



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-11

A Report of Assist Urban Planner to Preparation of Action Area Plan including report elaborating all containing sectors and extents of Gangni Pourashava

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Existing Situation:

Ward 01 of Gangni Municipality is a growing urban unit that reflects the challenges of balancing population growth, land use management, and resilience building in small-town Bangladesh. According to BBS (2022), the ward has a population of 3,289, which is projected to rise sharply to 5,959 by 2047, almost doubling within 25 years. This demographic increase is expected to place significant pressure on already constrained land, infrastructure, and services. The ward's land use is dominated by agriculture (62.44%), supported by residential areas (30.15%), while allocations for commercial (0.09%), community services (0.13%), and education (0.60%) remain disproportionately low compared to urban planning standards. The occupational structure shows 60% of residents engaged in farming, with small contributions from business (16%), services (7%), and other activities, reflecting a heavy reliance on agriculture and a predominance of informal employment (91%).

Social conditions further highlight vulnerabilities, with inadequate educational facilities, no community clinic, limited recreational spaces, poor sanitation, insufficient street lighting, and social concerns such as drug addiction. Economically, the ward suffers from unplanned market development, lack of diversification, and the predominance of katcha and tin housing, which drives scattered low-rise sprawl instead of compact vertical growth. From an environmental perspective, waterlogging, poor drainage, arsenic-contaminated drinking water, and air pollution from local brickfields weaken the ward's ecological balance and undermine public health. Although higher elevations (11.40–14.29 m) support settlements and institutions with relatively low flood risk, lower elevations (8.39–11.39 m) are vulnerable to seasonal waterlogging but still serve as important areas for agriculture and water retention.

Together, these social, economic, and environmental challenges keep Ward 01 within the Reorganization (α) phase of the Adaptive Cycle. The ward exhibits the characteristic results of this stage, including unmanaged sprawl, vulnerability to uncontrolled change, overstressed infrastructure, and environmental degradation. Without strategic intervention, rising population pressure and ongoing informal growth patterns could further strain services and natural resources. However, with resilience-based planning such as protecting agricultural land, promoting vertical housing, expanding community and commercial spaces, improving drainage and water supply, and addressing social issues ensuring a more sustainable and adaptive urban future.

Feature	Existing Situation
Occupational Analysis	Service holder: 7%, Business: 16%, Driver: 5%, Worker: 9%, Education: 0%, Medical service: 02%, Farmer: 60%. Formal employment: 09%, Informal employment: 91%. (Source: Socio-Economic Survey, 2025)
Transportation Analysis	By foot: 45.74%, Rickshaw: 18.35%, Van: 16.49%, Cycle: 5.32%, Motorcycle: 11.17%, Car: 00%, Bus: 2.13%, Microbus: 0.80%. Non-motorized: 85.90%, Motorized: 14.10%. Gender-wise: Females mainly use van (18.50%), walking (53.70%), and rickshaw (19.80%), while males depend on van (14.95%), walking (39.72%), rickshaw (17.30%), and motorcycle (14.49%). (Source: Socio-Economic Survey, 2025)
Building Type	Katcha: 206, Pucca: 545, Semi-Pucca: 1134, Tin Shade: 743, Under Construction: 38. (Source: Physical Feature Survey, 2025)
Building Floor Distribution	1 floor: 2583; 2 floors: 72; 3 floors: 10; 6 floors: 01. (Source: Physical Feature Survey, 2025)
Elevation Profile (DEM)	11.40–14.29 m (higher elevation): settlements, institutions, commercial areas—less flood-prone, suitable for permanent housing and dense development; concentration of educational and service facilities. 8.39–11.39 m (lower elevation): covers lower-lying areas, where agriculture, open spaces, and waterbodies dominate. These areas are prone to seasonal waterlogging but remain suitable for farming activities and natural water retention functions. (Source: Physical Feature Survey, 2025)
Land Use Status	Administrative: 0.63 acre (0.14%), Agricultural: 333.455 acre (62.44%), Commercial: 0.49 acre (0.09%), Community Services: 0.69 acre (0.13%), Education & Research: 3.20 acre (0.60%), Mixed Use: 6.31 acre (1.18%), Residential: 160.99 acre (30.15%), Road: 12.87 acre (2.41%), Industry: 4.60 acre (0.86%), Service Activity: 0.17 acre (0.03%), Waterbody: 11.29 acre (2.11%). (Source: Physical Feature Survey, 2025)
Utility Services	Deep tube wells: 317, Street lights: 49. (Source: Physical Feature Survey, 2025)

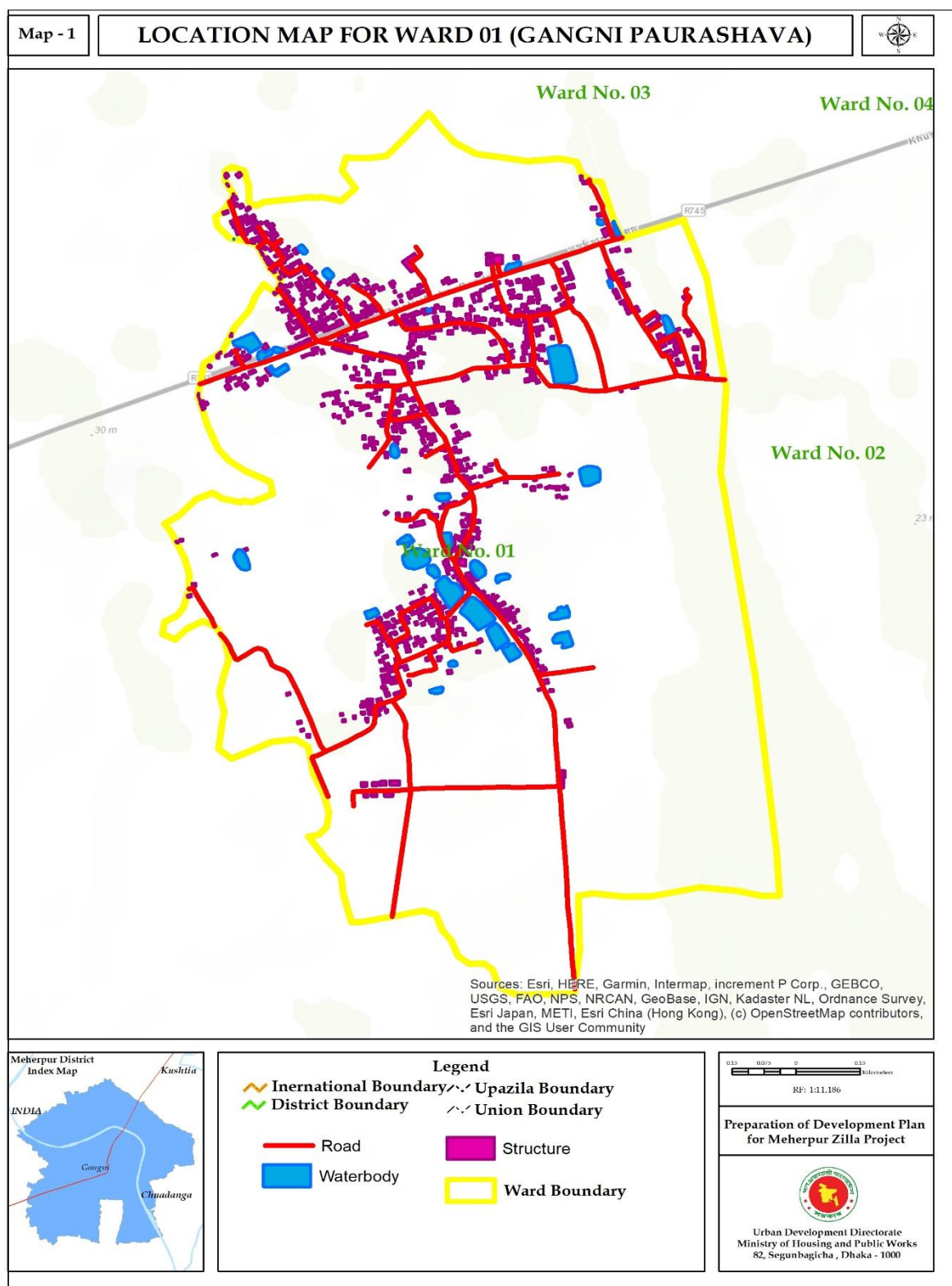
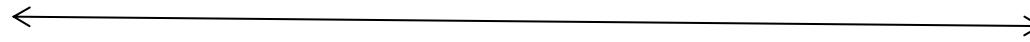


Figure 1: Location Map of Ward 07

Problem Identification:

Source	Key Problems Identified
PRA	<ul style="list-style-type: none">• Communication Problem• Water Logging• Lack of Dustbin• Lack of public library• Sanitation Problem• Lack of Pure Drinking water (Arsenic Contamination)• Unemployment• Lack of Educational Infrastructure• Unplanned market• Drainage Problem• Road Accident• Electricity Problem• No Community Clinic• Lack of recreational facility• Air pollution due to local Brick field• Drug Addiction
Socio-Economic Data	<ul style="list-style-type: none">• Need improvement in educational sector at Changgara
Newspaper	<ul style="list-style-type: none">• Child dies after being hit by a bus in Gangni. https://www.meherpurpratidin.com/e_paper_online/31-12-2022/#gallery-1

Adaptive Cycle Phase Analysis:



Resilience

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Adaptive Cycle Phase	Release (Ω)	Reorganization (α)	Growth (r)	Conservation (K)
Social System	One population overwhelms all others, which disappear, or a revolt occurs, breaking the homogeneity of the space.	Heterogeneous populations mixing at the individual level; and absence of barriers. Mainstreaming (residents and explorers) and marginal (drug traders and sex workers) are present.	Selected populations begin to grow; the mainstream populations may begin to overtake marginal populations. Space encourages inclusion.	One population may begin to dominate; Population in the area becomes homogeneous. Segregation occurs are barriers, both physical and implied, rise.
Economic System	Small permutation in customer or market yields collapse	Small, opportunistic, and temporary business emerges.	Entrepreneurs create highly flexible businesses. Imported or local response to local needs.	Large-scale economic entities emerge emphasizing “one size fits all” Efficiency is paramount: customization disappears and the system is inflexible.
Environmental System:	Out of bounds event overwhelms engineered and separated system.	Spontaneous and visible natural processes in the site.	Designed, visible Reinforcing the connection to other systems.	Engineered, hidden Separates the bio-system from others Inflexible.
Results	Unmanaged Sprawl: The primary issue is the unplanned and rapid conversion of land from its current use, such as agriculture, to urban development. This leads to the loss of valuable	Lack of Infrastructure: Areas begin to reorganize, the public infrastructure (roads, water, sewage) may not keep pace with the development.	Congestion & Overburdened Infrastructure: As the population and economic activity increase, the existing infrastructure can become overstretched, leading to traffic congestion, strain on the water	Stagnation: The strong emphasis on stability can lead to stagnation, preventing necessary upgrades to infrastructure and amenities. Rigidity: A rigid system of conservation can prevent the area from adapting to new social or

	<p>farmland and natural spaces.</p> <p>Vulnerability: Areas in this phase are highly vulnerable to uncontrolled change, which can overwhelm existing infrastructure and services.</p>	<p>Ad-hoc Growth: Without a clear plan, the reorganization can lead to scattered and uncoordinated development, making it difficult to provide efficient public services in the future.</p>	<p>supply, and inadequate sanitation.</p> <p>Environmental Degradation: Rapid development can lead to the loss of urban green spaces and a decline in air and water quality.</p>	<p>economic needs, potentially hindering long-term sustainability.</p> <p>Resistance to Change: The population in this phase may resist new development or changes, which can slow down progress and prevent the area from evolving.</p>
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- (Source: Anderson, 2011)
- Source: Marcus, L., & Colding, J. (2023). Placing Urban Renewal in the Context of the Resilience Adaptive Cycle. Land. <https://doi.org/10.3390/land13010008>.
- Source: Peng, H., Lou, H., Liu, Y., He, Q., Zhang, M., & Yang, Y. (2025). Spatial and Temporal Evolution Assessment of Landscape Ecological Resilience Based on Adaptive Cycling in Changsha Zhuzhou–Xiangtan Urban Agglomeration, China. Land. <https://doi.org/10.3390/land14040709>.
- Source: Wang, Z., Lin, L., Zhang, B., Xu, H., Xue, J., Fu, Y., Zeng, Y., & Li, F. (2023). Sustainable urban development based on an adaptive cycle model: A coupled social and ecological land use development model. Ecological Indicators. <https://doi.org/10.1016/j.ecolind.2023.110666>.
- Source: Marcus, L., & Colding, J. (2023). Placing Urban Renewal in the Context of the Resilience Adaptive Cycle. Land. <https://doi.org/10.3390/land13010008>.

Urban Resilience

Ward 01 of Gangni Municipality remains in the Reorganization (α) phase of the Adaptive Cycle as its social, economic, and environmental systems are still fragmented and unable to stabilize. Socially, weak cohesion persists due to poor educational infrastructure, absence of a community clinic, lack of recreational spaces, and growing problems of drug addiction, all of which limit collective resilience. Economically, the ward is dominated by agriculture (60% farmers) and small informal activities (91% employment is informal), while unplanned market development and the predominance of katcha and tin housing reflect opportunistic but unsustainable growth. Environmentally, the area faces severe challenges from waterlogging, poor drainage, arsenic-contaminated drinking water, and air pollution caused by local brickfields, while agricultural land remains under pressure from encroachment. As a result, Ward 01 exhibits typical outcomes of the reorganization phase, including unmanaged sprawl, vulnerability to uncontrolled change, overstressed infrastructure, and environmental degradation, which collectively prevent its transition into the Growth (r) phase despite its potential for resilience and sustainable development.

Urban Resilience Analysis for ward 01:

Adaptive Cycle Phase	Problem arises in ward 01	Planning Intervention	Implementation Authority
Reorganization (α)	<p>Lack of Infrastructure:</p> <ol style="list-style-type: none"> 1. Ward 01 suffers from frequent waterlogging and poor drainage, which disrupt daily life and damages infrastructure. (Source: PRA). 2. The community faces a shortage of pure drinking water due to arsenic contamination, creating serious health risks. (Source: PRA). 3. There is no community clinic, leaving residents without access to essential healthcare services. (Source: PRA). 4. The ward has a lack of dustbins and proper sanitation facilities, leading to unhygienic conditions. (Source: PRA). 5. Educational infrastructure is poor, with inadequate facilities to meet the needs of students. (Source: PRA). 6. Street lighting is insufficient, causing insecurity and safety concerns, especially at night. (Source: PRA). 7. The ward has a lack of recreational facilities, depriving residents, particularly children and youth, of open spaces and leisure opportunities. (Source: PRA). 	<ol style="list-style-type: none"> 1. Agricultural Area: Agriculture: 333.46 ac (62.44%) → preserve strictly. (Source: <i>FAO Urban Agriculture Guidelines</i>) 2. Residential Area: 160.99 ac (30.15%) → oversupplied; encourage vertical growth instead of expanding horizontally. (Source: <i>The standards of UDD for Small Towns of Bangladesh</i>) 3. Commercial Area: 0.49 ac (0.09%) → expand to ~8 ac. Needed for future economic growth, and supporting projected population. (Source: <i>UDD Land Allocation Norms (2015)</i>) 4. Community Service: 0.69 ac (0.13%) → expand to ~5 ac. Very low now; must increase for playgrounds, community centers, and public services. (Source: <i>WHO Urban Health & Recreation Guidelines (2016)</i>) 5. Education Institution: 3.2 ac (0.60%) → increase to ~6 ac. To enhance literacy and infrastructure improvements. (Source: <i>Community Anchor Spaces in Resilient Cities</i>) 6. Road Network: 12.87 ac (2.41%) → expand to ~18 ac. Expanding and upgrading for RCC/CC roads, pedestrian paths, and cycle lanes. (Source: <i>LGED Urban Road Standards (2018)</i>) 	<p>Recreational Place implemented by LGED (Local Government Engineering Department) in collaboration with the Municipality.</p>

	<p>8. Communication problems and frequent road accidents highlight the urgent need for better road networks and traffic management. <i>(Source: PRA & Newspaper).</i></p> <p>9. Electricity shortages disrupt households, businesses, and education, reducing overall quality of life <i>(Source: PRA).</i></p> <p>Ad-hoc Growth:</p> <p>1. Unplanned market development has led to scattered roadside businesses, creating congestion and disorder in commercial activities. <i>(PRA)</i></p> <p>2. The predominance of katcha and tin housing has resulted in scattered low-rise growth instead of planned vertical development. <i>(Source: Physical Feature Survey)</i></p> <p>3. Air pollution from local brickfields is degrading environmental quality and posing health hazards to residents. <i>(PRA)</i></p> <p>4. Drug addiction issues caused by weak regulation are undermining community stability and increasing social vulnerability. <i>(Source: Physical Feature Survey)</i></p>	<p>7. Mixed Use: 6.31 ac (1.18%) → increase to ~10 ac. Encouraged for compact development, reducing commuting needs. <i>(Source: Smart Growth Principles (World Bank, 2013))</i></p>	
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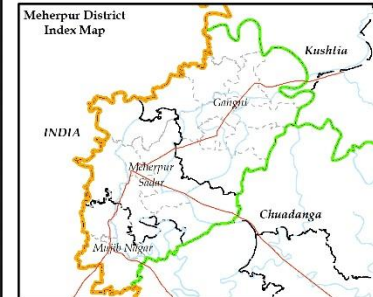
Map - 1

PROPOSED LANDUSE FOR WARD - 1 GANGNI MUNICIPALITY



Legend

- International Boundary
- District Boundary
- Upazila Boundary
- Union Boundary
- Ward Boundary
- Urban Void Space for Recreational Space



RE: 1:17,518

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