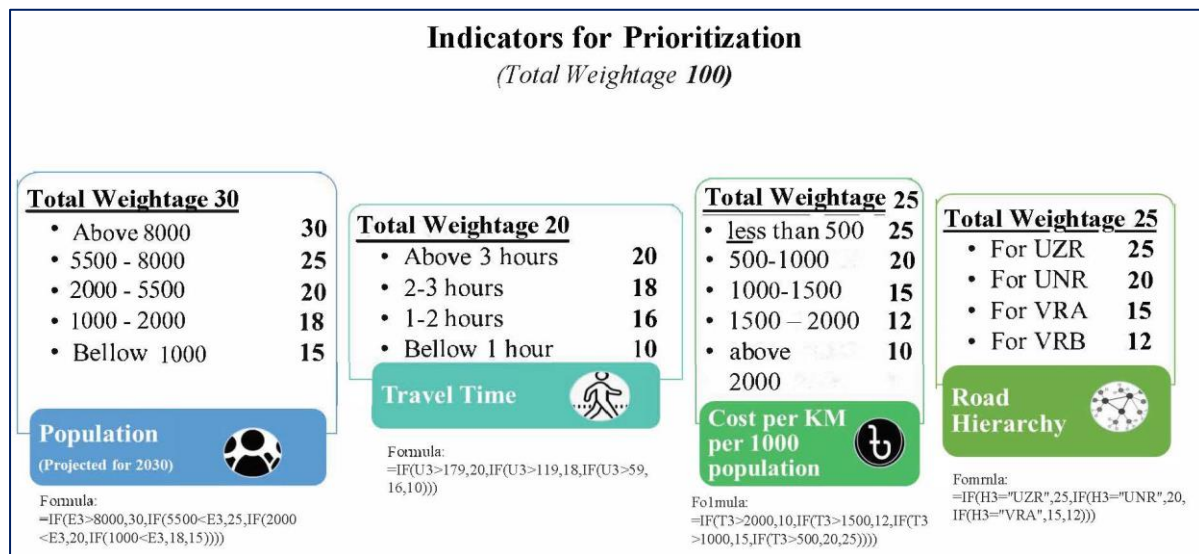


Figure 2: Prioritization indicators & their weightage values

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.

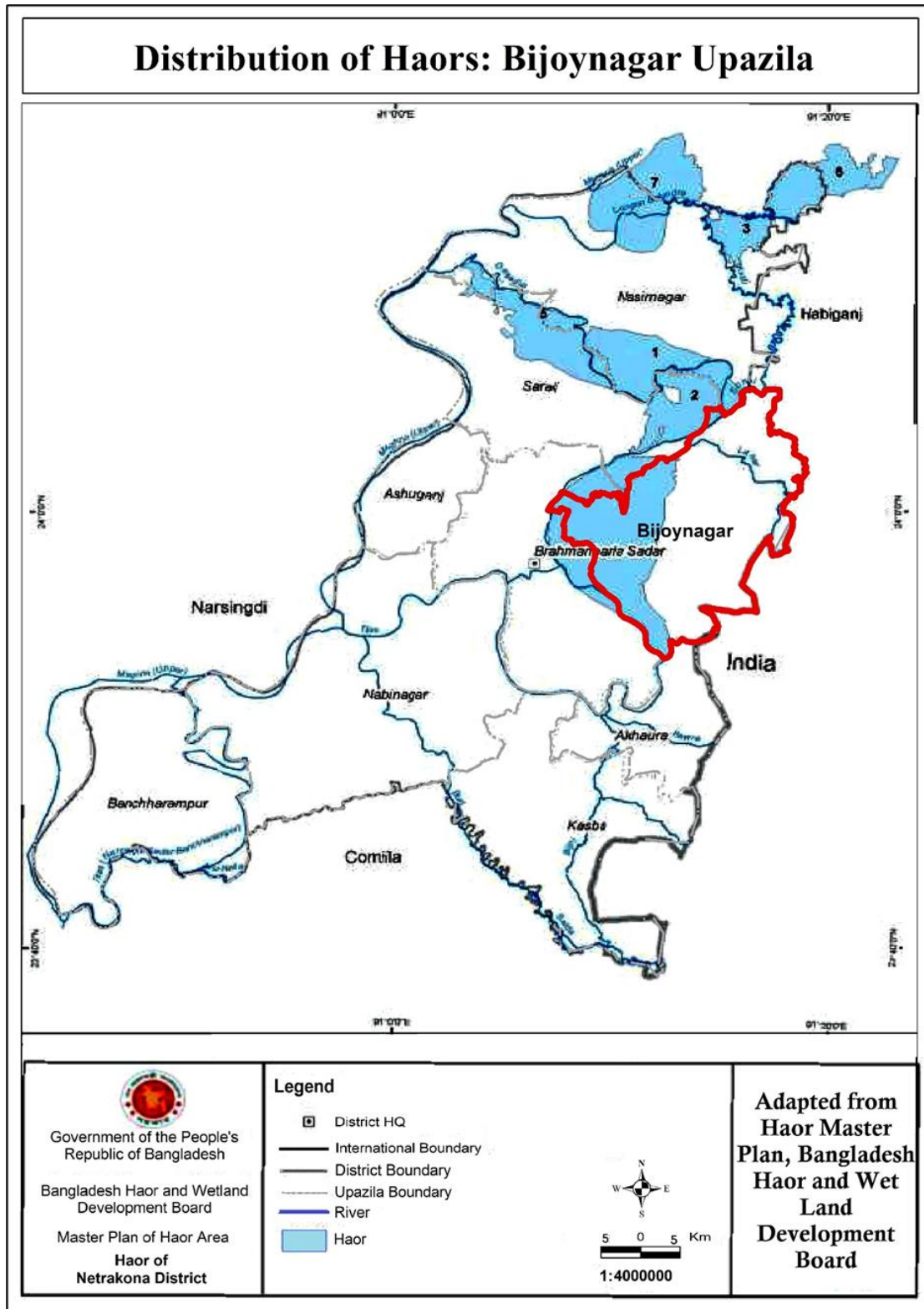
3.9 NATIONAL WORKSHOP

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 DESCRIPTION OF WETLANDS

4.1 DISTRIBUTION OF THE HAORS/ WETLANDS

The Upazila has a big portion of flash flood zone that covers almost 30-40% of its land area. The roads within the flood zone become inundated during monsoon, which requires attention to take relevant measures during road construction and maintenance.



4.2 HAOR/ WETLAND CATEGORY

However, in the west of the Upazila, it is within floodplain range. Therefore, road or other infrastructure development in this Upazila has several major environmental consequences.

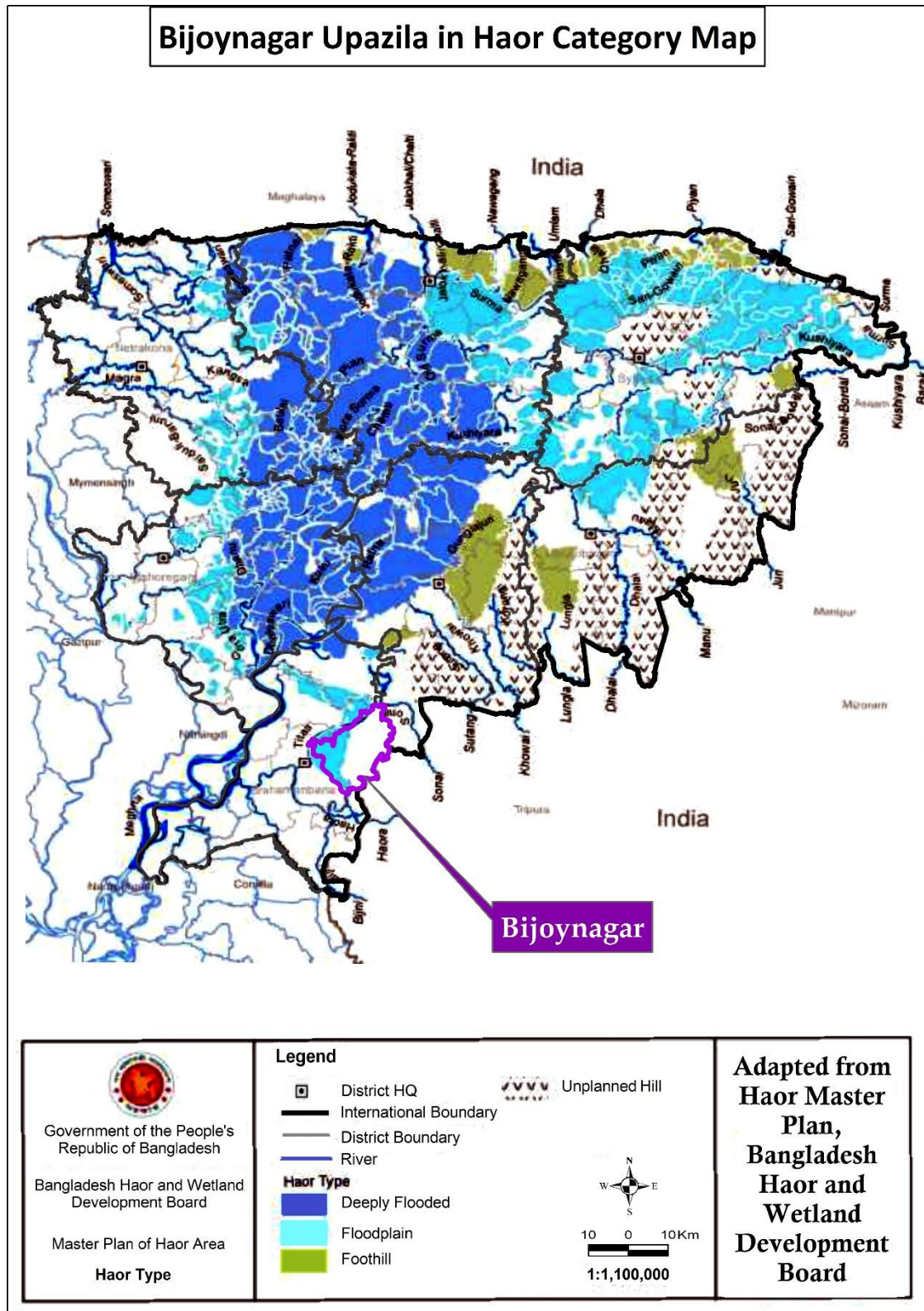


Figure 4: Haor Category Map.

4.3 BIO-ECOLOGICAL CHARACTERISTICS

The Bio-ecological characteristics map of the Upazila has been shown below. The map shows that it is a part of Haor Basin in the west, the middle portion is under Meghna Floodplain & is partially a part of Sylhet Hills. Therefore, adequate openings for the road and road structures should be maintained.

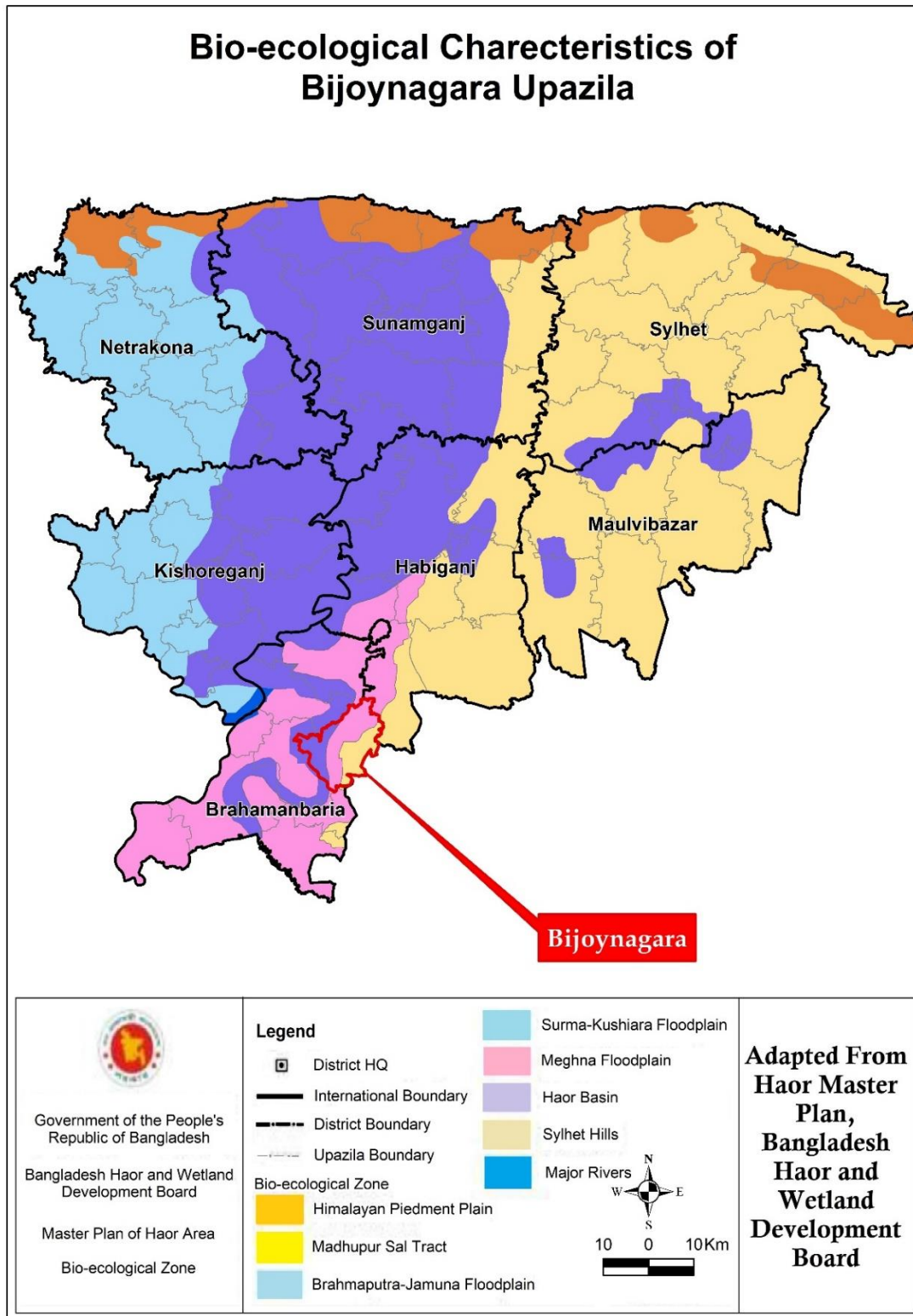


Figure 5: Bio Ecological Characteristics Map

5 RURAL ROAD CONNECTIVITY TO THE VILLAGES

5.1 SUMMARY OF THE VILLAGE CONNECTIVITY

The feature of rural road communications in Bijohnagar Upazila is contrasted. Out of 212 villages, 13 are disconnected from the developed paved road network which brings huge suffering for the people of those villages. The total rural road network of Bijohnagar is 633.43 km and out of which, 227.68 km are paved and 405.75 km earthen.

Table 1: Total villages in the unions and their connectivity

SL No	Union	No of Villages	Connected Villages	Disconnected Villages
1	Bishmapur	11	11	0
2	Budhanti	15	15	0
3	Chandura	22	21	1
4	Char Islampur	28	22	6
5	Champaknagar	17	17	0
6	Dakshin Singerbil	15	15	0
7	Harashpur	17	16	1
8	Paharpur	39	37	2
9	Pattan	26	23	3
10	Uttar Ichhapur	22	22	0
Total		212	199	13

5.2 VILLAGES AND THEIR CONNECTIVITY – UNION LEVEL

The consultant arranged a meeting at the Upazila conference room with and all the UP Chairman & their secretaries. The team interviewed a representative of each union and collected data about the HTRV.

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

Union	Sl.No	Connected Villages	Population 2021 (Based on BBS 2011)	Disconnected Villages	Population 2021 (Based on BBS 2011)
Bishmapur	1	Aulabad	697		
	2	Baktarmura	1032		
	3	Chhatarpur	4385		
	4	Dakshin Bishnupur	3235		
	5	Dulalpur	709		
	6	Ekartali	846		
	7	Ghanashyampur	782		
	8	Kazimura	291		
	9	Mahishpur	1635		
	10	Paschim Kalachhara	1521		
	11	Purba Kalachhara	1539		
	Sub Total		16672		
Budhanti	1	Alinagar	1990		
	2	Bargharia	2214		
	3	Binnighat	1841		
	4	Birpasha	2767		
	5	Budhanti	4928		
	6	Fatehpur	772		
	7	Gachhtala	896		
	8	Islampur	5950		
	9	Kena	3117		
	10	Merasani	1454		
	11	Satbariga	4972		
	12	Shashai	3361		
	13	Shemra	2346		
	14	Sreenagar	261		
	15	Taltala	343		
	Sub Total		37212		
Champaknagar	1	Bade Haria	661		
	2	Barirband	7		
	3	Bill Shaldha	71		
	4	Fatehpur	1196		
	5	Gakulnagar	84		
	6	Garargaon	773		
	7	Gopalpur	385		
	8	Jamal Pur	568		
	9	Khude Haria	1315		
	10	Masimpur	557		

Union	Sl.No	Connected Villages	Population 2021 (Based on BBS 2011)	Disconnected Villages	Population 2021 (Based on BBS 2011)
	11	Nurpur	880		
	12	Petujuri	2817		
	13	Rajapur	149		
	14	Ramchandrapur	1166		
	15	Satir Para	4219		
	16	Sonabarshi Para	990		
	17	Tan Garargaon	550		
		Sub Total	16388		
Chandura	1	Adbullahpur	1467	Hossainpur	984
	2	Aladaudpur	1840		
	3	Anandagram	658		
	4	Atka Para	405		
	5	Basudebpur	298		
	6	Bekinagar	61		
	7	Bhati Kalisima	773		
	8	Chandura	4065		
	9	Chhota Kalisima	2288		
	10	Dakshin Purbabhag	684		
	11	Ibrahimpur	2520		
	12	Jagatpur	278		
	13	Kayastha Para	39		
	14	Manikpur	571		
	15	Mirpur	761		
	16	Pasarchand	456		
	17	Rampur	732		
	18	Rasulpur	2327		
	19	Saputia	316		
	20	Satgaon	5868		
	21	Shyampur	273		
		Sub Total	26680		984
Char Islampur	1	Amanpur	292	Alakpur	323
	2	Baghalpur	751	Dakshin Rajabari	158
	3	Bairaghihati	159	Dulalpur	177
	4	Balarampur	868	Jamalpur	205
	5	Baramura	340	Kalyanmuri	103
	6	Char Parenga	219	Ranginbari	597
	7	Dakshin Pelunpur	998		
	8	Gachuliahati	88		
	9	Ganganagar	1023		
	10	Gobindapur	792		
	11	Haripur	157		
	12	Madhabpur Sthal	830		
	13	Mamudpur	1104		

Union	Sl.No	Connected Villages	Population 2021 (Based on BBS 2011)	Disconnected Villages	Population 2021 (Based on BBS 2011)
	14	Morailmura	143		
	15	Najirbari	1905		
	16	Pashim Islampur	4425		
	17	Pukurpar	283		
	18	Rakhalmuri	189		
	19	Roshnakandi	283		
	20	Sadullahbari	340		
	21	Shikarpur	164		
	22	Uttar Felunpur	60		
	Sub Total		15413		1563
Dakshin Singerbil	1	Daulatbari	1058		
	2	Kanchanpur	2165		
	3	Kashimnagar	6873		
	4	Kashimpur	789		
	5	Khiratala	2189		
	6	Madhya Para	532		
	7	Mrashani	3185		
	8	Muradnagar	603		
	9	Nalgaria	1872		
	10	Nayabadi	1706		
	11	Otaria Para	1610		
	12	Shibnagar	564		
	13	Singerbil	441		
	14	Singerbil Bazar	821		
	15	Sreepur	4278		
	Sub Total		28686		
Harashpur	1	Atura Para		Nayahati	1351
	2	Baghdia	2157		
	3	Bara Paik Para	4733		
	4	Bara Uthan	424		
	5	Bulla	4172		
	6	Ektarpur	2901		
	7	Hajipur	3075		
	8	Harashpur	4480		
	9	Kaicha Paramura	91		
	10	Kamalapur	76		
	11	Megh Simul	828		
	12	Nidarabad	2922		
	13	Panchgaon	2128		
	14	Shishaura	872		
	15	Sonamura	1937		
	16	Uttar Bishnupur			
	Sub Total		30796		1351

Union	Sl.No	Connected Villages	Population 2021 (Based on BBS 2011)	Disconnected Villages	Population 2021 (Based on BBS 2011)
Paharpur	1	Adampur	329	Purba Nayanpur	460
	2	Alekpur	158	Kaichapura*	917
	3	Alipur	1074		
	4	Anantapur	192		
	5	Bamutia	1015		
	6	Bhatir Para	328		
	7	Bhiti Daudpur	2773		
	8	Chandpur	1746		
	9	Channipur	256		
	10	Dalilnagar	155		
	11	Dariapur	3002		
	12	Daulatpur	155		
	13	Dhuranal	608		
	14	Geneshpur	124		
	15	Ghilamura	904		
	16	Goalnagar	1289		
	17	Jalilpur	400		
	18	Jashamantapur	71		
	19	Jhojantamura	301		
	20	Joypur	570		
	21	Kachuamura	1302		
	22	Kamalmura	2155		
	23	Kamalpur	847		
	24	Khatenga	4475		
	25	Madhaberbagh	1008		
	26	Madhupur	192		
	27	Mahabbatpur	415		
	28	Mukundapur	891		
	29	Nazarpur	503		
	30	Paharpur	1397		
	31	Purba Lakshmipur	536		
	32	Purba Manipur	501		
	33	Rupa	200		
	34	Sahadebpur	1046		
	35	Sharifpur	169		
	36	Shejamura	3260		
	37	Shyampur	324		
		Sub Total	34671		1377
Pattan	1	Adampur	3072	Bara Pukurpar	2404
	2	Atka Para	1183	Mashaura*	1146
	3	Bongerkhola	460	Sahapur	563
	4	Chowarakhola	371		
	5	Dakshin Lakshmipur	1088		

Union	Sl.No	Connected Villages	Population 2021 (Based on BBS 2011)	Disconnected Villages	Population 2021 (Based on BBS 2011)	
	6	Fulbaria	2156			
	7	Goalkhola	1515			
	8	Jagannathpur	676			
	9	Kalatek	434			
	10	Kalyanpur	602			
	11	Lakshminimura	2379			
	12	Naharmura	504			
	13	Noagaon	1746			
	14	Parenga	410			
	15	Paschim Daulatbari	45			
	16	Paschim Keshabpur	245			
	17	Paschim Manipur	1518			
	18	Pattan	750			
	19	Purba Keshabpur	1336			
	20	Sreepur	1051			
	21	Tanmanipur	890			
	22	Tetuia	418			
	23	Tukchandpur	130			
		Sub Total		22979		4113
	Uttar Ichhapur	1	Arial	2472		
		2	Binandapur	117		
		3	Brahmangaon	58		
		4	Chhota Chandpur	101		
5		Chhota Dhitpur	1594			
6		Chhota Sultanpur	293			
7		Dakshin Jadabpur	273			
8		Dalpa	1399			
9		Daspara	179			
10		Datta Para	81			
11		Fulbaria	371			
12		Gopinathpur				
13		Kalyanpur	39			
14		Khadurail	3351			
15		Kutubpur	391			
16		Makimpur	180			
17		Mirzapur	1605			
18		Paschim Dulalpur	4			
19		Payrabari	107			
20		Purba Chhaybaria	115			
21		Purba Ichhapur	515			
22		Tulatala	312			
	Sub Total		13557			

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)
633.43	227.68	405.75	98.50

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	Bagdia UZR-Lamakhating via Kaichapura	No ID	All Weather	7
2	Nayahati- Shosan road	No ID	All Weather	8
3	Gilamura -Nayanpur road	No ID	All Weather	10.5
4	Monipur-'Sahapur	No ID	All Weather	8

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	Road Type by Surface Condition	Unpaved length (km)
1	Mohammadpur madrasha - Alakpur road	No ID	Submersible	9.5
2	Lakkhimura Bazar (Sheikh Hasina Road) -Bara Pukurpar Road	No ID	Submersible	7.5
3	Sheikhasina road -Dakshin Rajabari	No ID	Submersible	11
4	Dulalpur- Mojlishopur Kheya Ghat	No ID	Submersible	4
5	Aladaudpur-Hossainpur road	No ID	Submersible	1.5
6	Kalyanmuri-Jamalpur road	No ID	Submersible	4.5
7	Dakshin Rajabari - Kalyanmuri road	No ID	Submersible	7
8	Simna-Brahmanbaria road - Mashoura GPS road	No ID	Submersible	10.5
9	Sheikhasina road -'Ranginbari road	No ID	Submersible	9.5

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

- Bijoy Nagar Upazila is located within the *Middle Meghna Flood Plain zone*. There are 5 (five) 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 13 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 Bijoy Nagar 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	Bishnapur	Runway bazar	HB	Yes	General Market	Wholesale	2	41	0.14	41	0.24	0.45	0.00	1820	1280
2	Budhanti	Sathbarga bazar	HB	Yes	General Market	Wholesale	7	0	0.00	50	0.05	0.00	1.00	10450	13960
3	Budhanti	Islampur bazar	HB	Yes	General Market	Wholesale	7	0	0.00	80	0.05	0.00	1.50	9400	2160
4	Chandura	Chandura cattle market	HB	Yes	General Market	Wholesale	1	0	0.00	0	0.00	0.40	0.00	41460	56370
5	Chandura	Sathbarga/Khata Bari cattle Market	HB	Yes	General Market	Wholesale	1	0	0.00	0	0.00	0.40	0.00	24580	49060
6	Chandura	Amtoly bazar	HB	Yes	General Market	Wholesale	1	24	0.10	24	0.22	0.35	4.65	13860	25040
7	Chandura	Chandura bazar	HB	Yes	General Market	Wholesale	2	0	0.00	50	0.08	0.08	2.60	5890	2240
8	Chompok Nagar	Noorpur (chompoknagar) cattle market	HB	Yes	General Market	Both	1	0	0.00	0	0.00	0.52	0.00	53070	277000
9	Chompok Nagar	Nurpur bazar	GC	Yes	General Market	Both	2	122	0.66	466	0.12	2.29	0.65	17730	70200
10	Dakshin Singerbil	Merasani bazar	HB	Yes	General Market	Both	7	0	0.00	0	0.00	0.15	0.45	15110	66500
11	Dakshin Singerbil	Singerbeel bazar	GC	Yes	General Market	Both	7	26	0.13	26	0.43	0.86	2.25	17110	250000
12	Harashpur	Harashpur cattle market	HB	Yes	General Market	Both	2	0	0.00	0	0.00	0.00	0.00	301100	620200
13	Harashpur	Bullah bazar	HB	Yes	General Market	Wholesale	2	51	0.22	20	0.00	0.45	0.00	0	0
14	Harashpur	Harashpur keyagat bazar	GC	Yes	General Market	Wholesale	1	0	0.00	0	0.00	0.00	0.50	4380	11500
15	Harashpur	Dewan bazar	HB	Yes	General Market	Both	2	78	0.39	130	1.78	2.17	0.50	18810	156000
16	Paharpur	Awlia bazar	HB	Yes	General Market	Both	2			675	0.00	1.41	6.33	17180	101880
17	Paharpur	Mokundapur bazar	HB	Yes	General Market	Wholesale	7	0	0.00	0	0.00	0.24	0.00	0	0
18	Paharpur	Paharpur bazar	HB	Yes	General Market	Both	2	0	0.00	0	0.00	0.90	0.00	4580	1770
19	Uttar Ichhapur	Ariol bazar	HB	Yes	General Market	Wholesale	2	86	0.34	86	0.34	0.35	0.50	6530	12000

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	Bijoy nagar	Pattan	Bara Pukurpar	2404	2754	Lakshimura Bazar (Sheikh Hasina Road) -Bara Pukurpar Road	No ID	VRB	Submersible	7.50			7.50	7.50	7.50	1350.00	60.00	540.00	1890.00	367	686.17	112.50	20	16	20	12	68	1
2	Bijoy nagar	Harashpur	Nayahati	1200	1375	Nayahati- Shosan road	No ID	VRB	All Weather	1.00			8.00	8.00	8.00	960.00	10.00	90.00	1050.00	172	763.68	120.00	18	18	20	12	68	2
3	Bijoy nagar	Chandura	Hossainpur	984	1127	Aladaudpur-Hossainpur road	No ID	VRB	Submersible	1.50			1.50	1.50	1.50	270.00	50.00	450.00	720.00	752	638.62	22.50	18	10	20	12	60	3
4	Bijoy nagar	Paharpur	Kaichapura	800	917	Bagdia UZR-Lamakhatting via Kaichapura	No ID	VRB	All Weather	7.00			7.00	7.00	7.00	840.00	30.00	270.00	1110.00	131	1210.98	105.00	15	16	15	12	58	4
5	Bijoy nagar	Pattan	Mashaura	1000	1146	Simna-Brahmanbaria road - Mashoura GPS road	No ID	VRB	Submersible	10.50			10.50	10.50	10.50	1890.00	200.00	1800.00	3690.00	109	3220.56	157.50	18	18	10	12	58	5
6	Bijoy nagar	Char Islampur	Dakshin Rajabari	1156	1325	Sheikhasina road -Dakshin Rajabari	No ID	VRB	Submersible	11.00			11.00	11.00	11.00	1980.00	290.00	2610.00	4590.00	120	3465.46	165.00	18	18	10	12	58	6
7	Bijoy nagar	Pattan	Sahapur	563	645	Monipur-Sahapur	No ID	VRB	All Weather	8.00			8.00	8.00	8.00	960.00	90.00	810.00	1770.00	81	2743.91	120.00	15	18	10	12	55	7
8	Bijoy nagar	Paharpur	Purba Nayanpur	460	527	Gilamura -Nayanpur road	No ID	VRB	All Weather	10.50			10.50	10.50	10.50	1260.00	35.00	315.00	1575.00	50	2988.33	157.50	15	18	10	12	55	8
9	Bijoy nagar	Char Islampur	Ranginbari	597	684	Sheikhasina road -Ranginbari road	No ID	VRB	Submersible	9.50			9.50	9.50	9.50	1710.00	320.00	2880.00	4590.00	72	6710.33	142.50	15	18	10	12	55	9
10	Bijoy nagar	Char Islampur	Alakpur	323	370	Mohammadpur madrasha - Alakpur road	No ID	VRB	Submersible	9.50			9.50	9.50	9.50	1710.00	315.00	2835.00	4545.00	39	12281.09	142.50	15	18	10	12	55	10
11	Bijoy nagar	Char Islampur	Jamalpur	205	235	Kalyanmuri-Jamalpur road	No ID	VRB	Submersible	4.50			4.50	4.50	4.50	810.00	150.00	1350.00	2160.00	52	9196.14	67.50	15	16	10	12	53	11
12	Bijoy nagar	Char Islampur	Kalyanmuri	103	118	Dakshin Rajabari - Kalyanmuri road	No ID	VRB	Submersible	7.00			7.00	7.00	7.00	1260.00	120.00	1080.00	2340.00	17	19828.24	105.00	15	16	10	12	53	12
13	Bijoy nagar	Char Islampur	Dulalpur	177	203	Dulalpur- Mojlisipur Kheya Ghat	No ID	VRB	Submersible	4.00			4.00	4.00	4.00	720.00	375.00	3375.00	4095.00	51	20192.32	60.00	15	16	10	12	53	13

*** 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)