



Government of the people's Republic of Bangladesh
Ministry of Housing and Public Works
Urban Development Directorate
82 Segunbagicha, Dhaka-1000

PREPARATION OF DEVELOPMENT PLAN FOR MEHERPUR ZILLA

REPORT ON ASSIGNMENT-6

Preparation of Structure plan Map containing sectors and extents

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Summary of Assignment-6

A. Summary of Assignment-6

Mujibnagar Upazila's planning study analyzes trip movement, road connectivity, land use, utilities, water, power, and growth center potential. The unions of Mahajanpur, Monakhali, Dariapur, and Bagoan show strong internal trip movement, with Meherpur and Gangni emerging as major attractors. The proposed road network enhances access to markets, haats, loading points, and tourist sites, improving trade and mobility. Land-use analysis shows that existing 2025 land allocations already exceed the requirements for the 2047 population, meaning no additional land is needed. Service and utility facilities—schools, health centers, mosques, and community spaces—are also more than sufficient for future needs. However, major gaps exist in water supply and irrigation, requiring thousands of deep tube wells and additional DTWs for full agricultural coverage. Power demand will rise, requiring seven new substations by 2047, while solar energy offers a viable supplementary option. Bagoan and Monakhali are identified as potential growth centers due to strong connectivity, heritage value, tourism potential, and market activity.

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Union-wise Trip Attraction and Generation Analysis of Meherpur District

Taz-19: Mahajanpur Union

Mahajanpur attracts 89.69% (12,000) internally, followed by Pirojpur (6.25%, 837) and Buripota and Amdah (2.08%, 279).

It generates 76.79% (12,000) internally, 7.14% (1,116) in Meherpur, 5.36% (837) in Monakhali, and smaller flows to Bagoan, Amdah, Dariapur, and Pirojpur.

Mahajanpur is a compact, well-integrated local union with strong local circulation.

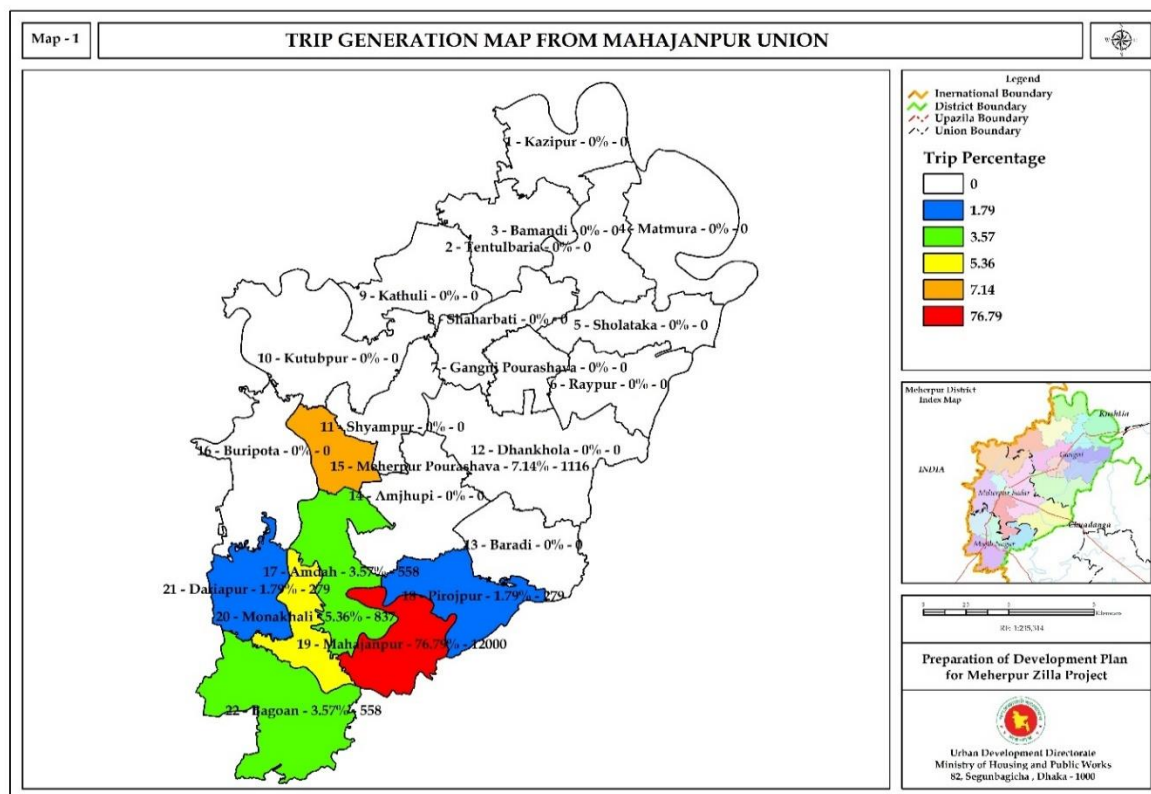


Figure: Trip Generation Map of Mahajanpur Union

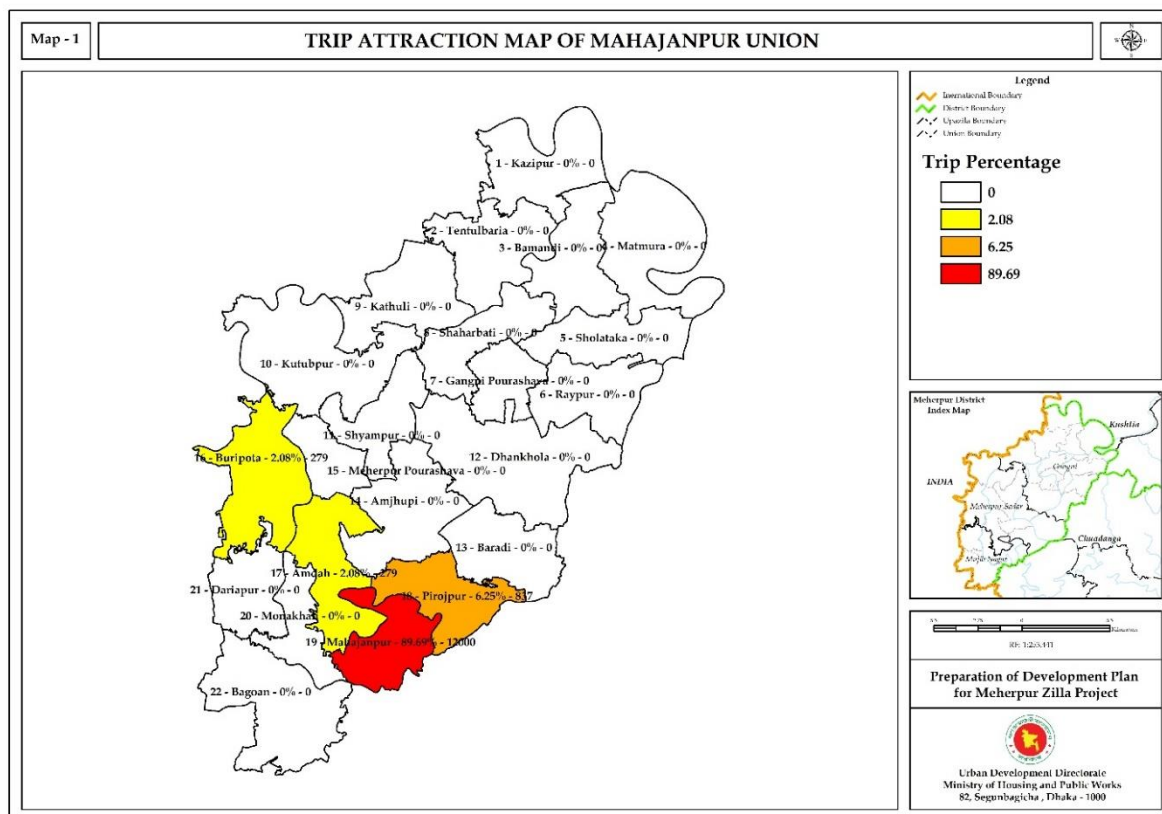


Figure: Trip Attraction Map of Mahajanpur Union

Taz-20: Monakhali Union

Monakhali attracts 70.15% (13,116) internally; Bagoan, 11.94% (2,232); Dariapur, 5.98% (1,116); Mahajanpur, 4.48% (837); Pirojpur and Buripota, 2.98% (558); and Dhankhola, 1.49% (279).

In generation, Monakhali produces 75.81% (13,116) locally, Dariapur 14.51% (2,511), Meherpur 8.06% (1,395), and Amjhupi 1.61% (279).

Monakhali serves as a southern regional connector between rural and semi-urban zones.

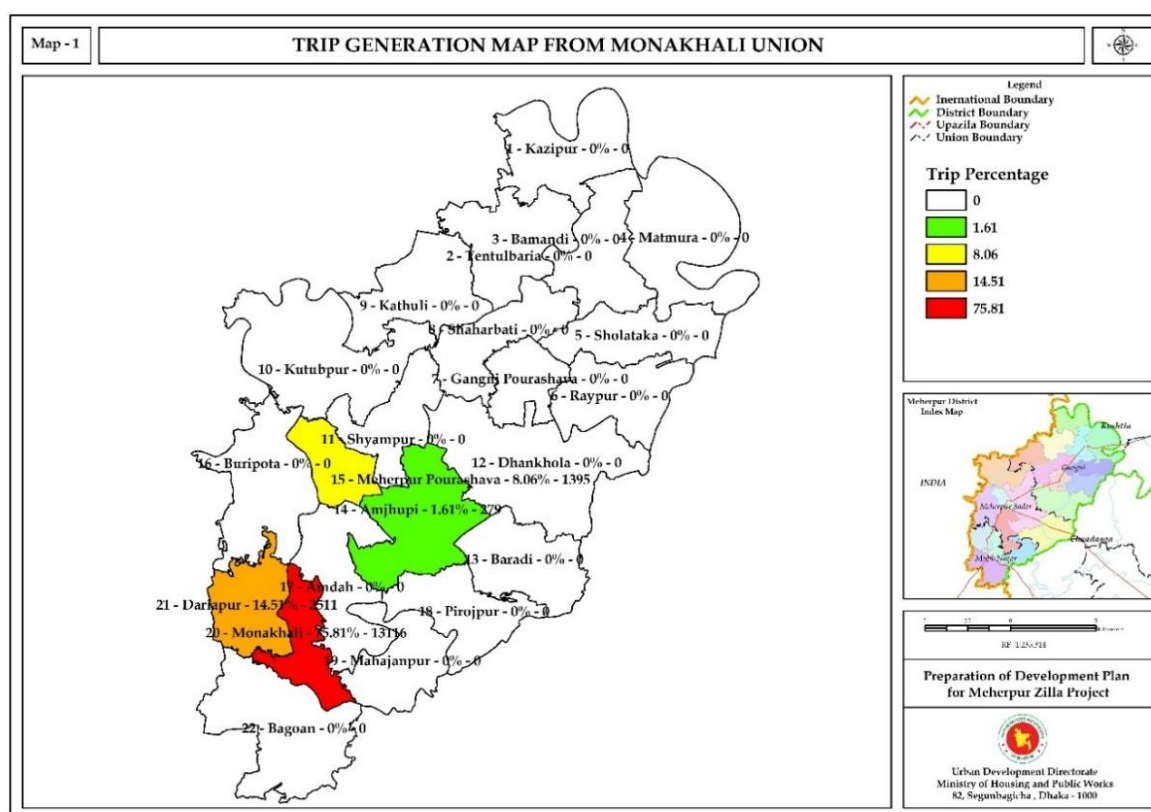


Figure: Trip Generation Map of Monakhali Union

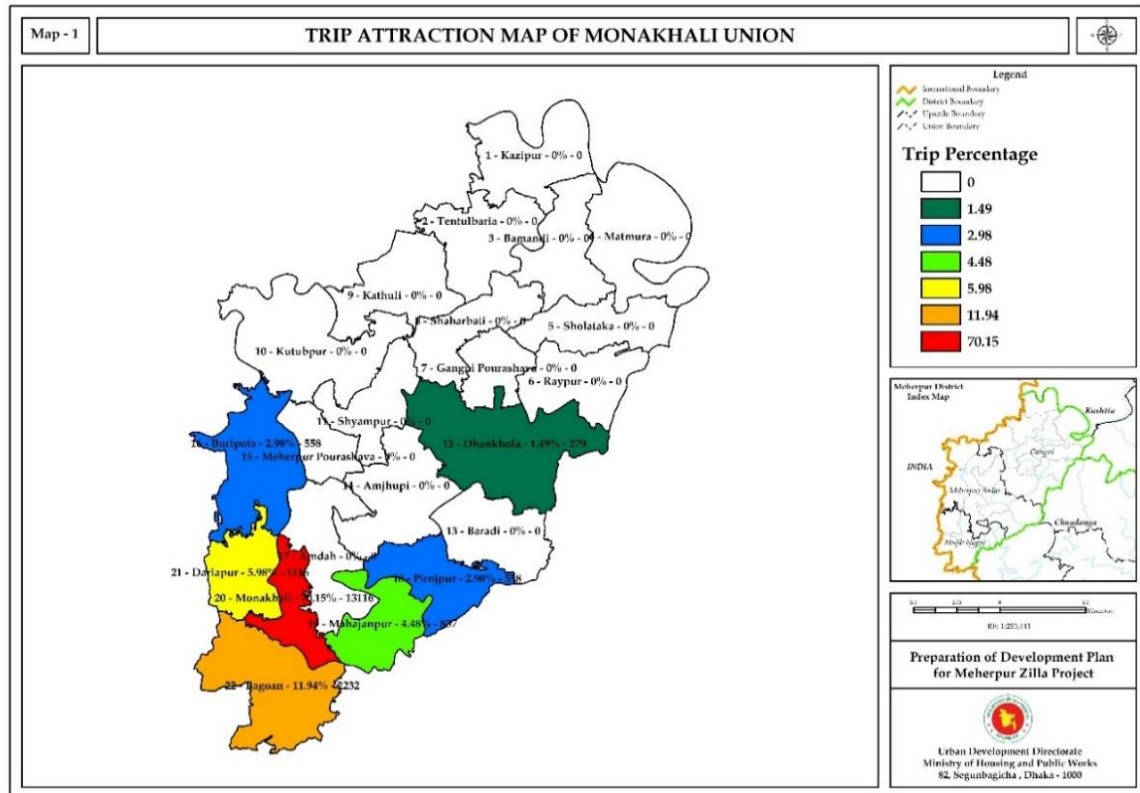


Figure: Trip Generation Map of Monakhali Union

Taz-21: Dariapur Union

Dariapur attracts 70.77% (12,837) of its residents internally; Monakhali, 13.84% (2,511); Buripota, 10.77% (1,953); and Shyampur, Meherpur, and Mahajanpur, 1.54% (279).

It generates 85.19% (12,837) locally, Monakhali 7.41% (1,116), Meherpur 5.55% (837), and Bagoan 1.85% (279).

Dariapur thus functions as a stable, moderately active southern union.

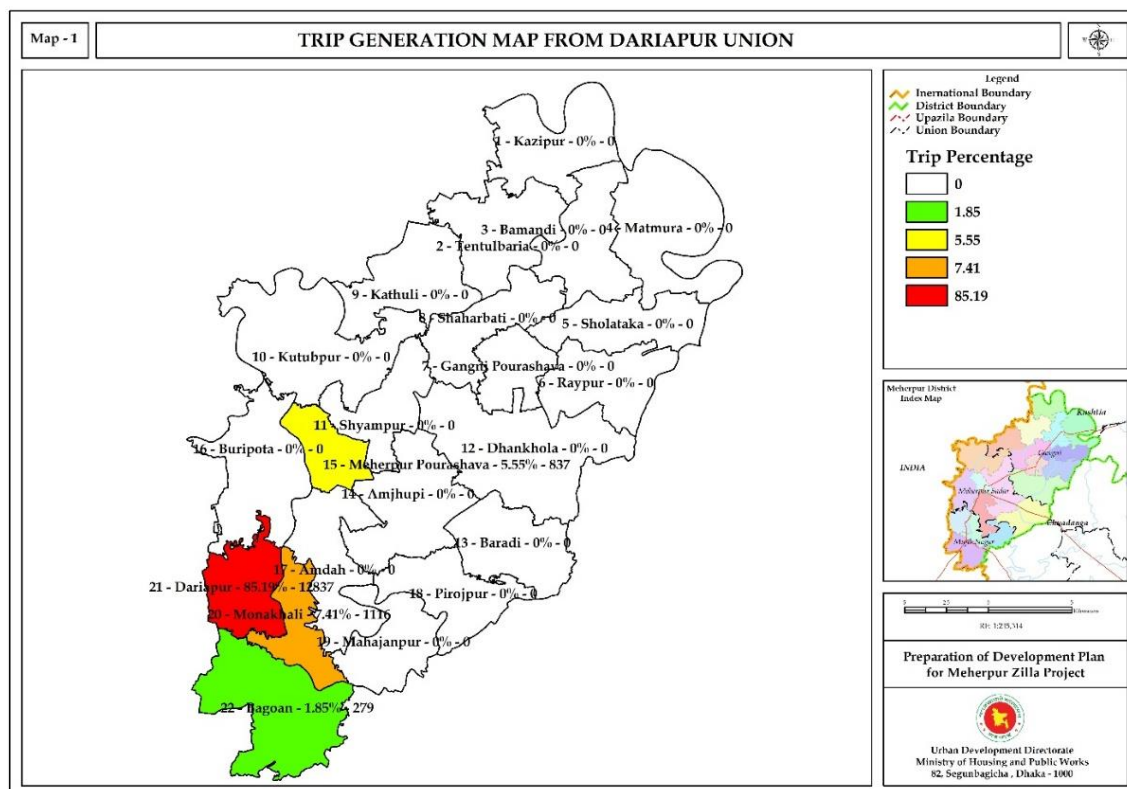


Figure: Trip Generation Map of Dariapur Union

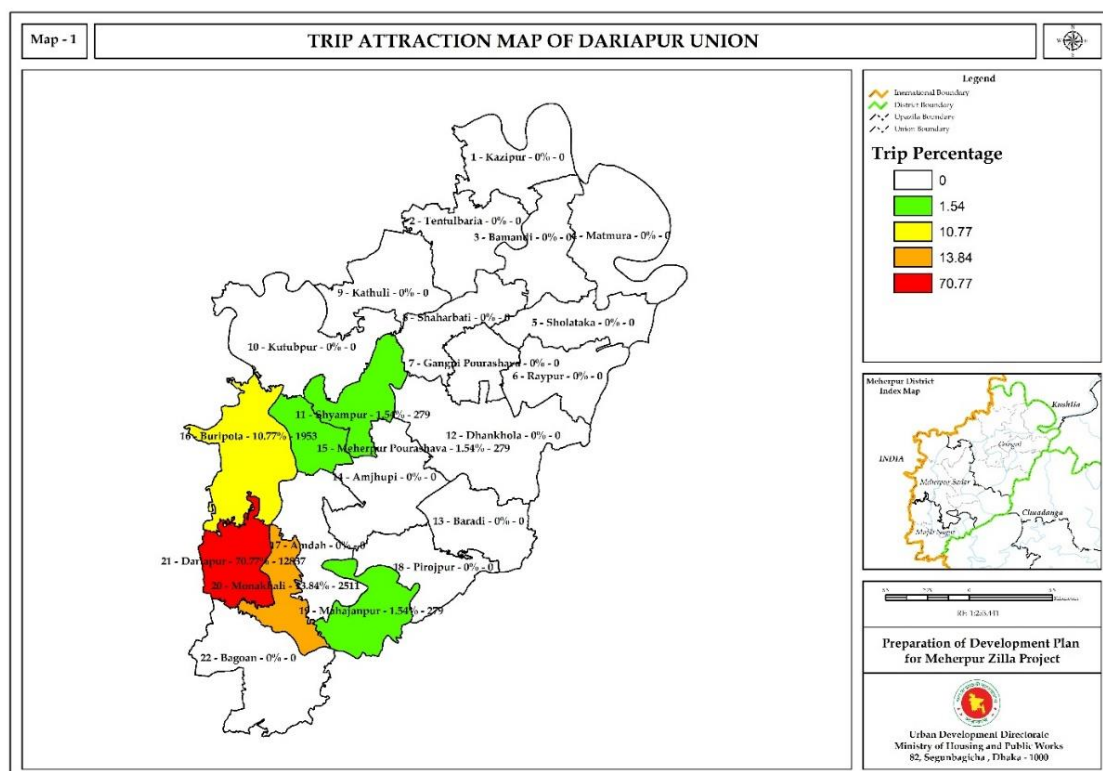


Figure: Trip Attraction Map of Dariapur Union

Taz-22: Bagoan Union

Bagoan attracts 33.33% (558) from Amdah and Mahajanpur, and 16.67% (279) each from Dariapur and Buripota, making it a low-attraction zone.

However, it generates 86.52% (21,489) internally, Monakhali 8.99% (2,232), and Meherpur 4.49% (1,116), suggesting strong local trip origin dominance.

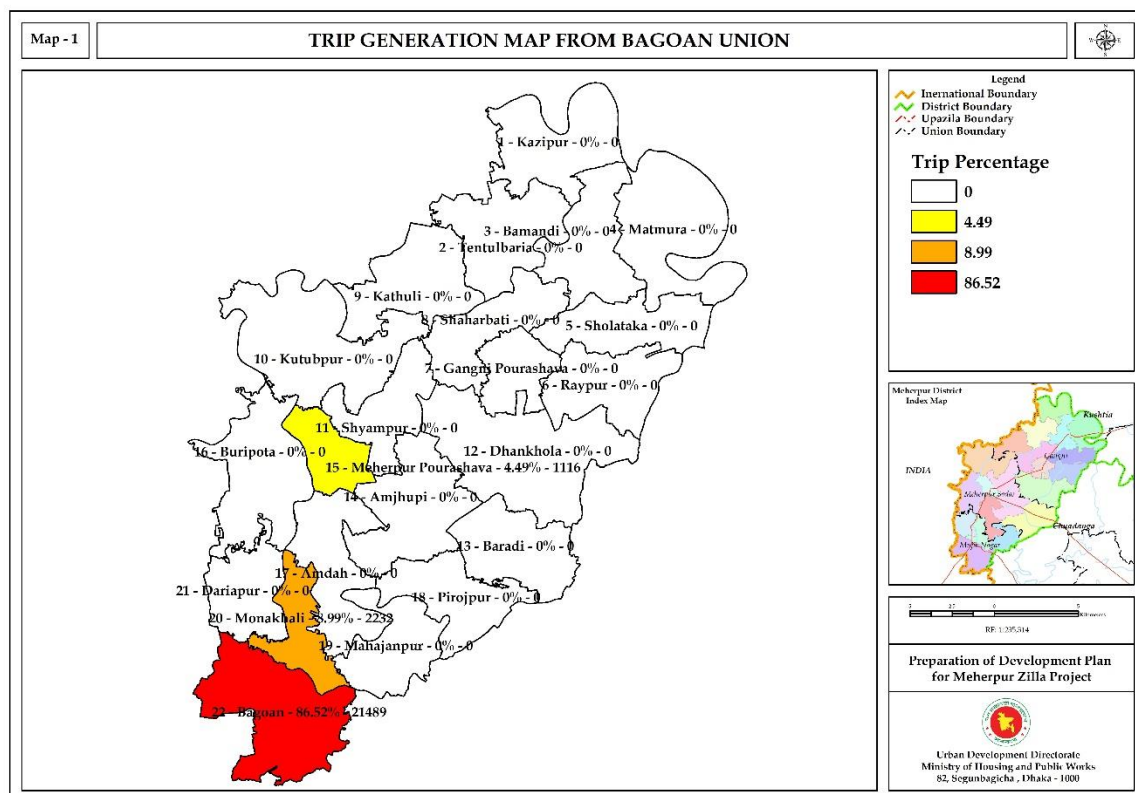


Figure: Trip Generation Map of Bagoan Union

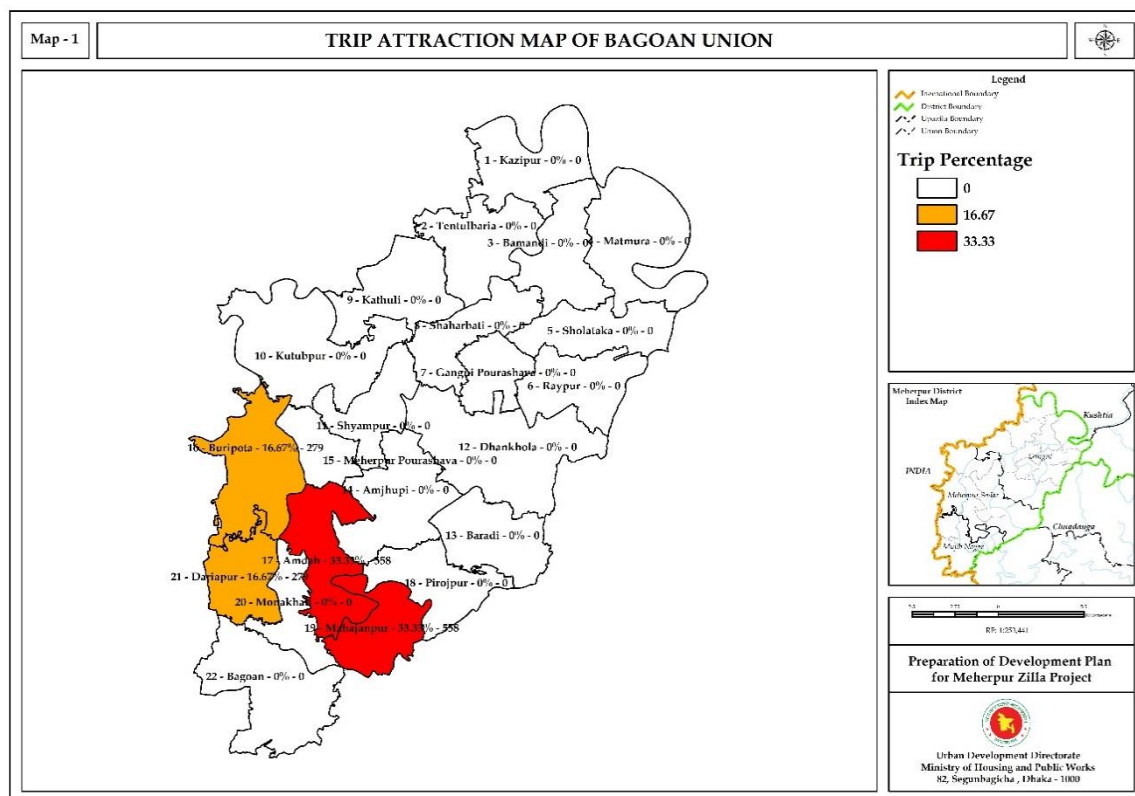


Figure: Trip Attraction Map of Bagoan Union

Trip Generation and Attraction Purpose:

Total Number of Trips:

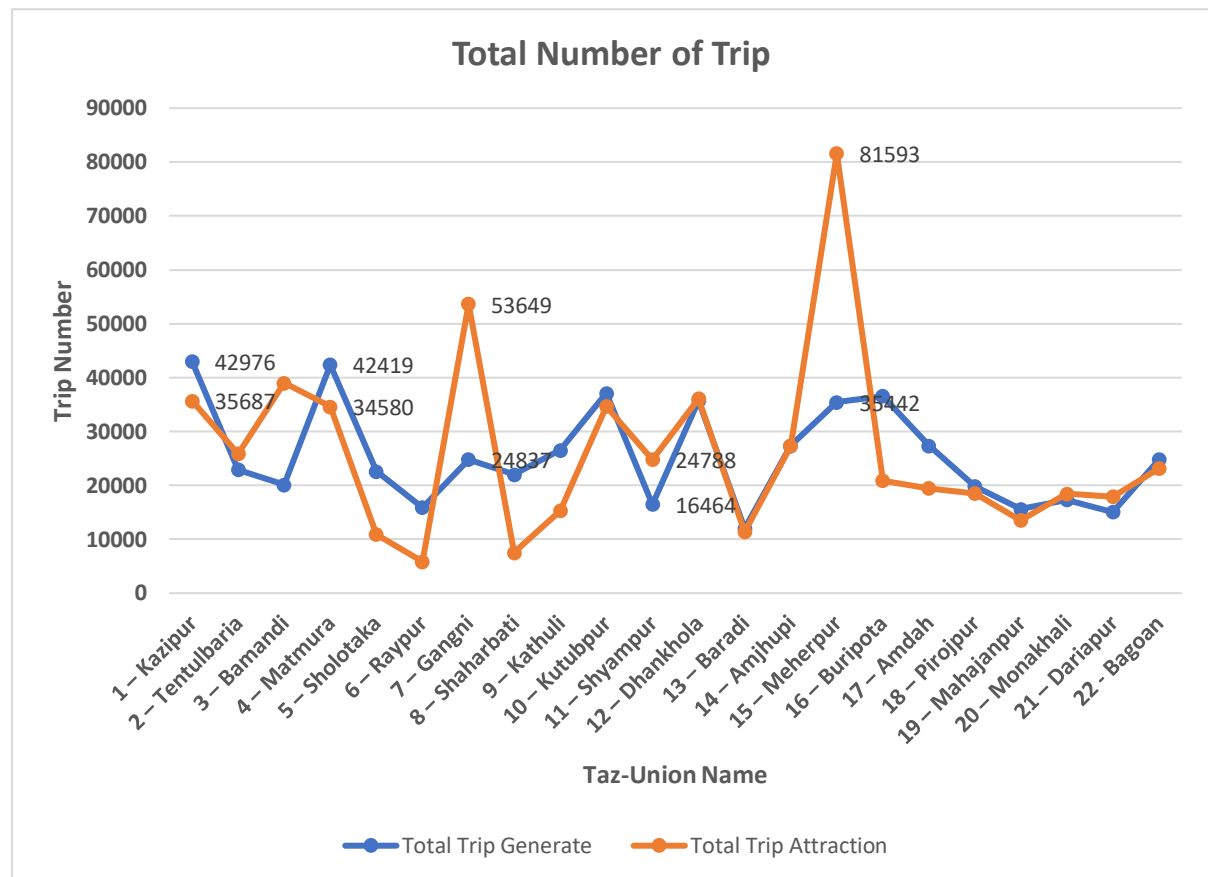


Figure: Total Number of Trips

The line chart titled "Total Number of Trips" provides a visual comparison of trip generation and attraction across 22 Taz-Unions. The blue line, representing Total Trip Generated, shows a relatively stable pattern, generally fluctuating between 20,000 and 40,000 trips. In contrast, the orange line for Total Trip Attraction is far more volatile, with trip counts varying significantly across locations.

The data reveals that some Taz-Unions are major trip attractors, most notably "15 – Meherpur," which recorded the highest peak at 81,593 trips, and "7 – Gangni" at 53,649 trips. These two unions show a clear imbalance, with the number of trips attracted far exceeding those generated. Other unions, such as "1 – Kazipur" (42,976 generate vs. 35,687 attract) and "3 – Bamandi" (21,570 generate vs. 39,475 attract), demonstrate a closer, though not always equal, relationship between trips generated and attracted. The chart effectively illustrates the differing roles of these unions in the regional travel network, with some serving as key destinations while others primarily act as residential or originating points.

Union-wise Trip Generation and Attraction Purpose Patterns in Meherpur District

Bagoan Union

Bagoan generates 24,837 and attracts 23,142, dominated by work trips (97%). The high proportion of labor-related travel marks Bagoan as a residential workforce hub, providing a significant number of commuters to nearby urban areas.

Dariapur Union

Dariapur generates 15,069 and attracts 17,924, primarily work-related (93–95%). The union's pattern indicates outward commuting toward Meherpur and Gangni for employment. It acts as a feeder union in the regional labor network.

Mahajanpur Union

Mahajanpur generates 15,627 trips and attracts 13,495, both with over 93% of trips being work-related. The pattern reveals a purely employment-driven community, primarily rural, with daily short-distance travel. It maintains stable internal trip movement.

Monakhali Union

Monakhali generates 17,301 and attracts 18,473, with mixed others (66%) and work (31–44%) trips. The balance shows diversified mobility, with both commercial and work travel. Its local markets attract visitors, making Monakhali a mixed-use rural hub.

The proposed road connectivity for Mujibnagar Upazila

The proposed road connectivity for Mujibnagar Upazila focuses on improving transportation links between key markets, raw material loading points, haat locations, and tourist sites, thereby contributing to economic growth, enhanced trade, and increased tourism. The Arot (markets) in Mujibnagar, such as Mohajanpur Bazar, Gopalnagar, Shibpur, and Monakhali, serve as vital trade hubs for goods like vegetables, fruits, fish, meat, and clothing. These markets are connected to raw material loading points, such as Bisshonathpur Koborstan More, Koborstan More, Shibpur, and Monakhali, where goods are loaded onto trucks for distribution to other regions. The road network will improve the flow of goods, making transportation more efficient and accessible for local traders, farmers, wholesalers, and retailers. In addition to trade, the Haat locations in Mujibnagar—such as Monakhali, Mujibnagar, Meherpur, and Dariapur, Mujibnagar—are central to the local economy, facilitating the trade of agricultural products, including rice, paddy, wheat, vegetables, fruits, fish, and meat. These markets employ a range of transportation methods, including vans, motorcycles, trucks, and bicycles, depending on the type of goods and their destination. For example, goods are transported to nearby areas, such as Dariapur, Gourinagar, and Meherpur, linking local farmers and sellers with broader markets. This enhanced road connectivity will ensure that goods can move efficiently between rural and urban areas, benefiting both local markets and broader regional commerce.

Moreover, the infrastructure plan places significant emphasis on tourism. Proposed roads will enhance access to essential tourist spots, such as the Church of Bangladesh and the Mujibnagar Liberation War Memorial Complex, encouraging cultural and historical tourism in the region. By improving transportation to these sites, the proposed roads will help attract more visitors, boost local tourism, and contribute to the preservation of the area's cultural heritage.

The proposed road network comprises highways, internal roads, and routes specifically designed for tourists. Highways with 100-foot widths will serve as the primary routes for long-distance travel, ensuring smooth, efficient transportation across the upazila. Mujibnagar Internal Roads, with a 40-foot width, will facilitate local traffic within urban areas. These roads will help connect residential, commercial, and trade zones, ensuring that daily transport within the municipality runs smoothly. The Internal Ring Road, with a width of 22 feet, is designed to facilitate circular traffic flow around key urban locations, thereby easing congestion and enhancing traffic management.

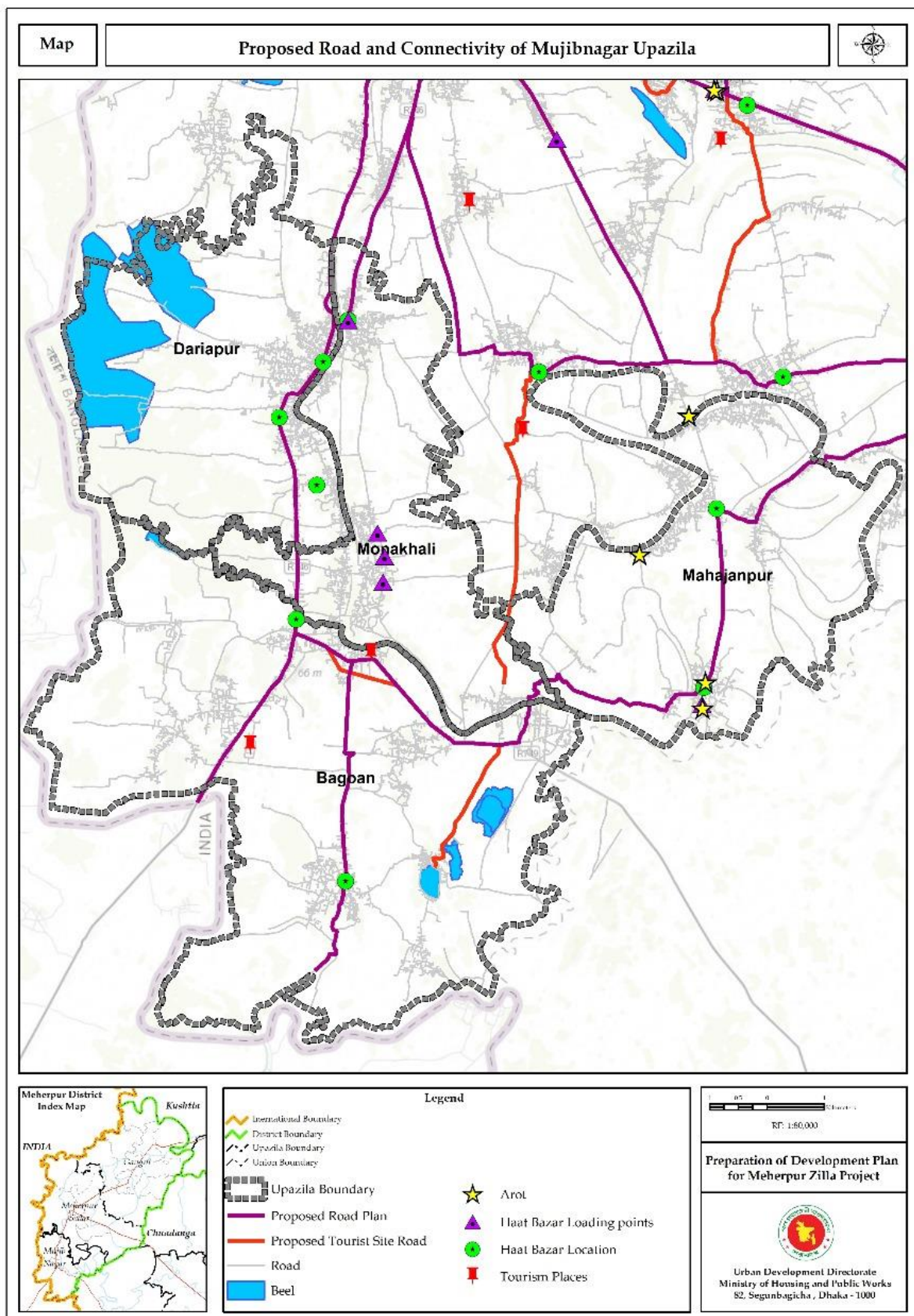


Figure: Proposed road connectivity Map for Mujibnagar Upazila

Additionally, roads leading to tourist sites will follow a Herring-Bone-Bond design, with widths ranging from 20 feet to 30 feet, ensuring visitors can easily access cultural landmarks. These roads will serve as essential routes for tourists, further supporting the local economy through increased visitor traffic.

This comprehensive infrastructure development will improve connectivity, mobility, and access to markets, haats, tourist locations, and loading points in Mujibnagar Upazila. It will streamline trade, promote tourism, and facilitate better transportation for agricultural and commercial goods. As a result, the region's economy is expected to grow significantly, and the local population will benefit from improved access to essential services and increased economic opportunities.

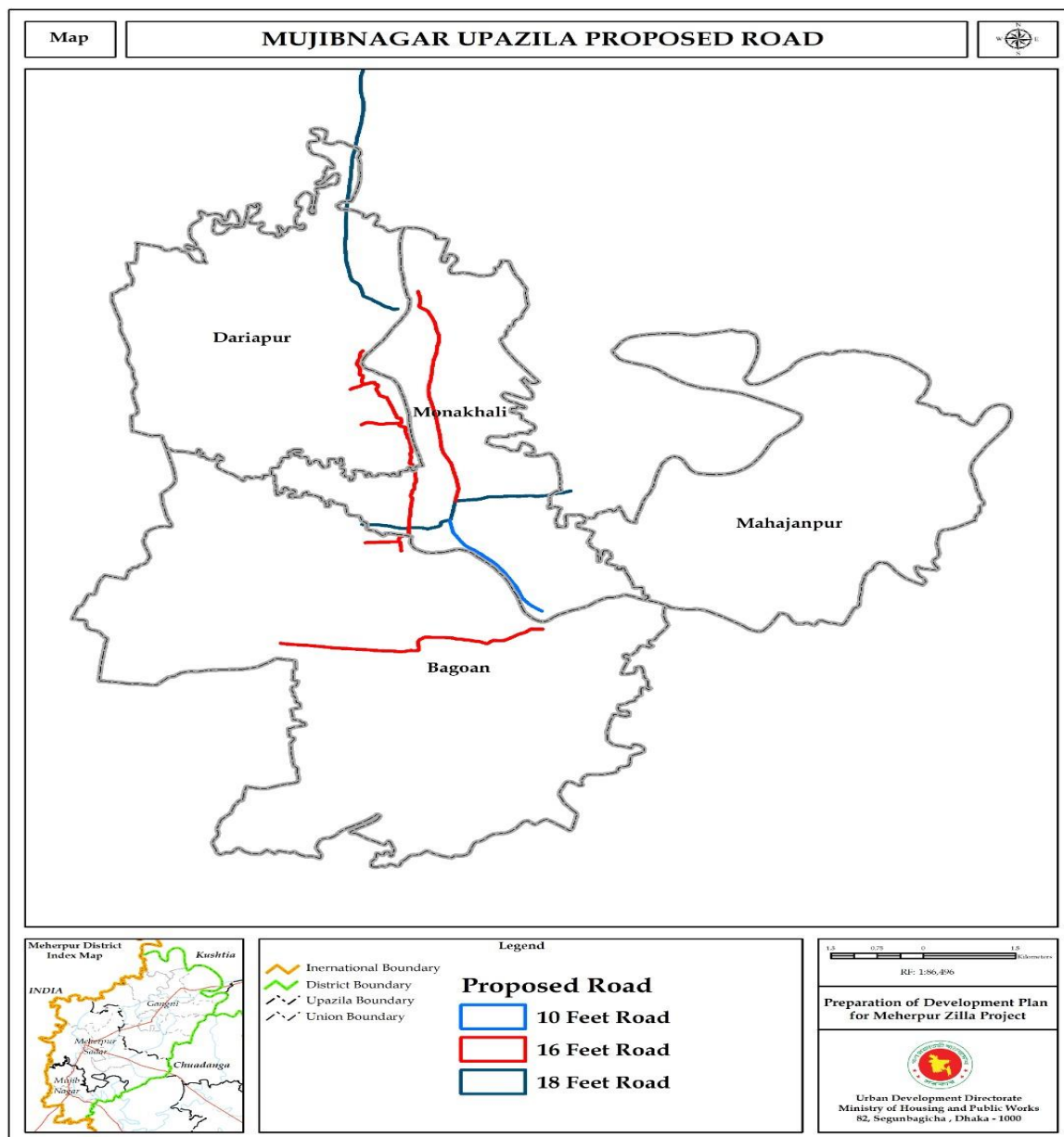


Figure: Proposed road connectivity Map for Mujibnagar Upazila

Rural Services and Utility Management Plan

Evaluation of Existing and Projected Land Use Demand in Mujibnagar Upazila

Features		Land Use_2022	Existing Land Use - 2025		Land for Services - 2047
		Area (Acre)	Area (Acre)		Area (Acre)
Administrative/ Public Service	Population of 2022 - 105752		640.681862	Population of 2047 - 140953	
Agricultural			67748.47704		
Commercial		148.05	83.337631		197.33
Community Facilities		26.44	365.391982		102.74
Education and Research		153.34	273.411377		204.38
Health Facilities			5.820606		
Historical Landmark			107.751822		
Industrial		211.5	379.343037		281.9
Mixed Use			332.406547		
Open Space and Recreational		37.01	45.524708		49.33
Residential		705.01	8468.359748		939.69
Service Activity			185.640832		
Transport and Communication		15.86	1259.907453		21.14
Vacant Land			210.91592		
Vegetation			8058.297355		
Waterbody			5227.94581		

Table: Existing and Projected Land Use Demand in Mujibnagar Upazila

Based on a 2022 population of 105,752, land requirements calculated using national planning standards were compared with the existing land-use distribution in 2025 and with the projected population-based land demand for 2047 (140,953 people). The comparison shows that in many categories, the existing land in 2025 already exceeds or closely matches both the 2022 requirement and the 2047 projected requirement, indicating that no additional land acquisition will be necessary to serve the future population. Residential land illustrates this clearly: while the standard-based requirement is around 705 acres, the existing land in 2025 is already very high (about 8,468 acres), demonstrating substantial surplus capacity for accommodating population growth through 2047 without expansion. A similar pattern is observed in Transport and Communication, where the existing 2025 land area (1,259 acres) far exceeds the standard-based requirement, ensuring adequate infrastructure support for future mobility needs. In sectors such as Industrial, Commercial, Education and Research, and Community Facilities, the planned requirements for 2047 fall well within the land already available in 2025, confirming that the existing supply is adequate for future service delivery.

Specific categories such as Agricultural land, Health Facilities, Historical Landmark, Vacant Land, Vegetation, and Waterbody have been intentionally kept unchanged in the analysis because they are protected and non-modifiable zones. The existing land in these categories is sufficiently large and stable, and any planning intervention is neither feasible nor desirable. Retaining these areas as they are does not hinder meeting future service needs; rather, their presence contributes to environmental sustainability, resource protection, and heritage preservation. Overall, the comparison clearly shows that the existing land-use stock of 2025, even without expansion or reallocation, is adequate to meet the 2047 population's demand according to planning standards. Therefore, no additional land will be required for essential services in the future, and the present land-use pattern can sustainably support long-term rural growth.

Assessment of Service Infrastructure Requirements for Future Population (2047)

	Service & Utility	Existing	For 2047
School	Primary School	50	28
	High School	23	7
	College	5	7
	Others	50	0
Health	Govt. Hospital	1	1
	Non-Govt Hospital	1	1
	Health Center	21	28
Community Facilities	Mosque	62	7
	Graveyard	17	7
	Eid Ghah	22	7

Table: Service Infrastructure Requirements for Future Population

The assessment of service and utility facilities in Mujibnagar Upazila reveals that the existing supply in 2025 significantly exceeds the projected requirements for the 2047 population. According to planning standards, the upazila will require 28 primary schools, seven high schools, seven colleges, and no additional “other” educational institutions to serve the future population adequately. However, the existing educational facilities include 50 primary schools, 23 high schools, five colleges, and 50 additional institutions, demonstrating a substantial surplus across almost all categories. Similarly, the health sector shows adequate provision: the area currently has one government hospital, one non-government hospital, and 21 health centers, while the 2047 requirement is only one government hospital, one non-government hospital, and 28 health centers. Although the number of health centers needed increases slightly, the existing distribution remains close to the requirement, and the gap can be addressed through optimization rather than land expansion. Community facilities also show a considerable surplus. The upazila presently hosts 62 mosques, 17 graveyards, and 22 Eidgah grounds, against future requirements of only 7 in each category. This indicates that existing facilities are more than adequate to meet long-term community service needs.

Overall, the comparison clearly demonstrates that Mujibnagar Upazila has more facilities than required in every major service and utility category. Therefore, no additional land or new utility infrastructure will be needed to serve the 2047 population. The existing facilities are sufficient to ensure continued service delivery and community support without further expansion.

Future Water Demand and Deep Tube Well Requirements

Mujibnagar, a small region, has experienced substantial population growth over the years. In 2022, the population stood at 105,752, with projections estimating it will rise to 140,953 by 2047. According to the Bangladesh National Building Code (BNBC), each person is allowed a maximum of 80 liters of water per day for household use, including drinking. Based on the 2022 population of 105,752, the total water requirement for household and drinking purposes is estimated at 8,460,160 liters per day. For a projected 2047 population of 140,953, the water requirement will increase to 11,276,240 liters per day.

One primary concern for Mujibnagar is the absence of deep tube wells, which are essential for providing a consistent water supply. To meet the water demand for both household and drinking purposes, it is estimated that Mujibnagar will need 3,384 deep tube wells by 2025. By 2047, when the population will have reached 140,953, the number of deep tube wells required will increase to 4,510 to meet the growing demand.

Year	Population	Daily Water Requirement (liters)	Number of Deep Tube Wells Needed
2022	105,752	8,460,160	3,384
2047	140,953	11,276,240	4,510

Table: Water Demand and Deep Tube Well Requirements

Irrigation Status:

The irrigation system of Mujibnagar Upazila is primarily supported by two types of tubewells, **Deep Tube Wells (DTWs)** and **Shallow Tube Wells (STWs)**. Although their capacities differ, both play an essential role in supplying water for crop production.

DTWs represent **32.14%** of the total tubewells and have a discharge capacity of **2.0 cusec**, making them suitable for irrigating large areas. Each DTW covers approximately **24 hectares**, totaling 216 hectares (533 acres) of irrigated area. Their high-water output allows farmers to cultivate water-intensive crops more reliably, especially during dry seasons.

On the other hand, STWs make up the majority (**67.86%**) and **operate at a lower** capacity of **0.5 cusec**. Each STW irrigates about **6 hectares**, totaling **114 hectares**, equivalent to **282.7 acres**. While they supply less water than DTWs, their large number ensures widespread irrigation support for small and medium farms across the upazila.

Together, DTWs and STWs irrigate **815.7 acres** of agricultural land. When compared with the total agricultural land of 20,399.947 acres in Mujibnagar Upazila, it becomes evident that only a small proportion is currently irrigated by tubewell systems. To ensure full irrigation coverage

of the upazila's agricultural land, an estimated **additional 330 Deep Tube Wells** would be required. This gap highlights the limitations of the current irrigation infrastructure and the need for substantial expansion.

According to future projections, the total agricultural land area is expected to remain unchanged in **2047**, suggesting that without new investments in irrigation infrastructure, the present challenges will likely persist.

Types of Tubewell	Percentage	Area Covered (each Tubewell)	Total Area Covered
Deep Tube Well (DTW) (2.0 Cusec)	32.14%	24 Hector (Source: Ministry of Agriculture)	216 Hector (533 Acre)
Shallow Tube Well (STW) (.5 Cusec)	67.86%	6 Hector (Source: Ministry of Agriculture)	114 Hector (282.7 Acre)
Total Area (Acre)			815.7 Acre

Source: Prepared by Consultant

Table: Water Demand and Deep Tube Well Requirements for Irrigation

Overall, while the existing tubewell network provides essential irrigation support, its current coverage is insufficient to realize the agricultural potential of Mujibnagar Upazila fully. Expanding DTW and STW networks, improving water management practices, and adopting efficient irrigation technologies will be essential for ensuring sustainable crop production in the coming years.

Current Power Distribution, Future Demand, and Infrastructure Expansion

Meherpur District is served by five substations: two in Meherpur Sadar, two in Gangni, and one in Mujibnagar. The West Zone Power Distribution Company manages the electricity distribution. According to the latest data, Meherpur has 202,198 customers. These customers collectively consume 23,884,364 kilowatt-hours (kWh) of electricity per year. On average, each customer uses between 118 and 120 units of electricity per month.

The table provides details about the electricity substations in various regions, including their number, capacities, and locations. Each substation provides "33/11 kV," which refers to the substation's voltage capacity. The substations are distributed across Meherpur, Gangni, and Mujibnagar, with each area having its own substations to serve its local population. These substations are essential for efficiently distributing electricity to meet the district's needs.

The district's total consumption reflects the growing energy demands of the population and the increasing reliance on electricity for both household and commercial purposes. With the current infrastructure of five substations, the region is working to meet the rising power demand. The capacity of each substation is crucial for understanding how much electricity it can handle to satisfy the needs of the surrounding areas. This information is vital for efficiently managing and distributing electricity, especially as demand continues to grow. The data helps plan future upgrades and ensure that the electrical infrastructure can support increasing power requirements, maintaining a steady, sufficient electricity supply for all customers in the district.

Looking ahead to 2047, projections indicate that Meherpur will require additional substations to meet the growing demand for a 24-hour, uninterrupted electricity supply. Specifically, it is estimated that **seven additional substations** will be necessary. Each of these substations will require **1 acre of land** for installation. This expansion is essential to sustain the district's growing energy needs and ensure a reliable, continuous power supply for the population.

Solar Power as a Supplement for Meherpur District

According to local perceptions of Meherpur District, Solar power could be a viable supplement to the existing electricity grid. With sufficient sunlight, solar panels can efficiently meet household and community electricity needs. For households, a 1 kW solar panel can provide around 118–120 units of electricity per month, enough for lighting, fans, and small appliances. For larger areas, **solar micro-grids** can be established to meet the energy demand without relying entirely on the grid.

Potential Growth Center of Mujibnagar Upazila

Bagoan

Bagoan Union has strong potential to emerge as a key growth center in Mujibnagar Upazila, thanks to its well-developed communication network and historical significance. Its well-connected road system enhances mobility for people, goods, and services, making it an attractive hub for future economic expansion. The union's 400-year-old heritage—including the residence of the Zamindar of Nawab Siraj-ud-Daulah and the earlier origin of Bagoan compared to Meherpur town—adds cultural and tourism value that can stimulate local businesses, hospitality services, and preservation projects. The presence of landmarks such as the Shorshoti Canal, the Christian missionary church, and the missionary hospital further strengthens the area's role as a service and heritage center.

In addition, Bagoan's strategic location within the upazila positions it to support agricultural marketing and small-scale commercial activities. Its enhanced connectivity enables the smooth transportation of agricultural goods to major regional markets, complementing the upazila's growing role in vegetable supply chains. The combination of historical appeal, service institutions, and transport advantages

creates favorable conditions for Bagoan to function as a mixed-growth node, promoting tourism, trade, and local development.

Monakhali

Monakhali Union also demonstrates strong potential to become a growth center within Mujibnagar Upazila, driven by improvements in communication infrastructure and its impact on local water management. The Bhairab River sluice gate—one of the union’s notable features—serves not only as a tourist attraction but also as a critical hydraulic structure that supports agriculture by regulating water during periods of scarcity. The regular inflow of visitors on Fridays and Saturdays increases opportunities for small businesses, local markets, and service-oriented activities, contributing to a more dynamic rural economy.

Moreover, Monakhali lies along important local transport routes, facilitating the movement of agricultural produce to nearby collection centers and regional markets. This makes the union a strategic point for enhancing rural trade and logistics. Its blend of tourism potential, water-resource importance, and transport accessibility positions Monakhali as a promising location for future agricultural processing, river-based tourism, and market development—key factors that support its designation as a potential growth center for Mujibnagar Upazila.

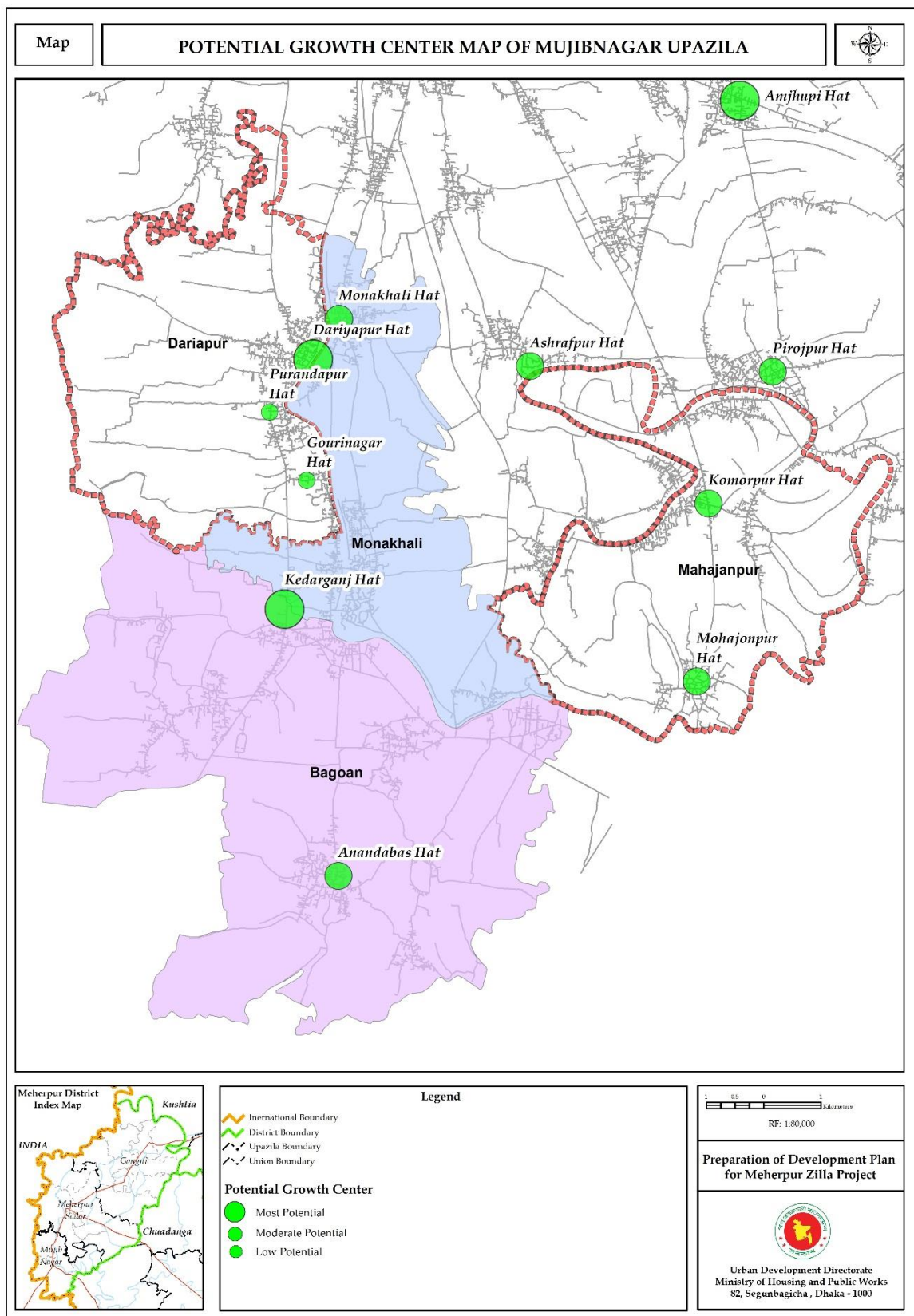


Figure: Potential Growth Center of Mujibnagar Upazila