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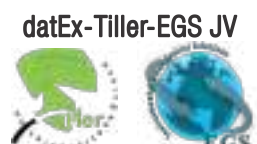
STRUCTURE PLAN



May 2026

**PREPARATION OF CHATTOGRAM METROPOLITAN MASTER PLAN
PERIOD: 2025 - 2050**

Prepared in Association with





Chattogram Development Authority
Ministry of Housing and Public Works
People's Republic of Bangladesh

PREPARATION OF CHATTOGRAM METROPOLITAN MASTER PLAN (PERIOD: 2025-2050)

Draft Final Report Structure Plan

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Consultant: datEx-Tiller-EGS JV



ABBREVIATION AND ACRONYMS

3R	Reduce, Reuse, Recycle
ADB	Asian Development Bank
ADP	Annual Development Programme
ANPR	Automatic Number Plate Recognition
AQI	Air Quality Index
B.C.	Before Christ
BBIN	Bangladesh–Bhutan–India–Nepal
BBS	Bangladesh Bureau of Statistics
BCCSAP	Bangladesh Climate Change Strategy and Action Plan
BCSIR	Bangladesh Council of Scientific and Industrial Research
BDT	Bangladesh Taka
BMD	Bangladesh Meteorological Department
BNBC	Bangladesh National Building Code
BNCC	Bangladesh National Cadet Corps
BOD	Biological Oxygen Demand
BPDB	Bangladesh Power Development Board
BR	Bangladesh Railway
BRT	Bus Rapid Transit
BRTA	Bangladesh Road Transport Authority
BSCIC	Bangladesh Small and Cottage Industries Corporation
BWDB	Bangladesh Water Development Board
CAAB	Civil Aviation Authority of Bangladesh
CBD	Central Business District
CCA	Climate Change Adaptation
CCC	Chattogram City Corporation
CDA	Chattogram Development Authority
CEPZ	Chattogram Export Processing Zone
CMA	Chattogram Metropolitan Area
CMMP	Chattogram Metropolitan Master Plan
CNG	Compressed Natural Gas
COD	Chemical Oxygen Demand
COVID-19	Coronavirus Disease 2019
CPA	Chattogram Port Authority
CUET	Chittagong University of Engineering and Technology
CWASA	Chattogram Water Supply and Sewerage Authority
DAP	Detailed Area Plan
DC	Deputy Commissioner
DDM	Department of Disaster Management
DOE	Department of Environment
DPHE	Department of Public Health Engineering
DRR	Disaster Risk Reduction
EIA	Environmental Impact Assessment
ENV	Environment
EPZ	Export Processing Zone
ESRI	Environmental Systems Research Institute
FAO	Food and Agriculture Organization
FAR	Floor Area Ratio
GDP	Gross Domestic Product
GIS	Geographic Information System
GSB	Geological Survey of Bangladesh

GoB	Government of Bangladesh
HAZUS	Hazards United States Multi-Hazard
HFT	Human-Friendly Transmission
HH	Household
ICT	Information and Communications Technology
ITS	Intelligent Transport System
JICA	Japan International Cooperation Agency
KDA	Khulna Development Authority
LDC	Least Developed Country
LGED	Local Government Engineering Department
LIUPCP	Livelihoods Improvement of Urban Poor Communities Project
LPG	Liquefied Petroleum Gas
LPI	Liquefaction Potential Index
LQ	Location Quotient
LULC	Land Use and Land Cover
MRT	Mass Rapid Transit
MoHPW	Ministry of Housing and Public Works
NAP	National Adaptation Programme
NBS	Nature-Based Solutions
NGO	Non-Governmental Organization
NHA	National Housing Authority
NMT	Non-Motorized Transport
OSR	Open Space Ratio
PC	Planning Commission
PP	Perspective Plan
PPP	Public–Private Partnership
PRA	Participatory Rapid Appraisal
RAJUK	Rajdhani Unnayan Karttripakkha
RDA	Rajshahi Development Authority
RH	Regional Highway
RHD	Roads and Highways Department
RMG	Ready-made Garments
ROW	Right of Way
RS	Remote Sensing
SDG	Sustainable Development Goals
SPEI	Standardized Precipitation Evapotranspiration Index
SPZ	Spatial Planning Zones
STP	Sewage Treatment Plant
SWM	Solid Waste Management
TAZ	Traffic Analysis Zone
TDR	Transfer of Development Rights
TIA	Traffic Impact Assessment
TOD	Transit-Oriented Development
UAP	Urban Area Planning
UDD	Urban Development Directorate
UN	United Nations
UNCHS	United Nations Commission on Human Settlements
UNDP	United Nations Development Programme
WASA	Water Supply and Sewerage Authority
WB	World Bank
WHO	World Health Organization

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Chapter One

Introduction

I N T R O D U C T I O N





1. KEY ISSUES IN CHATTOGRAM

Increasing Population

Rapid population growth in Chattogram has led to significant challenges, including overburdened infrastructure, housing shortages, traffic congestion, and environmental degradation. The city's resources struggle to meet the needs of its expanding population, exacerbating issues like water scarcity, waste management, and urban sprawl while straining efforts toward sustainable urban development and quality of life.

Congestion

Chattogram faces severe transportation and traffic congestion issues due to inadequate road infrastructure, unplanned urban growth, and a rapid increase in vehicles. Poor public transport systems, lack of traffic management effort, and insufficient parking exacerbate delays, pollution, and economic losses, making mobility a significant challenge for the city's residents and businesses.

Water Logging

Waterlogging is a persistent issue in Chattogram, caused by poor drainage systems, unplanned urbanization, and encroachment on canals and water bodies. Heavy rainfall overwhelms inadequate infrastructure, disrupting daily life, damaging property, and harming the economy. Restoring natural drainage channels and improving stormwater management are essential to address this recurring urban challenge.

Climate Change & Disaster

Chattogram is highly vulnerable to climate change and disasters, including cyclones, rising sea levels, landslides and urban flooding. Its coastal location amplifies risks, threatening lives, infrastructure, and livelihoods. Unplanned development and deforestation worsen these impacts. Enhancing disaster resilience, climate adaptation measures, and sustainable urban planning are crucial for safeguarding the city's future.

Affordable Housing

Affordable housing is a critical issue in Chattogram due to rapid population growth and rising land prices. Low-income residents face challenges accessing adequate housing, often settling in informal, overcrowded or vulnerable areas. Addressing this requires inclusive policies, subsidized housing schemes, and efficient land use planning to ensure equitable access to safe and affordable homes.

Waste Management

Waste management in Chattogram remains inadequate, with inefficient collection, improper disposal, and limited recycling facilities. Rapid urbanization and population growth exacerbate the problem, leading to environmental pollution and health hazards. Establishing sustainable systems, including segregation at source, modern treatment facilities, and public awareness, is essential to tackle the city's growing waste crisis.



Haphazard Industrialization	Urbanization and Growth Management	Institutional Impairments
Sustainable industrialization in Chattogram faces challenges such as environmental pollution, lack of green technologies, inefficient resource management, and unplanned industrial expansion. Balancing economic growth with environmental conservation is difficult amid rising energy demands and inadequate regulatory enforcement. Promoting eco-friendly practices, cleaner production, and policy reforms are vital for sustainable industrial growth.	Urbanization in Chattogram poses challenges like unplanned growth, housing shortages, traffic congestion, and loss of green spaces. Rapid expansion strains infrastructure, utilities, and public services, while informal settlements proliferate. Effective growth management requires integrated urban planning, sustainable land use policies, and investment in infrastructure to balance development with environmental preservation.	Institutional inefficiencies in Chattogram hinder sustainable development, with fragmented governance, lack of coordination between agencies, and weak enforcement of policies. Corruption, inadequate resource allocation, and outdated regulations further exacerbate challenges. Strengthening institutions, improving transparency, and fostering inter-agency collaboration are crucial for overcoming barriers to sustainable urban and economic development.
Water & Sanitation	Endangered Environment & Ecosystem	Recreational & Open Space
Chattogram faces significant challenges in water supply and sanitation, including inadequate access to safe drinking water, high dependence on groundwater, and insufficient coverage of piped water networks. Rapid urbanization has overwhelmed existing systems, leading to water scarcity, contamination risks, and poor wastewater management, resulting in health hazards and environmental degradation across the city.	Environmental degradation and ecosystem disruption in the Chattogram Metropolitan Area are major obstacles to its sustainable development. Key issues include air and water pollution, deforestation, encroachment of wetlands, and coastal erosion. Additionally, improper waste management and the loss of biodiversity due to unplanned urbanization exacerbate the region's environmental challenges.	Chattogram faces a severe shortage of open spaces and recreation facilities due to unplanned urbanization, encroachment, and rapid population growth. Parks, playgrounds, and green spaces are insufficient, poorly maintained, or inaccessible, limiting recreational opportunities. This lack contributes to environmental degradation, reduced livability, and health concerns, highlighting the need for sustainable urban planning.

Tourism

Chattogram's unique coastal geography, hilly landscape, and cultural heritage offer immense tourism potential. However, lack of integrated infrastructure, poor accessibility, inadequate tourist infrastructure, weak institutional support, and limited promotion of its diverse attractions hinder its growth. Environmental degradation, poor waste management, and encroachment on scenic and cultural sites further threaten the sustainability and appeal of the tourism sector.

Blue Economy

Chattogram's strategic location along the Bay of Bengal positions it at the forefront of Bangladesh's blue economy. Untapped marine resources, port-based industries, and fisheries require sustainable management. Challenges include unregulated exploitation of marine resources, lack of marine spatial planning, pollution from port and industrial activities, and weak governance of coastal and maritime sectors. There is also insufficient investment in research, infrastructure, and capacity to harness the full potential of the blue economy in Chattogram.

Port

Chattogram Port faces congestion due to limited handling capacity, outmoded infrastructure and logistics systems. Poor connectivity with hinterland regions, land constraints for expansion, and lack of coordination among port-related agencies further hamper operational efficiency. Environmental impacts and navigability issues also pose significant long-term challenges to sustainable port development.



2. HISTORY OF CHATTOGRAM

Ancient Period

Chittagong, historically known as "Samatata" and later "Chattagram", has ancient roots dating back to early human settlements influenced by its geographical features like hills, rivers, and proximity to the sea. From ancient times, Chattogram was a significant port city involved in maritime trade with Southeast Asia, the Middle East, and beyond, facilitated by its strategic location on the Bay of Bengal. In the 6th century, Chattogram came under the influence of regional powers such as the Arakanese and the Sultanate of Bengal, which shaped its socio-political landscape. The city witnessed the influx of different cultures and religions, including Hinduism, Buddhism, and Islam, contributing to its diverse heritage in the 10th century. The Deva dynasty rules Chattogram, promoting Buddhist culture and building significant religious and cultural landmarks during the 13th century.

Sultan Fakhruddin Mubarak Shah of Sonargaon conquers Chattogram, marking the beginning of Muslim rule. The city is integrated into the Bengal Sultanate. Chattogram became an important administrative and trading center under the Ilyas Shahi and later the Husain Shahi dynasties, experiencing significant urban development and cultural growth.

Portuguese and Arakanese Periods

During the 16th century, Portuguese traders and settlers establish a presence in Chattogram, engaging in trade and occasionally in piracy and the slave trade. The Arakanese conquered Chattogram, ruling it as a vassal state and using it as a base for maritime activities. Chattogram remains under Arakanese control, with significant Portuguese influence. The region is known for its mixed cultural and religious environment. Mughal Emperor Aurangzeb's forces, led by Shaista Khan, recaptured Chattogram from the Arakanese in 1666, incorporating it into the Mughal Empire and renaming it "Islamabad."

Mughal Period and Early British Influence

In the 17th century, Chattogram, known as Islamabad, was under Mughal rule. The Mughals, after their conquest in 1666, established administrative and military structures in the city. They integrated Chattogram into their empire, enhancing its role as a significant trading hub. The Mughals' influence persisted until the British East India Company took control following a secret treaty with Nawab Mir Kasim in 1760, officially confirmed in 1761.



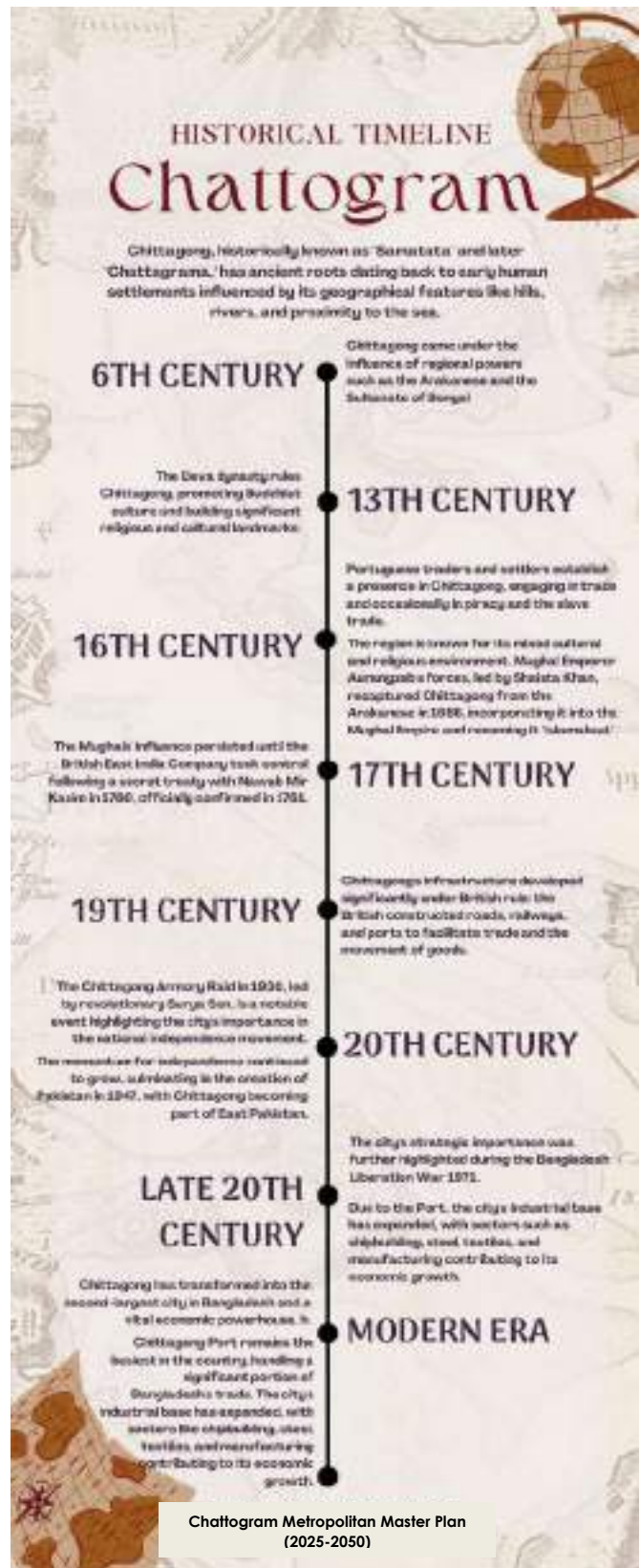
The transition from Mughal to British control marked the beginning of significant administrative changes. Harry Verelst was appointed the first British Chief of Chattogram, effectively ending the Mughal-style faujdar administration. The British introduced their systems, combining elements of British and Mughal governance, which included the establishment of a council to advise the Chief.

British Colonial Administration

The British period in Chattogram saw substantial administrative, social, and economic changes. The colonial rulers focused on consolidating their control and maximizing revenue. By 1776, the Khasmahal settlement was introduced, making the British government the direct owner of cultivable land. The Cornwallis Code 1793 further solidified British administrative control, creating a subservient landlord class and centralizing judicial and executive powers. Throughout the 19th century, Chattogram's infrastructure developed significantly under British rule: the British constructed roads, railways, and ports to facilitate trade and the movement of goods. The town of Chattogram, which was already a thousand years old, saw considerable urban development during this period, particularly after the creation of the British city in the 1860s.

Social and Cultural Changes

We also witnessed significant social and cultural transformations in



Chattogram during the British period. The coexistence of Muslims, Hindus, Buddhists, and Christians fostered a diverse and dynamic society. The





British introduced modern education, leading to the establishment of schools and colleges. This period also saw the growth of journalism, literature, arts, and culture, with the elite playing a crucial role in these developments. Religious reforms and social changes were also prominent during British rule. The introduction of Western education and legal systems reshaped societal norms and practices. The British period was marked by efforts to modernize various aspects of life in Chattogram, bringing the city closer to the modern age.

Political Movements and Independence

Chattogram played a vital role in the Indian independence movement. The city was a center of political activity, and its people were actively involved in the struggle against British rule. The Chattogram Armoury Raid in 1930, led by revolutionary Surya Sen, is a notable event highlighting the city's importance in the national independence movement. The early 20th century saw the rise of political parties and movements advocating for independence. The British response to these movements was often repressive, with strict laws and regulations to curb dissent. Despite this, the momentum for

independence continued to grow, culminating in the creation of

Modern Era

In the modern era, Chattogram has experienced accelerated urbanization characterized by rapid population growth, infrastructure

Pakistan in 1947, with Chattogram becoming part of East Pakistan.

Independence Movement & Post-Colonial Development

After the partition of India and the creation of Pakistan, Chattogram continued to develop as a major port and commercial center. The city's strategic importance was further highlighted during the Bangladesh Liberation War in 1971. Chattogram endured significant hardships during the conflict but emerged as a symbol of resilience and patriotism. In the modern era, Chattogram has transformed into Bangladesh's second-largest city and an economic powerhouse. The Chattogram Port remains the busiest in the country, handling a significant portion of Bangladesh's trade. The city's industrial base has expanded, with sectors such as shipbuilding, steel, textiles, and manufacturing contributing to its economic growth.

Urban development has reshaped Chattogram's landscape with modern infrastructure, high-rise buildings, and improved transportation networks. Educational institutions, cultural centers, and recreational facilities have increased, enhancing the quality of life for its residents. However, challenges such as urban congestion, environmental degradation, and socio-economic disparities remain.

expansion, and economic diversification. As Bangladesh's principal port city and commercial capital, Chattogram has become a



magnet for rural-to-urban migration and industrial investment, leading to a population exceeding 5 million within the metropolitan area. The city's urban fabric has expanded beyond its traditional core toward areas like Hathazari, Raozan, and Anwara, transforming peri-urban and rural zones into dense residential and industrial settlements. Large-scale infrastructure projects including flyovers, elevated expressways, and port connectivity improvements have redefined the city's mobility and spatial structure. The emergence of modern commercial hubs, high-rise apartments, and planned residential neighborhoods reflects a shift toward a more urban lifestyle.

However, this rapid growth has also created challenges such as unplanned land use, traffic congestion, housing shortages, and environmental degradation, particularly through hill cutting, encroachment on wetlands, and inadequate drainage. Despite these issues, Chattogram continues to play a pivotal role in national economic development, accounting for nearly 40% of Bangladesh's industrial output¹ and handling over 90% of its maritime trade². The city's ongoing urban transformation underscores both the opportunities and the sustainability challenges of modern urbanization in Bangladesh's coastal metropolis.

¹ ILO, 2024, Skills demand and supply assessment in the Chattogram–Cox's Bazar region, Bangladesh

² World Bank, 2024, Bay Terminal Marine Infrastructure Development Project,

3. KEY ELEMENTS & ACHIEVEMENTS OF PREVIOUS MASTER PLANS

Port City Chattogram

Chattogram is the second-largest city in Bangladesh - home to the Chattogram Port, one of the world's oldest and busiest ports. The Chattogram Port, on the banks of the Karnaphuli River, is Bangladesh's key seaport and the main port that the nations rely on. The port accommodates a wide range of cargo and handles 90% of Bangladesh's export imports. It ranked as the 61st busiest container port in the world in 2023³. The port has a recorded history dating back to ancient Roman accounts. It is the busiest container port in the Bay of Bengal.

Chattogram's urbanization is a testament to the city's economic dynamism and strategic importance. As a major port city, it drives significant economic activities and attracts a diverse population. The population of Chattogram City was 2.6 Million in 2011 and grew to 3.2 Million in 2022 by a rate of 2.5 average. Chattogram, as Bangladesh's principal port city, plays

a pivotal role in the country's economic landscape. The port serves as the lifeline for trade, driving industrial growth and employment. The city's rich history, cultural diversity, and economic significance make it a unique and vital part of Bangladesh. As Chattogram continues to evolve, it is a testament to the dynamic interplay between history, commerce, and culture.

Socio-economic and Cultural Influence

Chattogram is Bangladesh's second-largest city and a critical economic and cultural hub. As the country's principal port city, it plays a pivotal role in driving economic activities, fostering cultural diversity, and influencing socio-economic dynamics. Its economic influence is substantial, primarily driven by its strategic location and the presence of the Chattogram Port, the largest and busiest port in Bangladesh. The Chattogram Port handles around 90% of Bangladesh's maritime trade, making it the backbone of its import and export activities.

Chattogram is home to various industries, including shipbuilding, steel production, chemicals, and textiles.

³ <https://www.ajot.com/premium/ajot-commentary-ajots-top-100-container-ports>





The Chattogram Export Processing Zone (EPZ) attracts foreign direct investment, promoting export-oriented industrialization. These industries provide employment opportunities and drive economic growth, contributing significantly to the national GDP. Modern road networks, railways, bridges, and urban development projects enhance connectivity and facilitate efficient movement of goods and people. The city's infrastructure development is crucial for sustaining its economic activities and supporting further growth.

Chattogram's population has been proliferating, driven by rural-to-urban migration and the increase in natural population. This urbanization process brings diverse groups of people to the city, creating a dynamic and heterogeneous urban population.

Rural to Urban Transect

The Rural-Urban Transect is a conceptual framework for comprehending the shift from rural to urban areas. It delineates the gradual transformation in landscape, architecture, and land use as one moves from rural areas to the city center. This concept can be employed to examine how various zones in Chattogram, Bangladesh, transition from rural to urban environments.

Past Planning Efforts

Considering the importance of urbanization and growth management for Chattogram, Chattogram Development Authority (CDA) was established in 1959. A blue print master plan was prepared

in 1961 when the city had a population of around 365 thousand. The plan was based on four strategic assumptions:

- that the port would continue to be important.
- that the central business area should be retained
- that development of the low-lying area west of the Dhaka Trunk Road and southwards towards Patenga would continue and
- that the urban population growth rate would be 2.25%.

Urban development has mostly moved away from the old town, except for the left bank of the Karnaphuli River. Areas like Agrabad and beyond, Patenga peninsula, Dhaka Trunk Road, CDA Avenue, Hathazari, and Cox's Bazar roads have seen significant urbanization. Flooding has hindered development on the eastern side. The city's development has occurred, planned and unplanned, resulting in a mix of informal and formal structures. Urban growth seems uneven, with office blocks alongside rural landscapes, and the conversion from rural to urban use appears slow. The key challenges for low implementation of CDA Master Plan 1961 are:

- Institutional & Governance: Lack of importance to urban planning and management at policy and operational levels.
- Resources Scarcity
- Rigidity of the Master Plan

"Metropolitan Chittagong Review and Basic Development Plan" prepared by B.A.W. Trevallion was prepared to provide a structured framework for the city's development up to the year 1986.



The plan primarily focuses on understanding the existing urban conditions of Chittagong and identifying factors that influence its growth and planning needs. Key factors considered in the plan include population distribution and growth trends, land use patterns, transportation and communication networks, availability of urban services, industrial and commercial development, housing conditions, and environmental considerations. The plan aims to guide future development by balancing urban expansion with infrastructural capacity, ensuring systematic growth and improved living conditions for residents.

Key recommendation were:

- Implement cellular development in planned phases to concentrate housing/industry and ensure service efficiency.
- Implement development in four phases over 20 years, adjusting based on population growth.
- Apply strict planning control, especially in old Kotwali, to reduce density and reclaim land for public use.
- Strengthen coordination under a single planning Authority; require all agencies to consult it early.
- Introduce effective development control to regulate private construction and remove unauthorized uses.
- Establish a single provincial planning body (e.g., Urban Development Directorate) to oversee all authorities.
- Fund infrastructure via a land development rate, not betterment charges.
- Recruit/train planners urgently and unify staff across agencies.
- Enact unified planning laws with clear powers, appeals, and faster land acquisition.

- Focus detailed functional plans on expansion areas, not the old centre.
- Early alignment of primary/secondary distributor roads and flood protection in vulnerable areas.
- Define 27 Development Areas (DAs) with specific uses port, industry, housing, agriculture and remove non-conforming uses.
- Develop the Group 4/5 centre as the metropolitan hub with integrated transport.
- Use planning control to reserve land for roads, open spaces, and public facilities.
- Restrict ribbon development and multiple access points on primary distributor roads.
- Provide parking schemes in congested areas like New Market and Jubilee Road.

Travellion identified a number of structural and institutional weaknesses affecting the effective functioning of the Chattogram Development Authority (CDA), particularly in relation to planning, coordination, and implementation. He observed that the administering ministry responsible for local government was overburdened with administrative responsibilities and lacked the technical expertise required to oversee development authorities effectively. Fragmented technical and administrative control among multiple agencies constrained coherent interpretation and implementation of national development policies. Travellion emphasized the need for unified institutional control through a single provincial-level technical body to coordinate urban and regional planning, enabling better utilization of scarce professional planners through staff unification, cross-posting, and clearer career progression. He further



recommended reorganizing CDA by strengthening its planning function, reallocating experienced engineer-planners to planning duties, merging overlapping planning and project units, and reducing excessive construction-oriented staffing. CDA was also envisioned as the nucleus of a broader regional planning agency, retaining a supervisory role while gradually transferring routine urban responsibilities to municipalities. In addition, Travellion highlighted the need for stronger internal and inter-agency coordination, uniform planning legislation, streamlined land acquisition procedures, limits on court intervention in technical planning decisions, systematic training and recruitment of planning professionals, and the establishment of a dedicated development control and records unit to improve regulatory efficiency and institutional accountability.

The 1995 Chattogram Metropolitan Master Plan (CMMP), commonly referred to as the Structure Plan, was the first comprehensive planning framework prepared by the Chattogram Development Authority (CDA) to guide the city's long-term growth. The plan was developed in response to rapid urban expansion, pressure on housing and infrastructure, unplanned development, and the growing significance of Chattogram as the country's commercial and port-based economic centre. The Structure Plan established a strategic spatial framework identifying broad patterns of future land use, infrastructure corridors, conservation areas, and areas suitable for urban expansion. It emphasized balancing economic growth, environmental sustainability, and efficient urban management.

The Structure Plan was based on extensive surveys, demographic projections, land-use studies, transportation assessments, environmental analysis, and consultations with local institutions. Planners reviewed population growth trends, industrial expansion, port activities, housing shortages, drainage and waterlogging problems, and the city's unique hill-river-coastal ecosystem. The plan aimed to accommodate a rapidly growing urban population by identifying new urban growth areas to the north and west of the city, protecting hill areas and water bodies, improving road connectivity, and developing industrial zones aligned with port functions.

The key features of 1995 Structure Plan are:

- **A polycentric growth model**, strengthening nodes such as Agrabad, Halishahar, Nasirabad, Pahartali, and expanding the city northward.
- **Protection of environmentally sensitive areas**, including hills, wetlands, rivers, and canals.
- **A hierarchical road network** to improve mobility and reduce congestion.
- **Housing strategies** through planned residential areas and densification of existing urban zones.
- **Infrastructure upgrading**, including drainage, water supply, sewerage, and solid waste management.
- **Economic zoning**, supporting industrial clusters, port-related development, and commercial hubs.



The Detailed Area Plan (DAP) for Chattogram was prepared as an implementation instrument of the Chattogram Metropolitan Master Plan (CMMP) following its approval in 1999, with the objective of translating the Structure Plan and Urban Area Plan policies into detailed land use and development controls up to 2015. It covers approximately 1,30,000 acres (excluding restricted areas) and aims to provide detailed land use guidance, development strategies, and management controls. The planning area (1,70,702 acres) was divided into 12 Detailed Planning Zones (DPZs), with six within the Chattogram City Corporation Area and six outside. These DPZs were defined based on geophysical characteristics, existing land use, and administrative boundaries such as wards and unions. Prepared through extensive consultation with CDA officials, government agencies, local communities, and NGOs, the DAP provided comprehensive zoning and regulatory guidance covering residential, commercial, industrial, conservation, and restricted areas. It introduced strict hill management provisions, including prohibition of hill cutting, hill classification for conservation, and re-vegetation of degraded slopes. The plan emphasized protection of water bodies, canals, flood flow zones, and the Halda River through buffer zones and environmental clearance requirements. It also addressed transport hierarchy, environmental protection, heritage conservation, slum upgrading, and identified special ecological and waterfront development projects. Implementation was assigned to CDA, supported by updated building regulations, land subdivision controls, public-private partnerships, and institutional strengthening measures.

Despite its comprehensive scope and technically sound proposals, the Detailed Area Plan (DAP) for Chattogram was only partially implemented. Key reasons for limited implementation included weak institutional capacity within CDA, lack of effective inter-agency coordination, and absence of a dedicated monitoring and enforcement mechanism. Although the DAP provided detailed zoning regulations, hill protection rules, water body conservation guidelines, and transport hierarchy, these controls were not consistently enforced on the ground. Encroachment on hills, wetlands, and canals continued due to fragmented authority, political interference, and inadequate staffing for development control. In addition, limited financial resources, land acquisition challenges, and insufficient engagement of local governments constrained implementation. The absence of a regular review and update mechanism further reduced the relevance of the DAP over time, while rapid urban growth outpaced the regulatory framework. As a result, many environmentally sensitive and strategic proposals remained largely unexecuted.

The current Structure Plan builds directly upon the strengths and lessons of the earlier DAP while addressing its institutional and operational gaps. Core DAP principles- such as zoning-based development control, hill and water body protection, ecological buffers, and transport hierarchy - are reaffirmed in the Structure Plan at a broader spatial and policy level. However, unlike the DAP, the Structure Plan places strong emphasis on institutional reform, decentralization through zonal offices, inter-agency coordination via UDCC, and capacity enhancement

of CDA and Pourashavas. The Structure Plan also expands the ecological focus of the DAP by integrating green-blue networks, climate resilience, and nature-based solutions into metropolitan planning. In this way, the Structure Plan does not replace the DAP conceptually but repositions it as an implementable regulatory instrument to be prepared and updated within a strengthened institutional and governance framework.

The experience of implementing detailed regulatory plans in Chattogram demonstrates that effective execution depends less on the level of spatial detail and more on institutional readiness, coordination mechanisms, and implementation capacity. In this context, translating the Structure Plan into a phased and time-bound Action Plan offers a more pragmatic and flexible approach than preparing conventional Detailed Area Plans. An Action Plan framework can prioritize strategic projects, policy reforms, and institutional strengthening measures, supported by clear responsibilities,

financing strategies, and performance indicators. To be effective, the Action Plan must be integrated with development control regulations, capital investment planning, and inter-agency coordination mechanisms, particularly involving CDA, City Corporation, Pourashavas, and sector agencies. Regular monitoring, periodic review, and adaptive management should be embedded within the Action Plan to respond to changing urban dynamics and implementation constraints. Regular plan review, GIS-based monitoring, and public disclosure of planning decisions should be institutionalized to improve accountability. By focusing on achievable actions, institutional accountability, and measurable outcomes, an Action Plan-based approach can bridge the gap between strategic intent and on-ground delivery, ensuring that the Structure Plan functions as an implementable and responsive instrument for sustainable metropolitan development.

4. VISION

To transform Chattogram into a dynamic, sustainable, and resilient metropolitan hub, where economic growth, social equity, and environmental conservation are harmoniously integrated. By 2050, Chattogram will be a thriving city with world class infrastructure, efficient transportation systems,

green spaces, and climate-resilient urban environments that ensure a high quality of life for all residents. The city will foster inclusive development, sustainable industry, and innovation while preserving its unique cultural heritage, natural resources, and ecosystem services for future generations.



5. PLANNING STRATEGY

Chattogram is one of the most distinctive, liveable cities in Bangladesh. It is a marvellous place, made and remade by the work of generations of the business community, professionals, and cultural souls, including countless generations of ethnic groups.

It is now the turn of this generation of Chattogram to remake Chattogram in their image. The challenge is clear. How do we ensure Chattogram remains not just livable but sustainable and accessible? How do we ensure our suburbs develop jobs and services? How do we ensure that the Chattogram that was founded in the 6th century and renewed in the second half of the 20th century continues to flourish in the 21st century.

Chattogram Master Plan seeks to answer those questions. It is our plan to manage growth in the city and suburbs to the year 2050. It seeks to integrate long-term land use, infrastructure, and transport planning, and in doing so, meet the city's future environmental, population, housing and employment needs.

It is a document of transformational ideas and generational aspiration. It is a document designed to manage, adapt, and harness change for the social, economic, and environmental benefit of future generations of Chattogram.

A sustainable Chattogram requires a robust planning strategy that integrates effective governance, political commitment, and strong regulatory instruments. Political will is essential to prioritize long-term urban resilience over short-term gains, while transparent governance ensures accountability and public trust in implementation. Strengthening institutions, promoting inter-agency coordination, and involving local governments can enhance policy execution. Planning instruments such as zoning regulations, land use plans, environmental codes, and incentive-based development controls must be rigorously applied and periodically updated. Together, these elements create a framework where development aligns with sustainability goals, ecological preservation, and inclusive growth, ensuring a better urban future for Chattogram Metropolitan.



6. STRATEGIC DIRECTION & KEY POLICY SETTINGS

Chattogram Metropolitan plan will address the challenges it faces through an integrated, long-term planning framework based on the following strategic directions and key policy settings.

Strengthening Institute and Governance Capacity enhancement of CDA planning unit to be able to maintain the plan independently and update it on a regular basis Practicing a development coordination meeting and sharing with relevant organization under city governance umbrella Establish a two-way relation with Municipality/Pourashava and establish zonal offices for land use and development control	Harmonize Plans, Initiatives, and Strategies Across Different Organizations Align the plan with national interest, policy and guidelines while integrating with plans from other organizations. Establish inter-agency coordination mechanisms to ensure consistent objectives, avoid duplication of efforts, and streamline implementation between government departments, local authorities, and development partners. Create a shared digital planning database for all relevant agencies to access and update, enhancing transparency, data-driven decision-making, and collaborative project monitoring.
Sustainable & Integrated Transport Solution Install high-volume public transport (MRT/BRT) along key corridors. Integrate bus and lower-order public transport under one umbrella for route, fare, transfer and efficient operations. Ensure safe and sufficient footpaths along arterial corridors. Identify and plan for NMT zoning.	Save the Agriculture & Environment Avoid the use of fertile land for development. Strengthen waste collecting, sorting, disposal and reuse activities. Aware community for waste sorting, disposal and enforce if essential Build more secondary transfer stations (STS) and instruments for safe waste handling.





Restrict parking on arterial roads, major roads and at intersections, and regulate the parking.

Monitor having parking provisions in buildings and shopping.

Apply smart mobility solutions like intelligent transportation systems (ITS) for better traffic management, real-time information sharing, and improved public transport schedules.

Foster Smart Polycentric Development

Develop satellite towns by identifying specialized and mixed-use urban centers within Chattogram Metropolitan and facilitate them with good roads and amenities as investment concentrates and discourages fringe development.

Establish (if needed) and enhance connections between urban centers and improve public transport corridor among them

Sustainable Waste and Wastewater Solutions

Establish designated e-waste collection points and recycling centers to handle electronic waste (e.g., mobile phones, computers, and televisions) that contains hazardous substances like lead and mercury.

Promote the use of greywater (from baths, showers, and sinks) for non-potable purposes such as irrigation, flushing toilets, and industrial processes to reduce freshwater consumption.

Establish centralized and decentralized recycling centres where recyclable

Conserve the natural water body and restore it, in case it has been altered.

Encourage planned plantation efforts to reduce heat, serve as barriers against noise and dust, and enhance the visual appeal of the area.

Implement policies to control air and noise pollution from transport activities, especially in urban areas, by adopting cleaner technologies, retrofitting older vehicles, and enforcing regulations on emissions.

Housing for All

Provide planned site & services schemes for low-income community at locations suitable for their job

Promote nonmortgage housing loans for the poor

Regulate land sub-division and neighbourhood development in terms of their zoning, surrounding land use, access road and amenities they provide.

Making sure that slum upgradation schemes improve drainage systems to prevent flooding and waterlogging.

Promote eco-friendly housing solutions, waste recycling, and the use of renewable energy sources in slum upgrading projects.

Plan/facilitate site and service schemes in and around urban centres (Pourashava, Upazila Sadar) to serve them and to regulate their land use.

Initiate 'Slum Housing Rights Program' or 'Land Tenure Regularization Program' to provide legal land titles or long-term leases to slum dwellers, ensuring their rights to the land they occupy. This can reduce eviction fears and encourage



materials (plastics, glass, metals, paper) are processed. Provide financial incentives to both businesses and households to encourage recycling.

Educate citizens on sorting waste into categories such as biodegradable, recyclable, and hazardous to enhance waste recycling and composting.

Establish centralized and decentralized recycling centers where recyclable materials (plastics, glass, metals, paper) are processed. Provide financial incentives to both businesses and households to encourage recycling.

Create composting facilities for organic waste and encourage home composting to convert kitchen and garden waste into valuable compost for urban agriculture.

Invest in waste-to-energy plants that can convert non-recyclable waste into energy through technologies such as incineration, anaerobic digestion, or gasification. This will reduce the burden on landfills and generate renewable energy for local use.

Expand and modernize existing sewage treatment plants by implementing advanced treatment processes (e.g., Membrane Bioreactor, Reverse Osmosis) to improve the treatment capacity and efficiency and to reduce the environmental impact of wastewater discharge.

For densely populated areas or informal settlements, implement decentralized wastewater treatment systems (e.g., septic tanks, small-scale biogas digesters, constructed wetlands) that treat wastewater locally before disposal or reuse.

investment in improving housing and infrastructure.

Expanding Safe Drinking Water Coverage

Modernize and expand the CWASA water distribution network to reach underserved and peri-urban areas, ensuring a reliable supply of treated water.

Promote and incentivize the installation of rainwater harvesting systems in both urban and rural areas to supplement the municipal water supply, especially for non-potable uses.

Explore the feasibility of setting up desalination plants to tap into seawater as a reliable alternative source of fresh water.

Implement measures to recharge groundwater, such as rainwater harvesting, artificial recharge, and reforestation of catchment areas, to ensure sustainable long-term water availability.

Establish a robust water quality monitoring system at various points in the distribution network to detect contamination early and ensure safe drinking water.

Develop targeted strategies to expand safe drinking water access in informal settlements and slums by connecting them to the municipal water network, or by providing community-based solutions such as standpipes or water kiosks.

Enforce national standards for drinking water quality, ensuring that private vendors, water bottling plants, and local suppliers maintain safe and clean drinking water.

Ensure FSM outlet inspecting in building plan and monitoring during construction.

Enhance Regional Connectivity for Freight & Passengers

Construction of new bypass roads and bridges to better connect the southern areas to the main city and port. Develop a network of ports, jetties, and docking stations along key river routes, with a focus on freight and passenger ferries.

Prioritize Equity and Social Inclusion

Plan and build for poor, vulnerable and distant communities to give them an inclusive feel



7. SETTING THE CONTEXT

In response to the growing significance of urbanization and planned growth management in Chattogram, the Chattogram Development Authority (CDA) was established in 1959 with the mandate to administer and regulate urban development across the metropolitan region. Its primary objective is to ensure orderly and sustainable development in Chattogram to accommodate population growth, urban expansion, and economic development. To comply with its objectives, CDA has taken a leading role in planning and executing major urban infrastructure projects, including roads, drainage, housing, and public facilities, and in regulating land use to prevent haphazard development and maintain environmental balance.

To perform the assigned role of managing urbanization and accommodating development in a planned way, master plans are prepared. These planning documents serve as strategic blueprints for managing land use, infrastructure, and public services while addressing current and future challenges. CDA prepared its first

blue print Master Plan in 1961 when the city had a population of around 365 thousand through which provided the groundwork for land use and urban zoning in Chattogram. It focused on residential areas, industrial growth, and transport infrastructure. The independence, lower financial ability and capacity constraints of CDA did not allow emphasis to the master plan implementation in full. Several ad hoc decisions were made to build infrastructure and to control unplanned development.

In 1995, Bangladesh entered into a new paradigm of planning preparation. From blue print master plan to the four-stage plan preparation. For the Chattogram Metropolitan area, a strategic-level structure plan was prepared in 1995, providing the general principles for land use and development control for the next 20 years. It was expected to have the Urban Plan and Detailed Area Plan (DAP) in the subsequent years. However, a detailed area plan (DAP) for Chattogram was prepared in 2008, though not for the whole metropolitan area, but for the most significant part.





Structure Plan is a strategic process of setting long-term goals for sustainable urban development and management, and determining the best approach for achieving those goals within the context of urban development and management.

It involves the integrated and coordinated use of resources to achieve long-term development goals that enhance the quality of life in urban areas

This structure plan is a comprehensive framework to guide the Chattogram Metropolitan Area's (CMA) development for next 25 years to 2050. It aims to balance economic progress with social equity and environmental stewardship, ensuring that Chattogram evolves into a sustainable, resilient, inclusive, and livable metropolis. The structure plan is a policy document encompassing

Given that the 1995 structure plan is now significantly outdated, and the metropolitan area has taken a different shape with rapid change. The spatial demand of the economy and lifestyle has taken different pathways. As a result, an updated structure plan is required which will illustrate the firm goal of the Chattogram Metropolitan and spell out the strategies to achieve the goal to ensure sustainable development complying with national policies and modern era aspirations.

various facets of urban planning, including land use, transportation, housing, economic development, and environmental management, with supporting maps, figures, and tables of appropriate scale and composition. The structure plan incorporates the future functions of various strategic zones and land uses. It outlines the expected urban growth in scale and direction and establishes sector-specific strategies and policies to realize the plan's vision and objectives.

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Chapter Two

Urbanization and Growth Directions



Chapter Two: Urbanization and Growth Directions

Chattogram has witnessed rapid urbanization over the past few decades. Its strategic location as the country's primary port city has fueled industrial, trade, and economic activities, making it a hub for migration and urban expansion. The metropolitan population has grown significantly, from 3.6 million in 1990 to over 6.2 million today, reflecting the pressures of rapid urban growth. However, this urbanization has been largely unplanned, leading to challenges such as informal settlements, traffic congestion, environmental degradation, and an increasing demand for infrastructure and municipal services.

The growth directions of Chattogram have been heavily influenced by its geographic constraints, including hills, rivers, and the Bay of Bengal, which limit outward expansion. Urban sprawl has extended towards peri-urban areas and low-lying lands, often encroaching on ecologically

sensitive zones. Despite being a key driver of economic growth, the lack of a clear urbanization strategy has exacerbated spatial inequalities and infrastructure gaps.

This chapter explores the patterns and drivers of urbanization in Chattogram, identifies key growth corridors, and outlines strategic directions for sustainable urban expansion, addressing pressing issues such as landuse, infrastructure development, and environmental conservation.

2.1 Population Growth Trend in CMA

The following Table 2-1 and Figure 2-1 represents population data (in millions) for different administrative areas within the Chattogram Metropolitan Area (CMA) across four selected years: 1991, 2001, 2011, and 2022. The population is divided into three main administrative categories: Chattogram City Corporation, Pourashava, and Upazila (Rural).

Table 2-1: Population in CMA.

Administrative Area in CMA	Population (in million) by Year			
	1991	2001	2011	2022
Chattogram City Corporation	1.39	2.02	2.59	3.27
Pourashava	0.13	0.14	0.24	0.36
Upazila (Rural)	2.08	2.17	2.21	2.62
Total	3.6	4.33	5.04	6.25

Source: BBS 1991, 2001, 2011 & 2022.



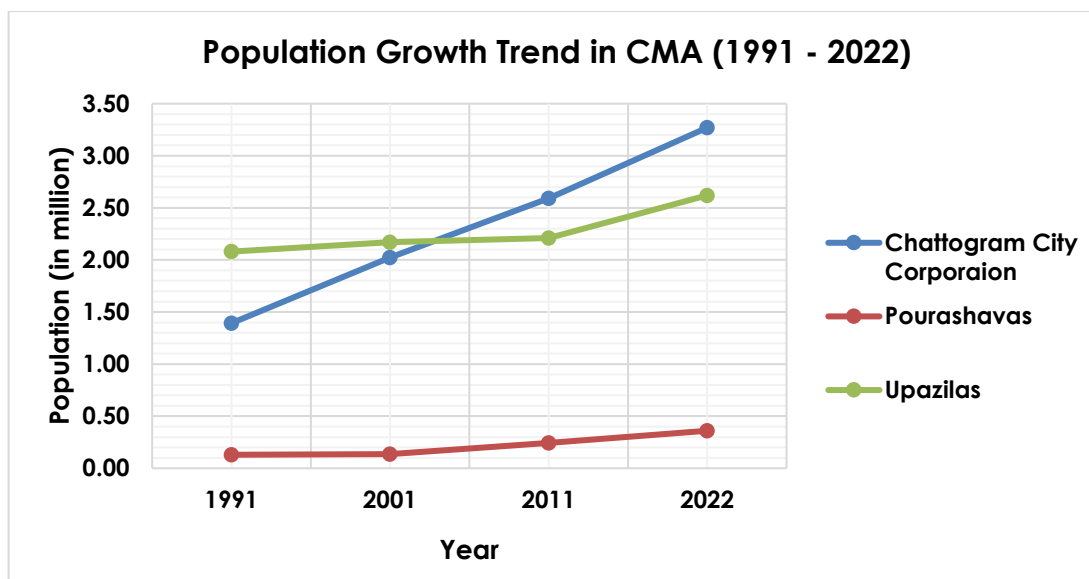


Figure 2-1: Population Growth Trend in CMA (1991 - 2022).

Source: BBS 1991, 2001, 2011 & 2022.

Administrative Breakdown and Sub Total Population

i. Chattogram City Corporation:

- Chattogram City Corporation is the Core Urban Area in the CMA
- Population shows a steady increase over time (3 decades), from 1.39 million in 1991 to 3.27 million in 2022, indicating significant urbanization and migration.

ii. Pourashava (Semi Urban Area):

- Pourashavas are the secondary towns in CMA and act as transitional area between urban and rural zones in CMA.
- The population increases gradually from 0.13 million in 1991 to 0.36 million in 2022, showing growth but at a slower pace compared to the city corporation area.

iii. Upazila (Rural):

- These are rural areas surrounding the urban zones within the CMA. These areas are characterized by

basically lower population density compared to the urban areas discussed above.

- The population increased slightly from 2.08 million in 1991 to 2.62 million in 2022.

iv. Total Population:

- The total CMA population grows consistently, from 3.6 million in 1991 to 6.25 million in 2022, driven mainly by the expansion of urban areas.

Observations:

- Urban areas (City Corporation and Pourashavas) show significant growth, indicating urbanization and economic development in CMA.
- Rural population growth is modest, suggesting migration to other urban centers for schooling and employment.
- The total population increase reflects overall growth trends, urbanization, and the CMA's growing importance as a metropolitan hub.

By 2050 the Chattogram metropolitan area is likely to become substantially larger and more urbanized than today, driven by continued rural to urban migration, economic pull from the port and industry, and natural population growth. The metropolitan area currently houses roughly 6.5 million people which is likely to increase. Urbanization trends at the national and divisional level indicate that a growing share of Bangladesh's population will live in cities by 2050, concentrating growth in major nodes such as Chattogram. Growth will be strongest in the city core and adjacent peri-urban municipalities that host industry, logistics, and transport corridors, while many outlying rural upazilas will see slower increases or gradual peri-urban conversion. This pattern will produce greater densification of inner wards, rapid suburbanization along major roads, and pressure on fringe wetlands, canals, and hill slopes - making coordinated landuse planning, infrastructure scaling, and environmental controls essential.

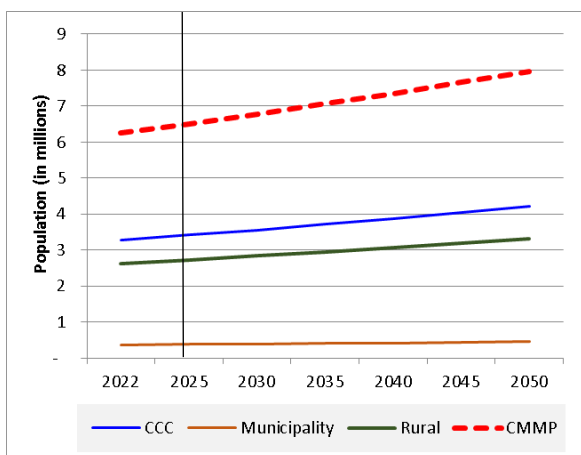


Figure 2-2: Population projection for Chattogram Metropolitan

Over time, living within the core areas of Chattogram will become increasingly difficult for low and middle-income households due to

rising land prices, congestion, and growing pressure on housing and services. As a result, many residents, particularly young and working-age populations are likely to relocate to emerging urban centers within the metropolitan area that offer better affordability, improved transport connectivity, and modern urban amenities. This trend will gradually depopulate many rural unions while accelerating the urbanization of secondary towns and Pourashavas. In this context, the need for polycentric development becomes critical. A polycentric metropolitan structure would connect the main city of Chattogram with multiple well-equipped urban centers such as, Hathazari, Raozan, Sitakunda, Boalkhali, Patiya, and Anwara, each functioning as self-sustaining nodes with housing, jobs, education, healthcare, and recreational facilities. Strengthening these sub-centers through transport corridors, planned industrial zones, and balanced service distribution will reduce pressure on the core city, support more equitable development, and create a resilient metropolitan region capable of accommodating long-term population and economic growth.

2.2 Key Issues

2.2.1 Unplanned Urban Growth

Chattogram's rapid and uncoordinated urbanization has resulted in sprawling informal settlements, inefficient landuse patterns, and widespread non-compliance with building codes due to inadequate monitoring by authorities. The absence of a cohesive urban development framework has led to haphazard construction, overcrowding, and land-use conflicts, while neglecting essential urban amenities such as





roads, open spaces, and utilities. Development predominantly follows major roads, creating sprawling ribbon patterns, particularly along the Chattogram-Hathazari highway, while areas with limited access increasingly witness squatter developments, complicating efforts toward organized urban renewal and sustainable growth. Despite earlier master plans identifying potential development zones, authorities have failed to provide the necessary infrastructure to facilitate organized growth, leaving prime areas like Agrabad underutilized and dominated by temporary single-storied structures. Additionally, aging buildings in older parts of the city, such as Chawkbazar and Kotwali, poses significant challenges for high-rise construction, further limiting opportunities for urban renewal and sustainable development.

2.2.2 Disparity in Development

Urban growth in the CMMP area shows stark disparities. City centers are overcrowded, while areas like Wards 39, 40, and 41 remain haphazardly developed despite proximity to hubs like CEPZ and KEPZ. Poor amenities deter investments, forcing workers to endure long commutes and worsening congestion. Informal, low-density housing near hubs fails to meet demand.

Urban development is city-focused, neglecting peripheral areas. Weak connectivity hinders polycentric growth, forcing workers into slums. Missed opportunities, like unrealized townships in Ward 01, could have eased congestion and promoted expansion. (Figure 2-3)



Figure 2-3: CDA Projects

2.2.3 Slow Progress of Initiatives

Delays in residential projects like Anannya R/A and Kolpolok R/A worsen housing shortages. Poor site selection, such as flood-prone Anannya, has stalled progress, pushing demand to unregulated areas.

Road development is slow, with only 59.11 km of widening and 33 km of new roads completed since 2003. Residents face building permit restrictions for unexecuted road projects, forcing unauthorized construction. Major projects like the Elevated Expressway strain CDA resources, diverting attention from critical roadwork.

2.2.4 Traffic Congestion

Severe traffic congestion plagues Chattogram due to limited road networks, poor traffic management, and an underdeveloped public transport system. Key intersections frequently operate at failing capacity levels, causing delays and

economic losses. The dominance of informal transport modes and insufficient parking further worsen mobility and accessibility across the metropolitan area.

2.2.5 Environmental Degradation

Chattogram's natural environment is under significant threat from hill cutting, deforestation, and the encroachment of rivers and canals. Industrial and household waste pollute water bodies, while urbanization in ecologically sensitive areas leads to biodiversity loss. These activities contribute to long-term environmental and climatic vulnerabilities, such as heat islands and flooding.



Figure 2-4: Environmental Degradation.

2.2.6 Inadequate Municipal Services

Municipal

Municipal services in Chattogram, including water supply, sanitation, and waste management, fail to meet the needs of its growing population. Many areas lack piped water access, leading to water scarcity and reliance on unsafe sources. Poor waste collection and sewage systems contribute to environmental pollution and health hazards.

2.2.7 Loss of Ecological Features

Uncontrolled urbanization has led to the destruction of Chattogram's hills, wetlands, and green spaces. Encroachments on these ecological features for development purposes disrupt natural drainage, increase flooding risks, and deplete biodiversity. Their loss also undermines the city's resilience to climate impacts and reduces opportunities for recreation and tourism.

2.2.8 Housing Shortages

Chattogram faces a critical shortage of affordable housing, forcing low-income groups to live in overcrowded and unsafe informal settlements. High housing costs and unregulated development exacerbate inequality in housing access. The lack of planned residential areas hinders quality of life and increases pressure on municipal services and infrastructure.

2.2.9 Urban Flooding

Frequent urban flooding in Chattogram is caused by poor drainage infrastructure, encroached water bodies, and unplanned development in low-lying areas. The clogging of canals by solid waste and illegal construction worsens flood



risks. These events damage infrastructure, disrupt daily life, and impose economic burdens on residents and businesses.



Figure 2-5: Flood in CMA.

2.2.10 Institutional Challenges

Weak governance, poor inter-agency coordination, and ineffective enforcement of planning regulations have led to unplanned urban growth in Chattogram. The Chattogram Development Authority (CDA) struggles with monitoring and implementing master plan guidelines, resulting in widespread non-compliance, overcrowded buildings, and dense urban landscapes. Landuse violations, such as the conversion of residential properties into commercial or institutional uses, strain road networks and disrupt urban planning. The Detailed Area Plan (DAP) currently provides limited regulatory precision, which may constrain its effectiveness in controlling development activities, including those affecting ecologically sensitive areas.. Projects like the Byazid Link Road have spurred unregulated settlements, hill cutting, and biodiversity loss, highlighting the urgent need for stronger governance and sustainable urban management.

2.2.11 Behavioral Challenges Among Chattogram Residents

The mindset of "my land, my rules" among residents contributes significantly to urban challenges. Many construct multi-storied buildings that cover nearly 100% of their plots, filling waterbodies, encroaching on open spaces, and obstructing Khals. Residents often prioritize individual needs over communal openness, neglecting adequate setbacks on their properties.

There is a general disregard for the necessity of wider, well-planned streets, with many assuming minimal vehicular movement suffices. Non-compliance with building permits is widespread, fueled by CDA's insufficient monitoring efforts. Addressing this behavioral challenge is crucial for sustainable urban development.

2.2.12 Future Urban Growth

Chattogram's urban growth reflects dynamic but uneven patterns driven by infrastructure development, industrial expansion, and economic opportunities. As the city core reaches saturation, growth has shifted to fringe areas like CCC Wards 3,6 and 18, spurred by projects such as the Byazid Link Road and Shah Amanat Bridge. However, unregulated development in hilly and sensitive zones poses ecological challenges.

The built-up area in the CMMP region expanded from 17,570 acres in 1993 to 41,605 acres in 2023. Peri-urban areas like Boalkhali, Rangunia, and Patiya are emerging as new hubs, requiring integrated planning to balance growth with sustainability.

The Shah Amanat Bridge is expected to drive development along the



Karnaphuli River, benefiting Boalkhali, Anwara, and Karnaphuli upazilas, especially with EPZ expansions. CDA's Karnaphuli Residential Area has potential to alleviate city-center stress but risks ribbon development without proper internal road networks.

The Bay Terminal may likely shift port operations to coastal areas, spurring development east of the CDA Coastal Road. Integrated planning could transform this region into a vibrant economic and residential zone, reducing city congestion.

A new township was proposed in Fatehabad in the 2008 Detailed Area Plan as a mixed-use urban center. However, CDA could not initiate any development project because of increasing land price, road access and its locational disadvantage. Unlike other areas in Chattogram, it has no major economic drivers nearby. Given its remote location and limited economic pull, significant development is unlikely unless major access is given. Part of the site also overlaps with reserved hill zones, with development decisions pending. Long-term viability depends on future economic activities and a detailed action area plan to guide infrastructure and settlement.

Based on the experience of other metropolitan cities in Bangladesh, the implementation of Detailed Area Plans (DAPs) often becomes challenging due to limited financial capacity and their rigid nature, as regular updating is rarely practiced. In this context, thematic and area-based Action Plans may be adopted as flexible implementation instruments to translate the proposals of the Structure Plan into achievable interventions. Under this project, three Action Plans—Agrabad, Bakalia, and Anwara—have been

prepared, with additional Action Plans expected to be developed progressively in the coming years.

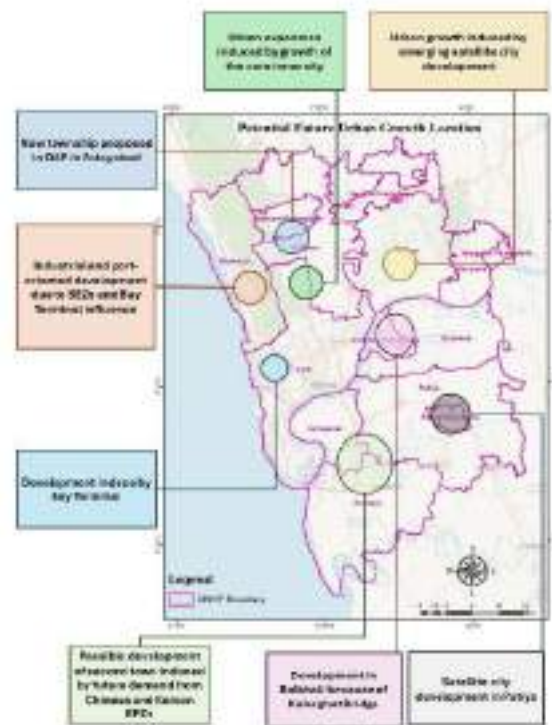


Figure 2-6: Potential Places for Future Urban Growth

2.3 Recommended Policy and Strategies

To ensure sustainable, equitable and efficient urbanization in Chattogram, few policy guidelines are suggested:

Policy UR-1: Promote equitable infrastructure development by improving road, transport, and utility access to underserved urban and rural areas to stimulate inclusive and balanced regional growth.

- UR-1.1: Map infrastructure deficits in underserved wards, Pourashavas, and rural growth areas using GIS-based needs assessment.
- UR-1.2: Prioritize road upgrading, public transport routes, and utility service expansion in low-access regions through phased investment plans.





- UR-1.3: Develop rural–urban connector roads and BRT/feeder bus links to integrate peripheral upazilas with the metropolitan core.
- UR-1.4: Allocate a fixed share of annual development budgets specifically for lagging areas to reduce spatial inequality.

Policy UR-2: Enforce the proposed landuse zoning regulations through legal measures, monitoring, and institutional coordination to guide orderly and sustainable urban development.

UR-2.1: Establish a zoning enforcement cell within CDA with legal authority for monitoring and compliance.

UR-2.2: Digitize building permit and zoning clearance systems to reduce violations and increase transparency.

UR-2.3: Conduct routine site inspections in high-risk areas (hills, wetlands, industrial zones) to prevent encroachment.

UR-2.4: Integrate zoning regulations into a unified online geo-portal accessible to citizens.

Policy UR-3: Promote the efficient use of land by incentivizing redevelopment and infill development on underutilized plots within the existing urban fabric to reduce urban sprawl.

- UR-3.1: Introduce incentives such as reduced fees or higher Floor Area Ratio (FAR) for redevelopment of brownfield or underutilized plots.
- UR-3.2: Identify strategic infill sites near transport corridors and

public facilities for compact development.

- UR-3.3: Promote mixed-use development in existing neighborhoods to reduce horizontal expansion.
- UR-3.4: Implement land readjustment schemes in old neighborhoods to optimize land use.

Policy UR-4: Ensure effective implementation of the Area Plan within the city through detailed guidelines, institutional collaboration, and integration with development control mechanisms.

- UR-4.1: Prepare detailed local area plans (LAPs) and design guidelines aligned with the metropolitan Area Plan.
- UR-4.2: Strengthen coordination among CDA, CCC, and utility agencies for synchronized implementation.
- UR-4.3: Establish monitoring indicators (e.g., zoning compliance rate, open space ratio) to track progress.
- UR-4.4: Ensure integration of Area Plan priorities in annual development programs.

Policy UR-5: Promote the planned development of areas surrounding EPZs by providing necessary urban amenities, infrastructure, and land use controls to support balanced industrial and residential growth.

- UR-5.1: Prepare special planning zones around EPZs with designated land-use controls (residential, commercial, logistics).

- UR-5.2: Upgrade road networks, drainage, worker housing, and community facilities in the EPZ influence zones.
- UR-5.3: Implement buffer zones between industrial and residential land uses to minimize environmental impacts.
- UR-5.4: Facilitate transit-oriented development (TOD) around EPZ access roads to improve mobility.

Policy UR-6: Strengthen and invest in growth centers outside Chattogram city to promote polycentric development, reduce urban pressure, and ensure balanced regional growth across the metropolitan area.

- UR-6.1: Identify and prioritize key secondary urban centers such as Sitakunda, Anwara, Hathazari, Patiya, Raojan, Rangunia and Boalkhali for investment.
- UR-6.2: Improve transport connectivity between these centers and the main city through express bus routes and upgraded highways.
- UR-6.3: Establish public service hubs (education, healthcare, administrative services) in each growth center.
- UR-6.4: Provide fiscal incentives for industries and real estate developers to locate in secondary urban nodes.

Policy UR-7: Facilitate and incentivize private sector participation in launching new land development projects through streamlined approval processes, public-private partnerships, and supportive regulatory frameworks.

- UR-7.1: Introduce a streamlined one-stop approval system for large-scale land development proposals.
- UR-7.2: Encourage public-private partnerships (PPP) for new townships, industrial parks, and housing estates.
- UR-7.3: Provide regulatory incentives such as expedited permits for developments complying with master plan goals.
- UR-7.4: Establish transparent criteria for evaluating private development projects to maintain quality standards.
- UR-7.5: Innovative guided land development (GLD) approach like Tripartite Land Readjustment Program (TLRP) can be adopted to avoid long process of land acquisition and eviction

Policy UR-8: Enhance enforcement mechanisms to ensure strict compliance with building codes and regulations by implementing penalties, regular inspections, and institutional accountability measures.

- UR-8.1: Form specialized inspection teams to conduct periodic field surveys and compliance audits.
- UR-8.2: Introduce penalty schedules for illegal construction, encroachment, and code violations.
- UR-8.3: Mandate structural safety certification for high-rise buildings, especially in seismic-prone zones.
- UR-8.4: Use drone-based monitoring to detect violations in real time, especially on hills and wetlands.





Policy UR-9: Promote public awareness on the legal and environmental impacts of unregulated development through community outreach, education campaigns, and stakeholder engagement within the CMMP area.

- UR-9.1: Conduct awareness campaigns targeting hill cutting, wetland filling, and illegal construction.
- UR-9.2: Engage local community groups, educational institutions, and media in development awareness programs.
- UR-9.3: Publish simplified guides on zoning, building codes, and environmental regulations.
- UR-9.4: Organize stakeholder consultations to build consensus on sustainable growth.

Policy UR-10: Ensure timely and coordinated implementation of the Anwara Action Area Plan to guide orderly development, prevent haphazard growth, and promote efficient landuse and infrastructure provision.

- UR-10.1: Establish a dedicated implementation unit for Anwara within CDA.
- UR-10.2: Prepare phased infrastructure development plans focusing on roads, drainage, utilities, and public facilities.
- UR-10.3: Monitor land-use change in Anwara regularly via satellite imagery and GIS analysis.
- UR-10.4: Coordinate with BEPZA, industries, and local government for harmonized development in

the economic zone influence area.

Policy UR-10: Implement the Structure Plan through a phased, time-bound, and prioritized Action Plan. The Action Plans will translate the Structure Plan proposals into short-, medium and long-term actions, clearly identifying priority interventions, sequencing, and interdependencies.

- UR-10.1: Establish realistic timelines, milestones, and performance indicators for each phase of the Action Plan to facilitate systematic monitoring and evaluation.
- UR-10.2: Align the Action Plan with annual development programmes, capital investment plans, and funding mechanisms to ensure financial feasibility and timely execution.
- UR-10.3: Introduce a regular review mechanism to assess implementation progress and allow for adaptive adjustments in response to changing urban, environmental, and socio-economic conditions.

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Chapter Three

Traffic and Transportation



Chapter Three: Traffic and Transportation

Chattogram faces significant transportation challenges stemming from rapid urbanization, increasing motorization, and inadequate infrastructure. The city's road network is plagued by severe traffic congestion, particularly during peak hours, due to insufficient capacity, poor traffic management, and the lack of integrated public transport systems. Encroachments and unplanned roadside activities exacerbate congestion and reduce road efficiency. Additionally, the absence of dedicated, safe and continuous pedestrian infrastructure and non-motorized transport facilities further complicates mobility, particularly for vulnerable road users.

The public transport system is dominated by informal and fragmented services, such as minibuses and auto-rickshaws, which lack coordination and reliability. Freight transport, critical to Chattogram's port-centric economy, suffers from inefficient logistics, poor connectivity to hinterlands, and conflicts with city traffic. Environmental issues, including air and noise pollution, are aggravated by traffic jams and the dominance of old, poorly maintained vehicles. Moreover, a lack of parking facilities and enforcement has led to chaotic parking practices, further impeding traffic flow.

To address these challenges, a comprehensive and sustainable transport improvement plan is essential. It should include developing an integrated multimodal transport system, prioritizing mass transit options like metro rail and BRT, and enhancing public transport reliability and accessibility. Traffic signals and traffic

management should be modernized with intelligent transportation systems (ITS) and stricter enforcement of regulations. Improving road capacity while protecting pedestrian and non-motorized transport infrastructure is crucial. Freight corridors and logistics hubs should be developed to streamline goods movement. A robust policy framework, stakeholder coordination, and investment in environmentally sustainable solutions will ensure Chattogram's transportation system supports economic growth and enhances urban livability.

3.1 Major Issues of Traffic and Transportation

3.1.1 Traffic Congestion

- According to World Bank Illegal public transport stopping, parked vehicles in intersection lanes, and high side-road volume are identified as primary causes, disrupting traffic flow and causing delays at intersections. (World Bank, 2018A)
- Parking of trucks and freight transport in lanes designated for regular traffic near the port intensifies congestion.
- A few roads intersection experiences further complications as slow or non-motorized transport vehicles contribute to delays.
- Additional causes involve road user indiscipline, insufficient traffic and parking management, intersection design issues, limited road networks, institutional challenges, and enforcement deficiencies, all contributing to the persistent traffic congestion in Chattogram.

3.1.2 Indiscipline

- Pedestrian disregard for designated crossings, traffic signals, and encroachment on



walkways contributes to road safety challenges and worsens traffic congestion in spite of existing infrastructure.

- Public transportation challenges include overcrowded vehicles, route deviations, and safety hazards, with potential accidents and disruptions arising from passenger conflicts and unsafe practices like standing on footboards and beside doors.
- Reckless driving behaviors, including speeding, dangerous overtaking, and a lack of adherence to traffic rules and lane discipline, contribute to significant road safety concerns and traffic chaos in Chattogram.

3.1.3 Organizational Perspective/Setup

Organizational coordination among agencies like CDA, CCC, and BRTA needs improvement. 1995 master plan (IAP, 1993 and LTDSIT, 1995) suggest the following institutional setup.

1. Formation of a Chattogram Traffic Committee, with a Traffic Group located in CCC
2. The expansion of the role of the Chattogram Metropolitan Transport Committee with the formation of a Public Transport Group located in either of CCC or BRTA
3. Formation of a permanent Strategic Transport Planning Unit within CDA
4. Formation of IAP implementation Unit and Project Implementation Unit in CDA and CCC

Points 1, 2 and 3 are not implemented yet.

3.1.4 Traffic Management

- Pedestrian chaos occurs with people crossing roads randomly,

mainly at intersections, disrupting traffic flow.

- Challenges include the absence of turning guidance, stop lines, and limited signage, creating difficulties for drivers.
- Public transport deviates from authorized routes, especially picking up/dropping off passengers at intersections, causing bottlenecks and congestion. Poorly managed parked vehicles worsen the situation.
- Access issues from minor to major roads lead to problems in smooth entry and connectivity for vehicles, affecting traffic movement.
- Chattogram faces traffic challenges like dysfunctional signals, chaotic pedestrian situations, public transport deviations, and inadequate road infrastructure.
- Freight transportation encounters hurdles due to inefficient logistics, especially in last-mile delivery within congested areas. Inadequate infrastructure for large trucks (such as designated lanes and rest areas) increases accidents and driver fatigue.

3.1.5 Parking Management

- In the 90s, designated stands for rickshaws and CNG vehicles existed in Chattogram, providing organized hiring options. Presently, this system is absent, leading to disorderly parking scenarios and unavailability of designated spaces.
- The current parking situation in Chattogram lacks organization, causing indiscriminate parking and stopping by public transports and private vehicles, contributing to congestion on major roads.
- The problems extend beyond the city, with public transports treating



major junctions and intersections as stopping zones, exacerbating congestion and disrupting traffic flow.

- The absence of designated drop-off bays, parking spaces, and effective traffic management at educational institutions creates chaos for students, hindering smooth operations and causing congestion.
- On-street and on-footpath parking is prevalent, obstructing pedestrian networks and adding to the overall lack of organized parking in Chattogram.

3.1.6 Intersection Design

Current intersections lack essential elements, such as proper signage and designated pedestrian facilities, leading to safety concerns and traffic disruptions. Currently the intersection at Love Lane's problematic layout is addressed with a proposed design to streamline traffic, reduce conflicts, and decrease the intersection footprint; a similar solution is applied to Noyabazar intersection. Proposed designs aim to address issues like haphazard turning, unregulated flow, and inadequate pedestrian paths, improving overall traffic organization and safety.

3.1.7 Pedestrian Safety and Walkability

- Existing footpaths are often blocked by vendors, hindering pedestrian movement.
- Discontinuation of footpaths due to damaged slabs or structures poses risks to pedestrians, leading to waterlogging and drainage issues.
- Numerous intersections lack safe pedestrian crossings, forcing pedestrians to navigate roads independently, posing serious safety concerns.

- Reluctance to use foot-over bridges is common among pedestrians, particularly due to the need to climb.
- Vehicles occupying footpaths as parking spaces, especially motorcycles and cars, obstruct walking paths, discouraging pedestrian use.

3.1.8 Lack of Enforcement

- Despite a significant traffic police force reported, there is a noticeable shortage of officers on the streets (World Bank, 2018).
- The existing police force is mainly focused on traffic management rather than robust enforcement of traffic laws.
- There is a detailed guideline for fines related to traffic law violations, but effective implementation seems to be lacking.
- Enforcement gaps exist regarding encroachment on roadways and footpaths by shopkeepers, street vendors, and others.

3.1.9 Issue of Non-Motorized Transport

Discussion on banning rickshaws is ongoing due to traffic congestion because of their slow speed, especially in hilly areas, and unawareness regarding traffic rules. Instead of a complete ban, considering their affordability and accessibility promoting safe motorized rickshaws with renewable energy is suggested. For paddle vans, with alternatives like mini trucks available, a ban is considered necessary to improve traffic flow.

3.1.10 Railway Crossings

Chittagong's traffic challenges are worsened by lengthy stoppages at railway crossings, impacting daily life and business. Total only three locations: one inside the CCC and



two others outside CCC has level crossing. Despite a previous plan emphasizing 11 essential overbridge locations, none have been constructed, and new flyovers hinder that progress. With increasing urbanization and rising railway demand, prioritizing overbridges, particularly on Zakir Hossain Road, is crucial for smoother traffic flow and safety. Secondary cities should also plan for rail overbridges to accommodate growing urban populations.

3.1.11 Landuse and Development

The vital connection between land use and transportation demands careful consideration from city authorities. Recent growth in high-end schools, malls, and hospitals has increased private vehicle numbers, worsened by insufficient parking facilities. Approving such land use without adequate parking provisions contributes to street parking issues and severe traffic congestion, urging the city management to address these transport-related concerns in crucial locations.

The absence of provisions and guidelines for traffic impact assessment in the approval process for trip-intensive land uses necessitates active measures by the development permission authority, CDA, to establish and implement such practices.

3.1.12 Accessibility and Inclusiveness

In Chattogram, women encounter challenges accessing public transport due to limited options, inadequate infrastructure, and safety concerns. With no reserved seats and facing harassment, about 19% of women identify safety as a significant public transport challenge. Cultural barriers and unsuitable job conditions in the

public transport sector contribute to the underrepresentation of women in this workforce.

Additionally, child laborers, constituting 21% of transport labor, face abuse and dropout from education, impacting vulnerable users. A comprehensive approach is needed to address these challenges, involving infrastructure improvement, cultural barrier elimination, and promoting gender equality.

3.1.13 Environmental Perspective

Chattogram City faces severe air pollution, primarily attributed to high private vehicle usage, inadequate public transport, and the presence of old, poorly maintained vehicles. The transport sector contributes to elevated levels of pollutants, particulate matter (PM), carbon dioxide (CO₂), sulfur dioxide (SO₂), nitrogen oxides (NO_x), and carbon monoxide (CO). The city's growing population, economic development, and insufficient enforcement of emissions standards worsen the problem, as evident in the exceeding concentrations of PM_{2.5} in various locations, violating Bangladesh standards. Urgent measures are needed to address traffic congestion, enforce emission standards, and improve public transport to mitigate air pollution in Chattogram.

3.1.14 Investment in Transport System

In the last five years, the Bangladesh government has heavily invested in enhancing Chattogram's urban transport system through mega projects like the Bangabandhu Sheikh Mujibur Rahman Tunnel, Karnaphuli River Embankment Road, and the Chattogram City Outer Ring Road. These initiatives, with budgets totaling billions of Taka, aim to improve connectivity and reduce travel time.



However, there remains a need for increased investment in public transport and pedestrian facilities, traffic management and parking management to achieve comprehensive urban development.

3.1.15 Use of ITS in Transport

The following systems are currently available in Chattogram:

- BRTA implemented RFID for vehicle identification and toll collection.
- Digital Number Plates (DNP) introduced for streamlined vehicle registration.
- Traffic police installed street cameras for monitoring road sections and intersections.
- CCTV cameras installed by BRTA to monitor highways' black spots.
- Two bus companies introduced e-ticketing with QR codes for transparent revenue collection.

However, given the transport and traffic challenges faced by the CMMP area, it would be beneficial to implement the additional ITSs listed below:

- Re-introduce traffic lights for intersections and pedestrian crossings.
- Integrate ITS into the traffic control system for data collection and signal optimization.
- Implement adaptive ITS for coordinated traffic management at intersections.
- Introduce e-policing through ANPR for identifying and penalizing traffic violations.
- Use IP and PTZ cameras for close traffic monitoring.
- Deploy ITS for parking management.
- Introduce Variable Message Signs (VMS) for providing critical information.
- Improve public bus service with a smart fare card system.

Enhance the public transport experience with real-time GPS information for bus arrival, available on both bus stops and smartphone applications.

3.2 Major Findings

The major findings of sector are as follows.

- Chattogram city Master Plan was not implemented properly. Although most of the proposals of LTDS and IAP regarding physical work (road widening, junction improvement, new road building etc.) was implemented. However, proposals for institutional strengthening including establishment of Chattogram Traffic Committee, Chattogram Metropolitan Transport Committee, formation of public transport group was not implemented till now. Again, some proposals regarding traffic management, parking and access management were not implemented properly. Again, some projects like building of elevated express way and flyover were not proposed in any approved planning documents.
- The road network in Chattogram City may not be considered ideal, but it certainly falls short of being labeled as very bad. However, traffic congestion is a regular phenomenon and the network speed is decreasing day by day. This is definitely not attributed to the traffic flow, as the analysis reveals flow of most of the road sections are well below the carrying capacity. The main reasons include the indiscipline of the road users, traffic



management, parking management, intersection design, lack of road network, institutional issues and enforcement.

- The adjacent Upazilas are well connected to the city. However, Boalkhali is currently poses a loose connection as the Kalurghat Bridge is not Fully functional.
- Public transport network comprises bus, tempo and human haulers. However, no city Public Transport terminal is existed. Again, the intercity bus terminal is also inadequate.
- The public transport system needs major improvements. Ridership for MRT or Monorail will not be achieved within 2050. A company-based bus service along with proper traffic and parking management will be sufficient within the Master Plan horizon year.
- The waterways are the lifeline of Chattogram as a big portion of trades are using the waterways especially to and from the port area. Passenger transport are mainly used to cross the river in certain locations including 15 no. ghat, Avoymitro ghat and Sadarghat.
- Railway do not run any urban trains. However, they are expanding in the last few years by connecting Cox's bazar with a new train line. Passenger and freight transport of the railway is planned to be increased in the future.
- Air traffic including freight and passenger transport is increasing day by day and the airport authority is planning to expand the terminal facilities.
- There is no designated cycling network for the city. However,

this is very important for a sustainable transport network

- Efficient freight transport to and from the port and ICDs are extremely important for Chattogram. Separate truck road to access port was built for this purpose. However, facility for truck parking including truck terminals is much needed for the city.
- Traffic congestion around schools, particularly high-end ones, is a major concern. These institutions often have a heavy reliance on private vehicles, leading to significant disruptions in the road network, especially during the end of the school periods.
- The mode share analysis revealed a significant 60% preference for walking trips and approximately a 10% preference for public transport trips. Surprisingly, the investment allocated to these crucial sectors amounted to only 1.7%, highlighting an opportunity for increased focus and support in these areas.
- Greenhouse gas emission from transport sector is not of that concern. However, the air quality particularly PM₁₀ and PM_{2.5} is concerning.
- No authority is coordinating the transport sector issues. Again, no coordination mechanism is practiced as suggested in the existing Master Plan and transport Plan.
- No Traffic signal is currently exists in Chattogram. The city badly needs an efficient traffic management system.
- No parking management plan exists currently. Certain areas of the city badly need parking management plan otherwise



the situation will be worse day by day.

- Currently different types of digital technology is used in Chattogram to improve the transport sector. However, use of ITS in transport will definitely make the city smart especially in traffic and parking management, enforcement and smart public transport system.
- As land use has direct impact on traffic, it's very important to provide traffic impact study for certain type of land uses while getting planning or development permissions. This is also important to provide adequate guidelines for the applicant while commit traffic impact study. As CDA do not have such capacity, they should start working to establish such capacity within their organization.

3.3 Policy Recommendations and Strategies

The policies in the Transportation Master Plan have been developed to provide a structured and inclusive framework for improving mobility, safety, and sustainability in Chattogram. They address key areas such as pedestrian and NMT infrastructure, public transport reform, intersection upgrades, rail and water-based transport, parking management, road safety, and institutional coordination. These policies aim to guide systematic improvements across all modes of transport while ensuring environmental and social considerations. Detailed programs and projects aligned with these policies are outlined in the Transport

Master Plan to support effective implementation.

TRN. 1. Promote inclusive and universally accessible pedestrian and NMT infrastructure throughout the city

- Improve infrastructure for elderly, children, and persons with disabilities.
- Provide signalized pedestrian crossings at intersections and mid-blocks.
- Ensure pedestrian infrastructure is accessible and follows appropriate standards.
- Increase public awareness about pedestrian safety and shared road use.
- Encourage battery-powered rickshaws with safety specifications and restrict non-motorized three-wheelers on major corridors.

TRN. 2. Transition to an efficient, inclusive, and company-operated public transport system

- Shift public transport to a company-based operation model.
- Provide targeted government support and subsidies for bus companies.
- Introduce a cashless automated fare collection system.
- Replace informal vehicles (human haulers, tempos) with safer, greener options like mini e-buses.
- Ensure frequent and reliable services on national and regional routes while restricting smaller vehicles.



- Improve public transport infrastructure including terminals and accessible bus stops.
- Incorporate inclusive design such as low-floor buses, ramps, and TGSIs.
- Implement route rationalization and promote supporting services (school, tourist, and group buses).
- Conduct public awareness campaigns before major changes are introduced.

TRN. 3. Encourage sustainable development and upgrading of urban and regional road infrastructure

- Implement the proposed road network and widening plans in a phased manner.
- Design and upgrade roads using standard cross-sections and climate-resilient materials.
- Establish alternative Upazila-level core road networks to complement RHD roads.
- Mandate feasibility studies before construction, including traffic, environmental, and social assessments.
- Ensure new road designs support multimodal functions and safety features.
- Promote sustainable construction materials and integration of roadside features like bays and parking zones.
- Enhance coordination among agencies and pursue diversified funding models including PPPs.

TRN. 4. Improve safety, design quality, and operational efficiency at road junctions

- Implement the proposed intersection improvement initiatives.

- Avoid use of roundabouts unless supported by training and awareness.
- Prioritize signalized pedestrian crossings at intersections.
- Require intersection design by qualified traffic engineers using advanced modeling tools.
- Include future demand projections and multimodal design considerations in all junction projects.

TRN. 5. Ensure the transport sector is developed to effectively complement port expansion and support efficient freight movement

- Develop dedicated freight corridors linking existing and planned industrial zones, ports, and inland container depots (ICDs)
- Promote multimodal integration to enhance the share of freight movement by rail and waterways.
- Set up strategically located truck terminals to improve freight handling and logistics efficiency.

TRN. 6. Expand and modernize rail-based services for both urban mobility and freight movement

- Construct grade-separated railway overpasses at priority locations.
- Explore intra-city train services (e.g., Janali Hat, City Gate, Hathazari).
- Introduce commuter rail services from adjacent Upazilas (Sitakunda, Boalkhali, Patiya).



- Increase freight rail services from Chattogram Port and future Bay Terminal.
- Evaluate new city station options at A.K. Khan Gate and Sholashahar for improved access.

TRN. 7. Facilitate safe, inclusive, and efficient inland water transport

- Upgrade ghat infrastructure with terminal-style facilities (e.g., Avoymitra and 15 No. Ghat).
- Assess the feasibility of water bus services connecting both riverbanks.
- Develop river tourism potential through organized river cruises.
- Provide a freight jetty to support Kalurghat Industrial Area.
- Ensure safety and inclusiveness for women, children, elderly, and differently abled passengers.

TRN. 8. Improve air transport facilities and integrate the airport with the city's wider transport system

- Provide a second runway at Shah Amanat International Airport.
- Upgrade passenger and freight terminal facilities.
- Introduce dedicated bus services to and from the airport.
- Implement airport-area traffic management improvements and integrate multimodal connections.

TRN. 9. Implement effective traffic and parking management and digitized enforcement systems

- Apply the proposed parking management strategy at both plot and community levels.
- Provide designated parking for all vehicle types including service vehicles.
- Use ITS tools for digital enforcement and smart parking management.
- Build supporting infrastructure like car pounds and enforcement booths.
- Coordinate implementation through collaboration among enforcement and planning agencies.

TRN. 10. Strengthen east-west connectivity through appropriate river crossing infrastructure

- Support the "One City, Two Towns" vision by building new roadway bridges and expanding ferry services.

TRN. 11. Enhance road safety through proactive education, design, and enforcement initiatives

- Investigate crash causes through detailed data collection and analysis.
- Maintain road markings and install proper signage and signals.
- Promote driver training, regular awareness campaigns, and school-level traffic education.
- Apply ITS tools to control violations such as speeding, wrong-way driving, and illegal stopping.



TRN. 12. Regulate environmental impacts and ensure vehicle roadworthiness through strict monitoring

- Conduct regular vehicle fitness inspections and emissions checks.
- Operate mobile courts to enforce environmental compliance.

TRN. 13. Mandate Traffic Impact Assessments for Major Land Developments

- Require TIAs for developments like shopping malls, healthcare, industry, schools, and mixed-use areas.
- Apply the basic guideline included in the Transport Plan while developing a more comprehensive framework.
- Use microsimulation modeling tools for scenario validation.
- Register competent traffic consultants or firms with CDA for TIA submissions.

TRN. 14. Strengthen institutional arrangements for coordinated traffic and transport planning

- Establish a Traffic Management & Planning Wing within CCC.
- Establish a Transport Planning & Modeling Wing within CDA.
- Form a Traffic Management Committee chaired by the City Mayor and composed of relevant agency representatives:
 - o CCC Traffic (Head)
 - o CCC Planning (1)
 - o CDA Transport Planning (1)
 - o CDA Planning (1)

- o BRTA (1)
- o Port Authority (1)
- o RHD (1)
- o WASA (1)
- o KGDCL (1)
- o PDB (1)
- o BR (1)
- o BIWTA (1)
- o CAAB (1)

- Use video evidence in enforcement actions.
- Revise the existing (2024) speed limit guidelines to adopt uniform limits based on evidence and road context.

This Chapter shows Traffic and Transportation related policies and major proposals. The detail plans and suggestions are presented in the "Traffic and Transportation Master Plan".



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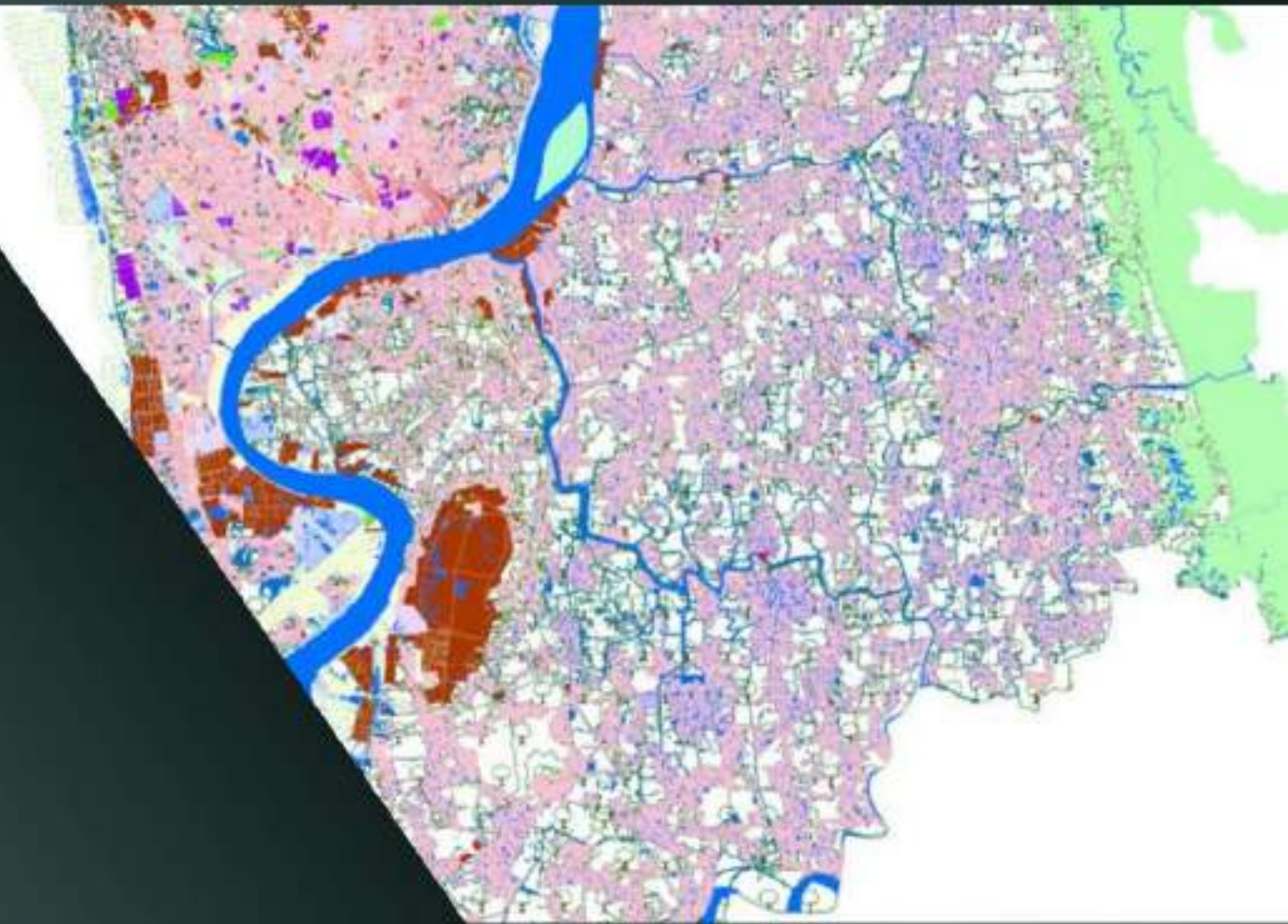
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Chapter Four

Land use Management and Development



Chapter Four: Land use Management and Development

4.1 Introduction

Land use management is a strategic approach to regulating the use of land resources to ensure sustainable development, efficient urban growth, and environmental protection. It involves planning, zoning, and regulatory measures to balance competing land demands, such as residential, commercial, industrial, and green spaces, while considering social, economic, and ecological factors. Effective land use management is essential to prevent unplanned urban sprawl, reduce environmental degradation, and enhance livability by ensuring adequate infrastructure, accessibility, and resilience to climate change. In the case of Chattogram, Bangladesh, land use management is particularly crucial due to its unique geographical features, including hills, rivers, and coastal areas, as well as its rapid urbanization and economic significance as the country's primary port city. Key considerations for Chattogram's land use planning include flood risk management, protection of ecologically sensitive areas, integration of transport and infrastructure development, and accommodating population growth without compromising sustainability. A well-structured land use management plan for Chattogram should involve a combination of regulatory frameworks, participatory planning, geospatial analysis, and enforcement mechanisms to guide development while preserving natural landscapes and ensuring equitable access to resources.

The need for a land use management plan in Chattogram

arises from its unique position as Bangladesh's primary seaport and second-largest city, which has led to rapid urbanization, population growth, and industrial expansion. Unplanned development, encroachment on natural habitats, and inadequate infrastructure have resulted in environmental issues like flooding, landslides, and pollution, as well as social challenges such as housing shortages and traffic congestion. A Land use and its management plan has been recommended through this master plan which considers several key factors. It includes the city's topography, which features hills, rivers, and coastal areas that are prone to natural hazards; the need to preserve ecologically sensitive zones; the demand for housing and infrastructure to accommodate a growing population; and the importance of supporting the port and industrial sectors, which are vital to the national economy. It aims to secure an adequate supply of land for various future urban needs, including residential, commercial, and industrial purposes. The plan also strives to balance competing land uses, resolving conflicts between different demands while ensuring there is enough land to accommodate a growing population.

Furthermore, it seeks to guide urban growth in a structured manner, promoting a desirable city layout and direction. Environmental conservation is also a key focus, with efforts to protect sensitive land areas for ecological sustainability. Lastly, the plan emphasizes the importance of providing the necessary infrastructure to support spatial development and improve overall urban functionality.



4.2 Land use Distribution in Chattogram Metropolitan

The existing land use in Chattogram Metropolitan is characterized by a diverse distribution of residential, commercial, industrial, institutional, and open spaces (Table 4.1, Figure 4.1). However, Agriculture occupies one-third of the area which includes crop, orchard and homestead forest. Residential areas dominate the landscape, particularly in central locations such as Nasirabad, Sholoshohor, Chandgoan, Jalalabad, Panchlaish, Halishahar, and Agrabad, where both high-density and low-density housing coexist. Commercial hubs are concentrated in areas like Agrabad, Kotowali, Khatunganj, Anderkill, and GEC Circle, serving as key trading and business districts. Industrial land

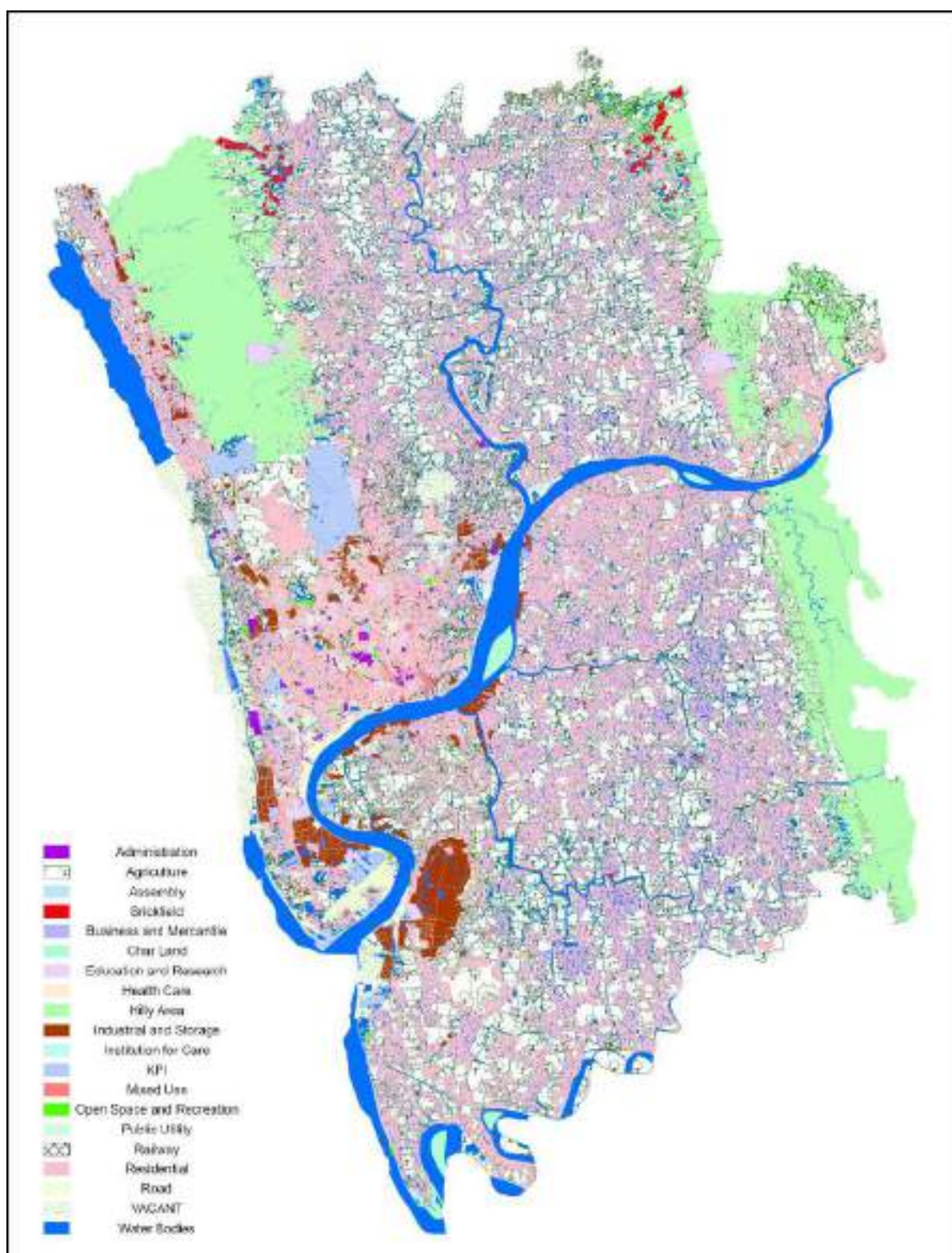
use is prevalent in the northwestern and southeastern regions, including areas along the Karnaphuli River, such as Patenga and Kalurghat, where major industrial zones and the port facilities are located. Nasirabad area also has industrial zones, Institutional land use, including educational and administrative buildings, is scattered across the city, with significant clusters in Chittagong University, Chittagong Medical College, and the central government offices. Green spaces and water bodies, including the Karnaphuli River, canals, and hills, play a crucial role in the city's ecological balance but are increasingly under pressure due to rapid urbanization and encroachment.

Table 4-1: Existing Land use of Chattogram Metropolitan.

Land use	CMMP		CCC		Paurashava	
	Area	%	Area	%	Area	%
Administration	3.59	0.29%	3.08	1.67%	0.03	0.03%
Agriculture	418.16	33.67%	20.94	11.37%	32.64	33.24%
Business and Mercantile	5.62	0.45%	0.47	0.25%	1.15	1.17%
Char Land	4.29	0.35%	-	0.00%	-	0.00%
Education and Research	12.73	1.03%	4.89	2.66%	0.64	0.65%
Health Care	0.75	0.06%	0.49	0.27%	0.05	0.05%
Hilly Area	150.90	12.15%	7.37	4.00%	10.23	10.42%
Industrial and Storage	27.19	2.19%	10.54	5.72%	0.51	0.52%
Institution for Care	0.11	0.01%	0.00	0.00%	0.01	0.01%
KPI	14.67	1.18%	11.49	6.24%	0.09	0.09%
Mixed Use	8.34	0.67%	6.46	3.51%	0.21	0.21%
Open Space and Recreation	9.16	0.74%	3.03	1.65%	1.34	1.37%
Public Utility	5.20	0.42%	4.05	2.20%	0.02	0.02%
Railway	0.03	0.00%	0.00	0.00%	0.01	0.01%
Residential	351.57	28.31%	54.69	29.70%	35.01	35.66%
Road	38.14	3.07%	18.82	10.22%	2.14	2.18%
Vacant	37.83	3.05%	10.59	5.75%	1.30	1.32%
Water Bodies	166.72	13.42%	27.22	14.78%	12.80	13.04%
Total (km)	1255		184.14*		98.18	

*based on mouza map

Figure 4-1: Existing Land use Map of Chattogram Metropolitan Area.



4.3 Emerging Issues

The distribution of built-up area shows a high growth in city, which also suggests an in-fill development trend. Vertical expansion is increasing, particularly in areas like Agrabad, Nasirabad, and Panchlaish, while rapid development along major corridors is reshaping land use patterns. Areas along the Bayezid Bostami Road Corridor have seen rapid residential and commercial expansion. O.R. Nizam Road – Panchlaish – GEC Circle Corridor has also gained development momentum due to several schools, clinics, commercial towers and residential condominiums. The Outer Ring Road Corridor, stretching from Patenga to Faujdarhat, has driven industrial and logistics growth, increasing land values and commercial activities. Similarly, following the global pattern of development, the Airport Road and Patenga area is likely to have high-end residential and commercial developments, fueled by proximity to Shah Amanat International Airport, Elevated Expressway and the upcoming Bay Terminal. The Karnaphuli Tunnel and South Chattogram Corridor have opened up new development opportunities in Anwara and Patiya, attracting investment in real estate and industries.

Chattogram, as Bangladesh's principal port city and industrial hub, has a distinctive industrial land use pattern shaped by geography, infrastructure, and trade dynamics. The city's core industrial areas are concentrated in the west and south-western belt, particularly around Chattogram Port, Karnaphuli River, and Dhaka-Chattogram Highway, where ship-breaking yards, oil depots, and heavy industries dominate. The Chattogram Export

Processing Zone (CEPZ) near South Haliashahar is a major cluster for garment and light manufacturing industries, benefiting from proximity to port facilities. To the north-west, areas such as Bayezid Bostami and Nasirabad house medium to small-scale industries, including steel re-rolling mills, ceramics, garments, and plastic factories. Kalurghat and Sholashahar also exhibit mixed industrial-residential land use, often causing land-use conflicts. In recent years, industrial expansion has moved towards Anwara (Korean EPZ & Chinese EZ) and Boalkhali. This shift represents a decentralization effort to reduce congestion and environmental pressure in the city core. However, many industrial areas suffer from poor zoning enforcement, inadequate road access, and environmental pollution. A balanced industrial land use strategy-focusing on clustering, infrastructure upgrades, and ecological zoning-is essential for sustainable industrial growth in Chattogram.

Mixed-use developments are becoming more common, but informal settlements are also expanding, putting pressure on already strained infrastructure. Informal and low-cost settlements are primarily found in low-lying flood-prone areas, along hill slopes, and near industrial and commercial hubs where low-income populations seek affordable housing. The rising population density is exacerbating issues such as traffic congestion, waterlogging, and overburdened utilities. Encroachment on open spaces, water bodies, and hills is leading to environmental degradation, increasing the risk of floods and landslides. Additionally, the lack of effective zoning enforcement has led to unplanned growth, worsening the housing

affordability crisis and compromising urban safety.

The urban growth morphological pattern in Chattogram shows that development takes place based on accessibility and locational importance. Except for a few major road-based corridors, most areas are

developed along organically grown roads based on land-aisle. Individuals built their buildings according to their financial ability, overlooking the lack of accessibility and the impact it might cause in the neighbourhoods.

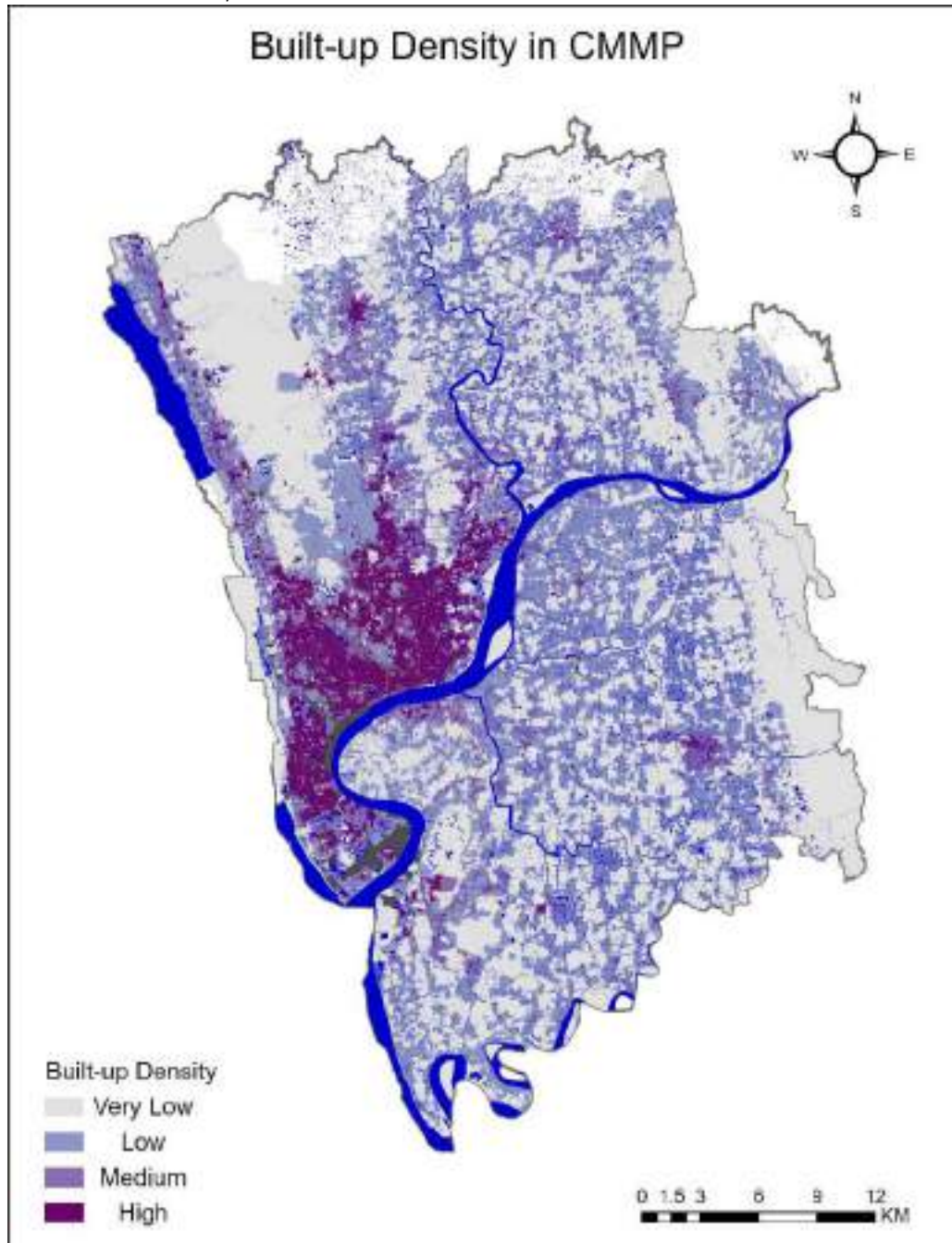


Figure 4-2: CMMP Built-Up Density Map.



4.4 Situation Analysis and Diagnostic

Chattogram has undergone significant urban expansion. Its land use distribution reflects a mix of residential, commercial, industrial, and natural areas. The city's core is densely populated with mixed-use developments, while industrial zones are concentrated along the Karnaphuli River and the port. Peripheral areas have seen rapid urbanization, often with unplanned settlements and encroachment on hills, water bodies, and agricultural land. Despite zoning efforts, land use conflicts-such as industrial activities within residential areas and commercial encroachments into public spaces-are prevalent. A significant portion of the city's land has been altered due to urban expansion, leading to reduced green spaces and increased pressure on natural resources. Chattogram's topographical uniqueness, with hills and canals, adds complexity to land use planning, as both are being threatened by unauthorized development. The unregulated conversion of wetlands and low-lying areas for housing and commercial activities exacerbates drainage problems and increases flood risks.

Land use control in Chattogram falls under multiple agencies, each with different mandates:

- **Chattogram Development Authority (CDA):** The primary planning body, responsible for preparing and enforcing master plans, structure plans, and detailed area plans. CDA also regulates the building development and usage control. [Chittagong Development Authority Act, 2018 Section -6, 22]
- **Chattogram City Corporation (CCC):** Oversees urban service

delivery and local development projects. [City Corporation Act 2009, Section 41]

- **Department of Environment (DoE):** Regulates environmental impacts of development projects, including land conversion. [Bangladesh Environmental Protection (Amendment) Act, 2010. Section 20,12]
- **District Commissionaire (DC):** As the chief administrative officer of the district, the DC oversees various land-related functions, including land administration, revenue collection, and enforcement of government land policies. [District Councils Act, 2000 Section - 27,54,55,56]
- **Chattogram Port Authority (CPA):** Controls land use within the port and adjacent areas. [Chittagong Port Authority Act, 2022, Section 10]
- **Bangladesh Railway and Other Agencies:** Own large tracts of land, often misused or encroached upon. [Railway Act (Amendment), 2021 Draft, Section 11, 12]
- **Ministry of Land:** Oversees land administration and ownership. [Acquisition and Requisition of Immovable Property Ordinance, 1982, Section 4]
- **Ministry of Defence:** The Ministry of Defence (MoD) plays an important role in land use control in Chattogram due to the presence of strategic military installations, training areas, cantonments, naval bases, and defense-related infrastructure, including facilities of the Bangladesh Army, Navy, and Air Force. Land within and around these installations is subject to special development restrictions to ensure national security, operational safety, and strategic integrity.

Despite these agencies' efforts, enforcement is weak due to overlapping jurisdiction, lack of coordination, and insufficient resources. Unauthorized development, including hill cutting and wetland encroachment, continues due to political influence and corruption. Although CDA has zoning regulations and building codes, many violations go unchecked, leading to haphazard urban growth.

The effectiveness of land use control in Chattogram is limited. While CDA's Master Plan and Detailed Area Plans (DAPs) provide guidelines, their implementation is inconsistent. Unauthorized construction is widespread, and illegal land conversion is often regularized post-facto. Development control measures, such as building height restrictions and land use zoning, are often bypassed due to weak enforcement.

The city's hills, which serve as vital ecological buffers, are being illegally razed for real estate and infrastructure projects. Similarly, canals and wetlands meant for drainage are frequently filled for housing and commercial structures. This lack of strict regulation has led to increased urban flooding, environmental degradation, and inefficient land use patterns.

4.4.1 Land use Conflict

In the Chattogram Metropolitan Area, land-use conflicts have

become a significant challenge due to rapid urbanization, industrial expansion, and population growth. The city's geographical location, coupled with its economic importance as a major port and commercial hub, has led to a high demand for land across various sectors. This increasing demand often results in competing interests between residential, commercial, industrial, and environmental uses. For instance, the conversion of agricultural or forest land for housing and industrial development frequently leads to environmental degradation, loss of biodiversity, and reduced green spaces. Moreover, informal settlements, which have proliferated in the city, often occupy land that is meant for public infrastructure or recreational spaces, further complicating land-use planning. The lack of adequate urban planning effort, combined with weak enforcement of regulations, exacerbates these conflicts, hindering sustainable development and affecting the overall quality of life in Chattogram. Balancing the need for urban growth with environmental preservation and social equity remains a key challenge for city planners and policymakers in Chattogram.

A review on exiting Land use pattern suggest that in last two decades the Land use conversion did not occur the way it has been planned in the Detailed Area Plan (2008) (Table – 4-2)



Table 4-2: Existing and DAP Proposed Land use Comparison.

Existing Land Use DAP Proposed Land Use (2008)														Grand Total
	Agriculture	Business and Mercantile	Education and Research	Health Care	Hilly Area	Industrial and Storage	Mixed Use	Open Space and Recreation	Residential	VACANT	Water Bodies	Service Activity and Public Utility	Others	
Agriculture	48%	0%	1%	0%	1%	0%	0%	0%	33%	3%	11%	0%	2%	100%
Commercial	7%	2%	2%	0%	0%	4%	18%	0%	37%	2%	7%	7%	14%	100%
Community Facility	13%	0%	32%	2%	0%	3%	2%	0%	23%	0%	5%	8%	11%	100%
Culture and Heritage	7%	0%	1%	1%	0%	0%	4%	4%	34%	1%	1%	29%	19%	100%
Environmental Protection / Enhancement	24%	0%	1%	0%	0%	14%	1%	1%	23%	8%	12%	3%	14%	100%
Industrial	18%	1%	1%	0%	0%	27%	1%	0%	31%	3%	11%	2%	6%	100%
Mixed Use	24%	2%	2%	0%	0%	4%	3%	0%	45%	1%	10%	2%	7%	100%
Recreation, Leisure & Open Space	19%	0%	2%	0%	20%	0%	0%	2%	10%	7%	25%	2%	13%	100%
Reserved Hill	16%	0%	3%	0%	63%	1%	0%	0%	12%	0%	2%	0%	2%	100%
Residential	31%	0%	1%	0%	0%	1%	2%	0%	46%	1%	10%	1%	6%	100%
Township	33%	0%	0%	0%	17%	1%	0%	0%	34%	0%	10%	0%	3%	100%
Transport Related Use	19%	1%	1%	0%	0%	5%	1%	0%	48%	0%	14%	2%	9%	100%
Urban Deferred Land	55%	1%	1%	0%	0%	2%	0%	0%	31%	0%	7%	0%	3%	100%
Utility Facility	31%	0%	25%	0%	0%	1%	0%	0%	4%	1%	7%	23%	8%	100%
Grand Total	31%	1%	1%	0%	7%	5%	1%	0%	34%	2%	10%	1%	6%	100%

The proposed agricultural zones seem to be preserved outside the city. However, within the city, a significant portion of the designated agricultural land (33%) has been converted for residential and other uses. Although in many cases of land use violations, the CDA did not approve changes contrary to the DAP, their enforcement efforts were inadequate. Consequently, development in these areas has been disorganized and lacking proper planning.

The DAP allocated a large area for industrial use. However, industrial development has either occurred at a slower pace than anticipated or in areas other than those designated. While the CDA did not allow alternative land uses in these industrial zones, intense housing demand led to approximately 31% of the land set aside for industrial purposes being converted to residential use without proper CDA approval. Meanwhile, despite being designated as industrial zones in the 1995 Master Plan, only 27% of these areas have been utilized for their intended purpose. Many plots remain under industrial ownership but are either vacant (20%) or being used for agricultural purposes. Additionally, 31% of the residential areas within these zones consist of scattered homesteads on the outskirts of the city or informal housing around industrial sites.

The 1995 Masterplan's Structure Plan included a provision for conducting a review every five years to align development with the evolving pace and emerging conditions. However, no such review has been conducted. As a result, land use has become inflexible, with no guidelines to accommodate alternative uses.

To accommodate the increasing growth, there are several designated Planned Residential Areas (R/As) and a Township. Despite this, several planned areas, such as Anannya, Salimpur, and Karnaphuly R/A, remain underdeveloped due to several reasons.

In Chattogram, the Anannya Residential Area (often referred to as Anannya Housing/Residential Area) remains relatively underdeveloped due to a combination of planning, infrastructural, environmental, and institutional factors rather than a single constraint. The relatively slow development of the Anannya Residential Area can be attributed to several interrelated factors. First, incomplete trunk infrastructure, particularly road connectivity, drainage, and utility services, has limited the area's immediate development attractiveness. Delays in the provision of reliable access roads, water supply, sewerage, and stormwater management systems have constrained large-scale private investment and residential uptake. Second, the area is influenced by topographical and environmental conditions, including low-lying land, waterlogging, and proximity to natural drainage channels in some areas. These conditions increase development costs and require additional engineering solutions, which have discouraged rapid plot development. Third, land ownership and plot development patterns have also played a role. A significant portion of land remains vacant, held for speculative purposes, or fragmented, resulting in uneven, piecemeal construction rather than coordinated neighborhood development. Fourth, distance from major employment centers and urban amenities, compared to established residential areas such as Khulshi or Panchlaish, has reduced



short-term residential demand. The limited presence of schools, healthcare facilities, commercial centers, and public transport services has further slowed population settlement.

A new township was also proposed in the Fateyabad area, covering DPZ 6 and 8, as part of Chittagong's planned expansion. The development aims to include residential areas for all income groups, industrial and commercial spaces, parks, open spaces, a garment village, an education village, a sports complex, a shopping complex, sewage treatment facilities, a five-star hotel, religious sites, government offices, transport hubs, and a flood storage pond. However, the location is quite distant from Chattogram city, lacks a proper road network. The lack of initiative by the CDA has halted the development of Fatahbad area and has increased the resentment among people for not allowing them to build on their own land.

Few proposed environmental protection zones overlap with Recreation, Leisure, and Open Space land use. However, about 23% of these zones have been converted into residential areas, and 14% have been taken over by industries through illegal encroachments into ecologically sensitive areas like the hills north of Bayezid Link Road.

DAP designates areas for Recreation, Leisure, and Open Space, including existing and proposed facilities. However, most of these zones have been converted to residential use, except those in DPZ 01, 02, and 04.

4.4.2 Density Control and Building Height

The city faces geographical constraints, environmental risks, and

infrastructure limitations, making unregulated high-rise development a significant concern. Uncontrolled vertical expansion in congested areas, such as GEC, Chawk bazar and Jamal Khan, can strain water supply, drainage, road networks, and emergency response services, leading to traffic congestion, waterlogging, and poor air quality. Additionally, in hilly areas like Khulshi, Bayezid and Nasirabad, excessive high-rise construction increases landslide risks due to slope destabilization.

Density control is also essential to ensure adequate open spaces, sunlight access, and ventilation, improving overall urban health and safety. While high-rise developments are necessary for accommodating population growth and economic expansion, they must be strategically planned along major transport corridors, mixed-use zones, and transit-oriented developments (TODs) to reduce pressure on central areas. Implementing zoning laws, strict floor area ratio (FAR) regulations, and environmental impact assessments can help improve the situation.

In GEC Circle, Jamal Khan, and Kazir Dewri, high population density has resulted in severe traffic congestion, water supply shortages, and excessive pressure on drainage and sewerage systems, leading to frequent waterlogging. Agrabad and Hali Shahar, being commercial and residential hubs, suffer from overcrowded roads, insufficient parking, and unplanned high-rises that block air circulation, reducing overall urban comfort. The Karnafuli riverbank and Patenga are experiencing densification in informal settlements, where poor housing conditions, lack of sanitation, and vulnerability to water logging



threaten public health and safety. Without effective density control measures, these challenges will intensify, making the city more congested, environmentally fragile, and infrastructure-deficient.

Building Height

In Chattogram, the regulation of building height based on road width has become a significant issue in urban planning, especially in the context of rapid densification and infrastructure constraints. A key point of confusion is whether building height should be determined by the existing road width or the proposed width, as outlined in the structure or detailed area plan. Globally, many cities default to existing road width to maintain harmony with current infrastructure and avoid overburdening narrow roads with high-density development (e.g. Mumbai, Tokyo). However, some cities allow proposed road widths to be considered if clear plans, land acquisition, and legal notifications are in place (Singapore, New Delhi, Dhaka). For Chattogram, a balanced approach is essential. Using existing road width ensures safe access, ventilation, and emergency response capabilities, especially in hilly or congested areas. However, in cases where future road widening is planned and feasible, conditional approval based on proposed width may be granted-provided the developer surrenders land or a government acquisition process is underway. A clear, enforceable guideline with transparent communication between authorities and developers is crucial to avoid misuse and confusion. Proper integration of height limits with road capacity will lead to a more sustainable and livable urban form, while also supporting planned infrastructure development.

4.4.3 Development Permission on Waterbody and Hill

Height and density control in Chattogram is crucial for managing urban growth, ensuring safety, and maintaining environmental balance. The city's topography, with its hills, flood-prone areas, and coastal proximity, necessitates strict regulations to prevent unplanned high-rise development and excessive population density in vulnerable zones. The Detailed Area Plan (DAP) and Building Construction Rule set guidelines for floor area ratios (FARs), building heights, and permissible densities based on land-use zoning. However, there is no height zoning in practice for Chattogram. As a result, Chattogram experiences a high rise in narrow alleys. Weak enforcement and gaps in prevailing rules have led to unauthorized high-rise construction, overburdening infrastructure and worsening traffic congestion, waterlogging, and fire hazards. In hill areas, uncontrolled vertical expansion increases landslide risks, particularly in Lalkhan Bazar, Bayezid, and Khulshi. Balancing densification with sustainable planning requires strengthening regulatory enforcement, integrating transport infrastructure with zoning policies, and promoting mixed-use development to ensure a livable and resilient urban environment.

The recommended policies for conservation of water body and hills are spelled out in the Chapter-12.

4.5 Spatial Development Strategies

The spatial development pattern of Chattogram has evolved significantly over time, shaped by its geography, economic importance, and policy decisions. Historically, the city developed organically along the



Karnaphuli River, with the port serving as the economic core. The British colonial era reinforced this pattern by expanding the port, establishing the railway, and developing commercial and administrative zones in Sadarghat, Agrabad, and Chawkbazar. Early urban expansion followed a linear pattern along key transportation routes, particularly towards Hathazari and Sitakunda. In recent decades, Chattogram has experienced rapid, unplanned urbanization, shifting from a linear to a fragmented polycentric pattern. Industrial zones have expanded along the Dhaka-Chattogram highway, creating new urban centers in Sitakunda, Pahartali, and Patenga. The hills and wetlands, once natural growth barriers, are now being encroached upon due to land shortages and informal settlements. Meanwhile, real estate-driven expansion has pushed growth towards Nasirabad, Bakalia, and Halishahar, often without proper infrastructure¹.

Current patterns show a high-density core, expanding peri-urban areas, and growing transport corridors, but lack planned integration. Moving forward, strategic urban planning emphasizing polycentric development, transit-oriented growth, and environmental conservation is essential for sustainable spatial development in Chattogram. A polycentric development strategy combined with transit-oriented development (TOD) and green infrastructure planning would be the most suitable

approach for Chattogram Metropolitan.

Accommodating Growth and Polycentric Development

A polycentric development model can decentralize economic activities by developing multiple urban centers such as Patenga, Halishahar, Pahartali, and Sitakunda, reducing pressure on the Central Business District (CBD). These secondary hubs can be strategically planned for commercial, industrial, and residential purposes, ensuring a more balanced and efficient urban structure.

To aid the polycentric development, several centers / location in Chattogram can be developed. Based on recent development pace, potential, connectivity and trend of Land use, several centers are selected and recommended for aided development, and those locations can thrive on their own and draw attention for activities. Few potential centers are:

Agrabad

Agrabad is the traditional commercial and financial hub of Chattogram, home to major banks, corporate offices, hotels, and government institutions. It can be transformed into a modern financial district with improved infrastructure, attracting global businesses and investment. However, it suffers from traffic congestion, limited open spaces, and outdated infrastructure. Development strategies could be:

- Implement mixed-use zoning to encourage residential and office integration.
- Improve public transport connectivity to reduce congestion.

¹ Al Mamun, M. M., Nijhuis, S., & Newton, C. (2024). Sustainable Urban Planning Challenges in the Peri-Urban Landscape: Evaluating LULC Dynamics and the Policy Effectiveness of the Chattogram Metropolitan Region, Bangladesh. *Land*, 13(8), 1157. <https://doi.org/10.3390/land13081157>



- Enhance green spaces and walkability to create a more livable business district.

Halishahar

Halishahar has grown as a densely populated residential zone with commercial and retail areas. It houses educational institutions, hospitals, and service industries but faces challenges related to informal settlements, traffic congestion, inadequate public transport, and limited social infrastructure (schools, hospitals, playgrounds). To make it more livable as a key destination, development strategies could be:

- o Introduce affordable housing policies and better waste management systems.
- o Develop public parks and green corridors for improved livability.
- o Improve drainage
- o Promote mixed-income housing with adequate infrastructure.

Patenga

Patenga is a strategic economic zone due to its proximity to the Chattogram Port, Export Processing Zone (EPZ), and Karnaphuli Tunnel. The area is expanding as an industrial and logistics hub, but it faces issues of traffic congestion from freight transport, pollution, and limited residential facilities. Patenga has huge tourism potential that can be focused. Recommended development strategies for Patenga are:

- o Establish dedicated freight corridors to ease traffic congestion.
- o Implement buffer zones preferably by plantation to mitigate industrial pollution.
- o Develop worker housing zones with proper amenities.

- o Beachfront can be revitalized with improved promenades, walking and cycling paths, viewing decks, and eco-friendly resorts.
- o Cultural tourism can be promoted by highlighting Chattogram's maritime history through museums and interactive heritage experiences with local fishing communities.

Oxygen/Bayezid

The Oxygen Square and Bayezid areas are emerging as educational and institutional corridors, hosting coaching center, college, health services and commercial activities. It can evolve into a tech and innovation hub, attracting startups, research institutions, and universities. However, these areas need better transport infrastructure and urban amenities to function as a knowledge hub. Development strategies could be:

- o Develop a university town concept with student housing and research parks.
- o Improve road connectivity and introduce efficient public transport services.
- o Promote innovation clusters and startup incubators.
- o Develop public park and open space.

Hathazari

Hathazari is home to the University of Chittagong and has the potential to become an education and research center. It can be developed as an integrated university town, attracting students, researchers, and academic institutions. However, Poor transport connectivity, inadequate student housing, and a lack of urban



amenities limit its growth potential. Development strategies could be:

- o Establish a university city model with research labs and commercial centers.
- o Improve rail and bus connectivity with central Chattogram.
- o Develop eco-friendly housing for students and faculty.

Raozan

Raozan is a peri-urban center with strong agricultural and small-scale industrial activity. It has potential to become an agro-industrial, organic farming and eco-tourism hub, but deforestation, unregulated land conversion, and lack of connectivity slow down its sustainable development. Development strategies could be:

- o Promote eco-tourism and cultural heritage conservation.
- o Establish agri-processing industries to support the local economy.
- o Implement green infrastructure to preserve natural landscapes.



Figure 4-3: Potential Growth Zone

Boalkhali

Boalkhali has a historical trading significance, located along the Karnaphuli River. It has the potential to become a vibrant riverfront economy, combining heritage tourism, small-scale trade, and eco-living, but river erosion. Poor road connectivity and environmental degradation hinder its growth. Development strategies could be:

- o Develop waterfront commercial areas with sustainable urban design.
- o Enhance river transport networks to boost trade.
- o Implement flood resilience strategies for climate adaptation.

Patiya

Patiya is a growing suburban area with potential for satellite town development. It is a prime location for suburban expansion, offering affordable housing, commercial districts, and industrial growth. Unregulated land use, poor road infrastructure, and inadequate utilities pose risks to sustainable growth. It needs better infrastructure, transport links, and planned urbanization to support its expansion. Development strategies could be:

- o Design a planned satellite town with self-sustaining amenities.
- o Improve road networks and public transport to reduce commute times.
- o Encourage compact, mixed-use urban development.
- o Direct north-bound connectivity towards Raozan and allow for eastern fringe development.

Anwara

Anwara is emerging as an industrial and economic hub due to the Karnaphuli Tunnel and the Special Economic Zone (SEZ). However, rapid



industrial expansion without proper planning may lead to pollution and unregulated urban sprawl. Development strategies could be:

Implement eco-industrial zoning to balance development with environmental protection.

- o Plan for a satellite town emphasizing planned worker housing and mixed-use developments.
- o Establish green buffers between industrial and residential areas.
- o These centers, if strategically developed, will decentralize growth, reduce congestion in central Chattogram, and promote sustainable urbanization.

Fateyabad New Town

The Chattogram Development Authority (CDA) initiated a large residential township project in the Fateyabad area (Hathazari) of Chattogram beginning around 2008, with the intention of creating a planned urban extension (4,700 acres). Under this initiative, CDA halted all design approvals and building plan clearances within the project boundary, effectively freezing development in the area.

Over the years, the development freeze has caused significant hardship for local landowners and residents. Many have waited years for plan approvals and have faced declining land market activity. In some localities, frustrated owners have constructed buildings without CDA approval. National media have highlighted these issues, including the inability of affected people to secure permits and the economic

uncertainty caused by the prolonged ban.



In response, communities have repeatedly demanded either the formal cancellation or revision of the township reservation or the release of the area for regulated development under existing planning rules, arguing that the reservation is no longer being implemented and is harming normal urban development.

Under these circumstances, it is proposed that a suitable portion of land be reserved for a future new town under CDA's Site and Services Scheme, while the remaining areas are recommended to be released for block-based development under CDA's supervision.

4.5.1 Zoning, Building Height and Density Control

Zoning is a crucial spatial development strategy that can help organize, regulate, and guide urban growth in Chattogram. Given the



city's rapid densification, geographic constraints (hills, rivers, flood-prone areas), and unplanned urban expansion, zoning can ensure that land is used efficiently, infrastructure is well-distributed, and environmental risks are minimized. Designating specific zones for residential, commercial, industrial, and mixed-use purposes ensures that urban activities are well-distributed, reducing congestion and infrastructure strain. Zoning also plays a key role in protecting environmentally sensitive areas, such as hills, wetlands, and flood-prone zones, by restricting high-impact developments and encouraging green spaces (Chapter 12).

In terms of equitable and sustainable distribution of urban services zoning is a proven tool. In Chattogram, schools, hospitals and shopping centers are found concentrated in a few locations. It has two impacts: first, it causes congestion for those locations which suffer the whole population and second, distribution becomes inequitable. The lower income group is generally required to travel longer distances.

4.5.2 Land use Intensity

To promote sustainable and compatible urban growth, a hierarchical land use intensity policy can be adopted in Chattogram. Development permissions can follow a descending intensity order (Figure 4-4). Under this policy, construction of lower-intensity activities (e.g., residential or green space) may be allowed within higher-intensity designated areas (e.g., industrial or commercial zones), ensuring flexibility and gradual densification.

Landuse Intensity
Industry
Commercial
Institutional
Mixed-use
Residential
Green/Open Space

Figure 4-4: Proposed Land use intensity hierarchy

However, higher-intensity developments will not be permitted in zones designated for lower-intensity uses to prevent overburdening infrastructure, traffic congestion, and environmental degradation. This strategy will guide zoning, control unplanned densification, and help maintain a balanced urban ecosystem while supporting economic functions. Special provisions may apply in transition zones and redevelopment areas through detailed area plans or action plans.

Chattogram accommodates several industrial estates and economic zones that are central to Bangladesh's industrialization and export-oriented growth strategy; however, their levels of development and performance vary considerably. The BSCIC industrial estates at Kalurghat, Fouzdarhat, Sholoshahar, and Patiya are currently underutilized, with a significant number of factories remaining idle or shut down. Similarly, the Korean Export Processing Zone (KEPZ) still has substantial vacant plots awaiting investment. At the same time, new Chinese Economic and Industrial Zones are under construction to host a diverse range of industries. Given this context, priority should be given



to fully utilizing the available vacant plots within existing industrial estates before establishing new ones through the conversion of agricultural land

4.5.3 Transit-Oriented Development

Transit-Oriented Development (TOD) should be integrated into this polycentric framework by enhancing public transportation infrastructure along major corridors, such as the Dhaka-Chattogram Economic Corridor and key intra-city routes. Developing high-density, mixed-use zones around CBD, Port, bus terminals, railway stations, and potential future mass transit lines (e.g., BRT or MRT) would encourage compact, walkable neighbourhoods, reducing dependency on private vehicles and easing congestion.

4.5.4 Green Infrastructure Approach.

Chattogram's unique geographic and environmental constraints - including hills, rivers, and coastal areas-necessitate a green infrastructure approach. The city's numerous canals and wetlands should be preserved as part of a sponge city strategy, incorporating flood-resilient infrastructure, green spaces, and water-sensitive urban design. This would mitigate urban flooding, reduce heat island effects, and ensure long-term environmental sustainability.

By combining polycentric urban expansion, transit-oriented connectivity, and resilient green infrastructure, Chattogram can achieve sustainable growth, economic diversification, and improved livability, while protecting its critical natural assets.

4.5.5 Residential Area Development Guidelines

The Private Residential Land Development Rule (2012) regulates private land subdivision for residential use by setting minimum standards for plot size, road layout, open space, and basic services. It defines approval procedures, developer obligations, and handover requirements to ensure planned, serviced, and legally compliant residential developments. However, it requires to develop a set of guidelines for its effective application in the Chattogram metropolitan area.

These Guidelines are intended to complement the Private Residential Land Development Rule by providing additional planning, design, environmental, and infrastructure guidance for private residential and commercial area development. In case of any inconsistency, the provisions of the 2012 Rules shall prevail.

Private residential and commercial land development shall be guided by a set of complementary planning and design guidelines to ensure orderly growth, environmental protection, infrastructure efficiency, and livability. These guidelines shall supplement the Private Residential Land Development Rule by addressing land use integration, infrastructure standards, environmental safeguards, and phased implementation, and shall be applied through planning approval and development control processes.

The project area should comply all criteria stated in the relevant rules. In addition, the following guidelines can be adopted:

- These guidelines should apply to all private residential, commercial



and mixed-use land development projects.

- Land development shall follow the Structure Plan and Action Plan land use designation.
- Mixed-use development shall be encouraged along arterial and collector roads.
- Incompatible uses shall be avoided within residential neighborhoods.
- Density shall be graded based on:
 - o Road hierarchy
 - o Proximity to public transport and activity centers
- A clear internal road hierarchy (arterial, collector, local) shall be provided.
- New developments shall ensure connectivity with surrounding road networks.
- Safe pedestrian movement shall be ensured through:
 - o Continuous footpaths
 - o Safe crossings
 - o Barrier-free design
- Land development shall be approved only where adequate provision is made for:
 - o Water supply
 - o Sewerage or on-site sanitation
 - o Stormwater drainage
 - o Solid waste management
- Utility corridors shall be reserved within road rights-of-way.
- Natural features such as water bodies, canals, hills, slopes, and floodplains shall be preserved.
- Development shall not obstruct natural drainage paths.
- Hill cutting, filling of water bodies, and encroachment on flood flow zones shall be prohibited.

- Minimum open and permeable space shall be ensured to support groundwater recharge.
- Final handover of infrastructure shall comply with CDA standards.
- All private developments shall be subject to planning approval by the CDA.
- Compliance with these guidelines shall be assessed alongside the provisions of the Private Residential Land Development Rules.

Private residential, commercial and mixed-use area development shall demonstrate conformity with both statutory rules and the complementary planning guidelines adopted under the Structure Plan to ensure coordinated, sustainable, and livable urban development.

4.5.6 Guided Land Development

It appears that, at the current pace of practice and development, the implementation of the city-wide plan is unlikely to be completed by the stipulated time set by CDA alone. In this case, Guided Land Development (GLD) can be adopted, and development authorities like CDA can take the role of facilitators in implementing planned neighbourhoods. Since GLD involves the active participation of local people, it reduces the lengthy duration of land acquisition. Chapter Nine (Section 9.4.7) has proposed different GLD techniques for various parts of the city.

4.5.7 Transfer of Development Rights

Transfer of Development Rights (TDR) is a land-use planning tool that allows landowners in restricted or conservation areas (called *sending zones*) to legally transfer their unused



development potential (usually measured as Floor Area Ratio or FAR) to other areas designated for higher density growth (called *receiving zones*). This approach helps preserve ecologically sensitive, heritage or low-density zones-such as hills, ponds, wetlands, or heritage sites -without financial loss to landowners. Instead of constructing buildings on protected land, owners sell their development rights to developers who wish to build more intensively in urban corridors that can support higher infrastructure loads. In cities like Chattogram, TDR can be used to protect ecologically sensitive hilly area and water body while encouraging vertical, transit-oriented growth in areas like Agrabad, GEC Circle, O.R. Nizam Road, Nasirabad, or Khulshi. It creates a win-win: conservation goals are met, developers gain flexibility, and urban sprawl is minimized. The process will be regulated by CDA. TDR aligns with sustainable urbanism by balancing growth with environmental and cultural preservation.

4.5.8 Betterment Fee

Introducing a betterment fee is both timely and essential for Chattogram, specially as the city undergoes major investments in roads, drainage, flyover, amenities and utility services. Areas like Outer Ring Road, Airport Road, Bayezid-Faujdarhat Link Road, and Ak Khan-Patenga are witnessing increased development potential due to public investments. Landowners in these zones often benefit from increased land prices, higher floor area allowances, and greater development opportunities-yet currently, they are not required to share the costs of such infrastructure upgrades.

Implementing a betterment fee would enable equitable urban development financing, reduce

reliance on limited government budgets, and promote land value redistribution. It can be applied during land use conversion, building plan approval, or new development in the influence zones of major infrastructure projects. To ensure success, the fee must be transparent, linked to real value appreciation, and legally backed by CDA regulations or local government by-laws. Revenues generated can be reinvested in infrastructure maintenance, slum upgrading, and public amenities, thus promoting inclusive urban growth. A pilot implementation in high-impact corridors like the Bayezid-Faujdarhat Link or Bakalia-Kalurghat zone could test its effectiveness before city-wide scaling.

4.5.9 Penalty for Unauthorized Extra Construction

Any construction exceeding the approved floor area or building dimensions shall be considered unauthorized. Developers or landowners responsible for such excess construction shall be liable to pay a penalty calculated based on the excess floor area. The competent authority shall levy the penalty and it must be paid prior to regularization or approval of future development. CDA can call for an assessment or investigation at any time of the year. Repeated violations may result in legal action, including demolition of unauthorized structures. The penalty rate can be based on the local rent rate (Ward). The CDA board can revise the rate annually and apply it indiscriminately.

4.5.10 Reclamation of Land

Land reclamation in Chattogram may not be strategically necessary but can be conditionally feasible in specific contexts, particularly for supporting port expansion, industrial logistics, and special economic



zones. Areas such as Patenga, Anwara, and parts of the Karnaphuli Riverbanks offer limited potential for engineered reclamation, especially where flat land is scarce and demand for infrastructure is high. However, Chattogram's geography also makes reclamation highly risky due to its exposure to cyclones, tidal surges, and flooding. Many potential sites are ecologically sensitive, including wetlands and fish spawning areas, where reclamation could cause irreversible environmental damage. Therefore, land reclamation should only be considered for high-priority, state-backed projects with strong environmental safeguards, robust coastal defenses, and rigorous planning oversight. It is not advisable for general urban housing or speculative development. A clear policy framework and environmental impact assessments must guide all reclamation efforts to ensure they align with long-term climate resilience, ecological preservation, and equitable urban growth.

4.5.11 Action Plan

Action plans are essential for translating the strategic vision of Chattogram's master plan into practical, time-bound initiatives. As a rapidly growing port city, Chattogram is facing challenges such as unplanned urbanization, traffic congestion, informal settlements, and environmental risks. It is not feasible to implement all development projects simultaneously. Therefore, action plans should be developed either by sector—such as solid waste management, air quality improvement, blue/green network, drainage improvement, aligning unplanned development etc. or by geographic focus, targeting specific areas like Anwara, Karnaphuli, Char Bakalia, or Agrabad. Three actions

plan has been prepared as part of this master plan preparation (Appendix E), Action plans help prioritize projects, define responsibilities, allocate resources, and set implementation timelines, enabling effective coordination among government agencies and stakeholders. They are also vital for addressing climate vulnerability, managing disaster risks like flooding and landslides, and guiding resilient infrastructure development. Moreover, well-defined action plans support efficient resource mobilization by presenting clear investment needs to development partners and the private sector. Ultimately, action plans serve as a bridge between long-term planning and ground-level impact, ensuring that Chattogram's urban transformation is inclusive, resilient, and well-managed.



Figure 4-5: Possible sites for Action Plan



Table 4-3: Proposed Action Area Plan

SI	Name	Area (Acre)	Remarks
1	New Fateabad Township	67.47	For this future residential area development natural flow of water and its retention need to take care of
2	Park & Water Retention at Hathazari	752.65	Low lying area, need to reserve for park, open space and water retention purpose
3	Chattogram Bay View	1154.91	This mixed use area can be the destination for high-end condominium, hotels, port logistic and liaison offices
4	Water Retention (Hathazari)	44.09	For rain water retention and underground recharge
5	Water retention (Chandgao)	60.42	For rain water retention and underground recharge
6	Future Development (Chandgaon)	94.94	Low lying area, need to reserve for water retention purpose
7	Guided Land Development (Mohra)	90.08	Land locked low density area. GLD can be adopted for regularizing plots and giving access to individual plots
8	Boalkhali Pourashava	4268.11	Detailed Area plan need to develop for Pourashava
9	Guided Land Development [Bakalia)	73.73	A prominent location in the city with low accessibility. GLD along with a access road can improve the liability of the area
10	Guided Land Development [Fateabad]	1900.04	Private sector can be invited to develop block-based development under CDA's supervision.
11	Hathazari Pourashava	6662.75	Detailed Area plan need to develop for Pourashava
12	Rauzan Pourashava	7631.71	Detailed Area plan need to develop for Pourashava
13	Patiya Pourashava	2578.57	Detailed Area plan need to develop for Pourashava
14	Ananya Water retention	136.48	Water retention area
15	Anwara Township	7315.01	New Township proposed
16	Bakalia Riverside Development	327.86	New Township proposed
17	Bakalia Wild Life and Tourism	406.75	Tourism Island Development



Chattogram Development Authority has recommended the preparation of Detailed Area Plans (DAPs) under its Strategic Land Use and Infrastructure Development Plan to address the unplanned development occurring in Pourashavas (municipalities).

In addition to these area-based action plans, this plan recommends a few key thematic action plans: parking management, public transport improvement, open space creation and management, low-income housing, solid waste management, blue network development, and tourism development, to mention a few, to address local development needs efficiently.

Hospital and Clinic

Several areas in Chattogram have a high concentration of hospitals and clinics, primarily due to their central location, accessibility, and demand for medical services. These include:

GEC Circle & Mehedibagh – This is the most concentrated healthcare hub in Chattogram, with major hospitals like Max Hospital, CSCR Hospital, National Hospital, and Labaid Hospital. Many diagnostic centers and specialized clinics are also located here.

Chawkbazar & Anderkilla – Chattogram Medical College Hospital (CMCH), the largest public hospital, is located in Anderkilla, along with many private clinics and diagnostic centers in the surrounding areas.

Agrabad & Haliashahar – These areas have multiple private hospitals and specialized clinics serving the commercial and residential populations.

Panchlaih & Khulshi – The presence of major hospitals such as Parkview Hospital and Surgiscope Hospital has led to a concentration of healthcare services in this area.



Figure 4-6: Distribution of Hospitals and Clinics in Chattogram

On the contrary, several areas in Chattogram lack adequate healthcare facilities, making access to medical services difficult, especially for low-income and peri-urban populations. These areas include:

South Chattogram (Anwara, Patiya, Banshkhali) – With the growing industrial development and increasing population, these areas require more hospitals and specialized healthcare facilities.

Patenga & EPZ Area – Despite being a major industrial and residential zone, the number of quality hospitals is limited, making workers and residents travel long distances for treatment.

Bayezid & Oxygen Area – Rapid urban expansion and increasing



population density in these areas require better healthcare infrastructure, including general hospitals and emergency care centers.

Hathazari & Raozan – These growing suburban areas, home to a large population, lack adequate tertiary healthcare facilities, forcing residents to travel to the city center for treatment.

To ensure that hospitals and clinics in Chattogram are optimally distributed for accessibility while preventing over-concentration in specific areas, policy guidelines should focus on balanced spatial distribution, accessibility, and integration with transport networks. The following policy recommendations can be considered:

- Designate health service zones across different parts of the city to distribute healthcare facilities more evenly.
- Implement floor area ratio (FAR) adjustments for hospital zones to allow vertical expansion where space is limited.
- Apply stricter parking policy or apply higher taxes
- Restrict healthcare development in high-risk zones, such as landslide-prone hill slopes or waterlogged lowlands.

School

In Chattogram, educational institutions are primarily concentrated in central and well-developed urban areas, where infrastructure and accessibility support dense student populations. Jamal Khan, GEC Circle and Nasirabad have a dense cluster of prestigious schools and colleges. The Chawkbazar and Panchlaish areas also host a significant number

of educational institutions, benefiting from better road networks and public transport access. Additionally, the Agrabad and Halishahar regions have a notable presence of schools, catering to the growing residential and commercial population in the port city.

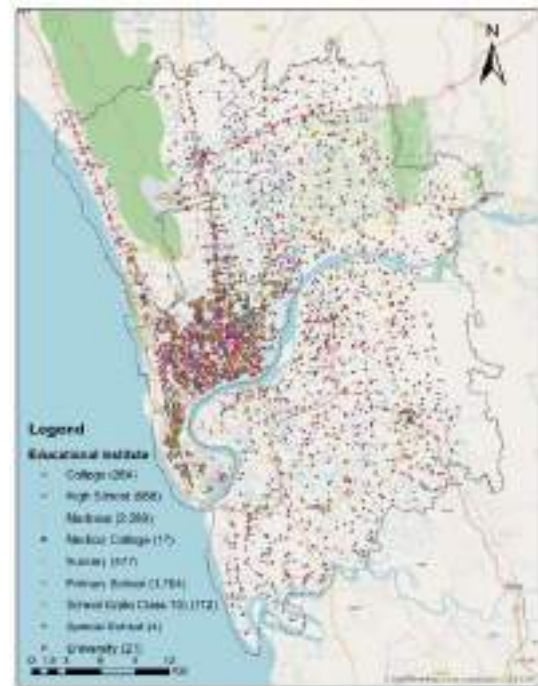


Figure 4-7: Distribution of Schools in Chattogram

In contrast, peripheral areas such as Anwara, Patiya, and Hathazari have fewer educational facilities, requiring students to travel longer distances to access quality education. To ensure balanced access to educational facilities, planning efforts should focus on expanding school networks in underserved areas, improving public transport connectivity, and integrating schools into future urban growth strategies.

4.6 Proposed Land use

Land use proposals is the key to Structure Plan for Chattogram because the city faces unique



geographic and environmental constraints, including hills, rivers, wetlands, and a highly congested core area. A clear land use framework helps manage rapid urbanization by guiding growth away from sensitive zones and toward suitable areas with adequate infrastructure. It prevents unplanned development, reduces disaster risks such as landslides and waterlogging, and ensures that industrial, residential, and commercial uses are placed in compatible locations.

Proposed Land use has been illustrated through map in Figure 4-7

General Urban Zone: the city has developed as a mixed Land use agglomeration where activity has been concentrated based on accessibility and market force. These

causes chaos, at the same time it's a beauty of organic growth. Along with the Chattogram City Corporation area and the Pourashava area, there are several areas with high-density residential areas. Considering these a generalized urban use (GUU) has been proposed where different urban activities can take place (commercial to open space) as depicted in Figure 4-4. Around 480km² is proposed as GUU, most of the urban activity will be located on this land with 80% of metropolitan population.

Different types of buildings and activity can take place on the GUU but it must meet the location, access and plot size criteria as stated in the table 4-5



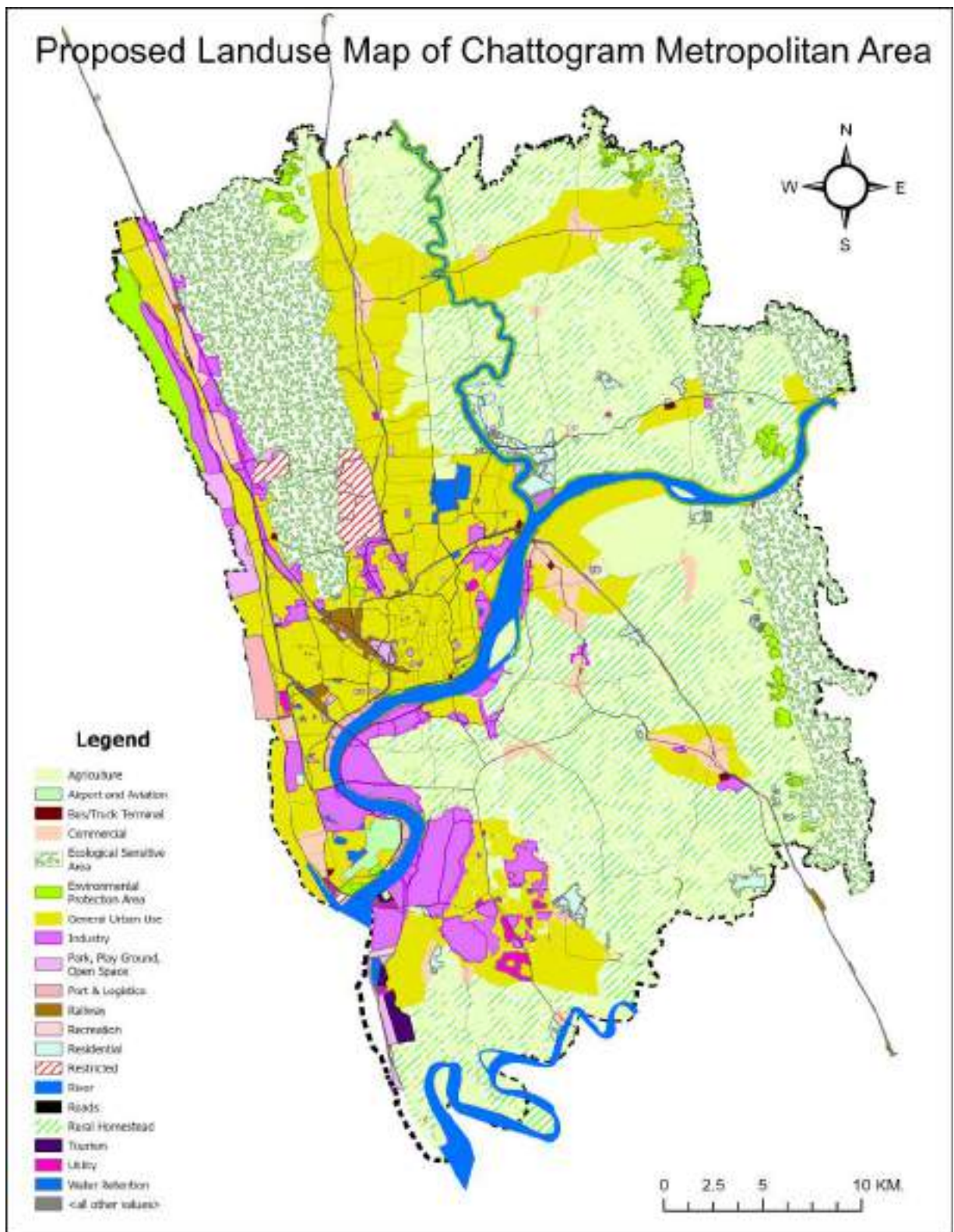


Figure 4-8: Proposed Land use



Table 4-4: Proposed Landuse Distribution

SL	Landuse	Area(Sq.Km)	Percentage
1	Agriculture	399	31.92%
2	Airport and Aviation	4	0.32%
3	Bus/Truck Terminal	1	0.08%
4	Commercial	29	2.32%
5	Ecological Sensitive Area	181	14.48%
6	Environmental Protection Area	22	1.76%
7	General Urban Use	260	20.80%
8	Industry	66	5.28%
9	Park, Play Ground, Open Space	7	0.56%
10	Port & Logistics	5	0.40%
11	Railway	4	0.32%
12	Recreation	2	0.16%
13	Residential	6	0.48%
14	Restricted	10	0.80%
15	River	55	4.40%
16	Roads	20	1.60%
17	Rural Homestead	170	13.60%
18	Tourism	2	0.16%
19	Utility	3	0.24%
20	Water Retention	4	0.32%
	Total	1250	100.00%



Table 4-5: Proposed Road Width, Plot Size, Frontage and others for different building use

Use of Buildings			Existing Road Width (in feet)	Minimum Plot Size (Katha)	Minimum Frontage (in Feet)	Remarks
Residential	Residential	Buildings having more than 40 flats or area more than 4000 sq.m.	30			TIA is must for buildings with more than 40 apartments/units
Institution	Education Institute	Kindergarten & Primary School	20	7.5	As per building construction rules	Minimum 30% open space in addition to set back TIA is essential for English Medium School
		Secondary/High School	40	20		Minimum 30% open space in addition to set back English Medium School will need a TIA
		College	40	20		Minimum 30% open space in addition to set back
		University	60	60.5k (inside city) and 121k (outside city)		Other criteria as indicated by the UGC
Mercantile	Health Services	Hospital/Clinic/Doctors Chamber/Diagnostic Lab	60	10	60	TIA and EIA is essential Drop off bay for MT and NMT parking for cars and motor bikes required
		Doctors Chamber, Diagnostic Lab	40	5 (maximum 10 katha)	40	TIA and EIA is essential
		Community Clinic	40	-	-	-
		Pathology Lab, Sample Collection	40	-	-	-
	Commercial	Office/Hotel/Boutique Hotel	40	5	-	TIA and EIA is essential Drop off bay for MT and NMT parking for cars and motor bikes required
		Residential Hotel (Star Rated)	60	20	60	
		Shopping Mall	60	20	60	
		Restaurant	40	5	-	





Use of Buildings			Existing Road Width (in feet)	Minimum Plot Size (Katha)	Minimum Frontage (in Feet)	Remarks
		Convention Centre / Community Centre	60	20	60	
		Super Shop	60	5	-	
		Filling Station	60	20	60	
Industrial (Other than Planned Industrial Area)	Light Industry	Light Workshops i.e., small furniture makers; tailor's workshops; light metal workshops; small bakeries; car repair shops; glass workshops; handicraft workshops; electrical repair workshops; etc. "Hi-tech" or clean industries i.e., research and development industries; computer equipment; etc.	30	5	-	Drop off bay for MT and NMT parking for cars and motor bikes required
Industrial (Other than Planned Industrial Area)	Medium Industry	Textiles, Ready-made garments, pharmaceutical manufacturing, Rubber products manufacturing, Medium-scale plastic product factories, Metal fabrication and machine parts manufacturing, Medium-scale food processing plants etc.	40	10		TIA and EIA is essential Drop off bay for MT and NMT parking for cars and motor bikes required
Industrial (Other than Planned Industrial Area)	Heavy Industry	Steel and rolling mills, Cement manufacturing plants, Automobile or heavy equipment manufacturing, Power plants etc.	60	40		TIA and EIA is essential

Use of Buildings			Existing Road Width (in feet)	Minimum Plot Size (Katha)	Minimum Frontage (in Feet)	Remarks
Industrial (Other than Planned Industrial Area)	Noxious	Ship breaking and dismantling, Tannery (leather processing), Petrochemical industries, Fertilizer plants, Pesticide and toxic chemical manufacturing, Oil refineries, Ship breaking industries, Hazardous waste treatment and disposal facilities.	60	40		TIA and appropriate EIA is essential
Others	Inland Container Depots (ICD)		60	900	60	TIA and EIA is essential
	Freight/Truck Terminal/Bus Depot		60	300	60	TIA and EIA is essential
	Amusement Park		60	40	40	TIA and EIA is essential MT and NMT parking for cars and motor bikes required



4.7 Regulatory Guidelines for Effective Land use Management

Effective land-use management in the Chattogram Metropolitan Area requires a combination of regulatory measures that promote sustainable development while addressing urban challenges. Under the Chattogram Metropolitan Master Plan, several regulatory measures can be implemented to achieve this balance:

1. Zoning Regulations: Zoning laws should be strictly enforced to clearly demarcate areas for residential, commercial, industrial, and recreational purposes. This helps prevent the encroachment of incompatible land uses, such as industrial development in residential zones or the conversion of agricultural land to unplanned urban sprawl.

2. Density Control: The density of built-up area can be controlled by stricter regulation on road width, parking requirement and set back. For urban amenities like school, clinic, restaurant, cinema, shopping similar zoning regulation can implement as well. Clinic and hospital can only be allowed with roads higher than 15 meters. A minimum plot size and floor area can be set within city limit

3. Building Codes and Density Control: Establishing and enforcing building codes, along with density control regulations, can help manage the rapid urbanization in Chattogram. By regulating building heights, floor area ratios (FAR), and population density, authorities can ensure that urban development is sustainable and does not overwhelm infrastructure and services.

4. Land Use Permits and Approvals: A more stringent land-use permitting system should be

introduced, requiring developers to obtain permits based on the land-use compatibility outlined in the master plan. This will ensure that any new development aligns with long-term planning goals and does not disrupt existing land uses or public services.

5. Hills, Water body and Green Space Protection and Conservation:

Regulatory measures to protect green spaces, water bodies, and forest areas are critical to maintain ecological balance (Chapter 12). Incentives for preserving open spaces, including tax breaks or transfer of development rights, can encourage developers to prioritize environmental sustainability.

6. Environmental Impact Assessments (EIA): Mandating EIAs for large-scale construction projects (based on floor area, plot size and types of activities) ensures that the environmental consequences of development are carefully considered and mitigated. This can help reduce pollution, soil erosion, and other negative environmental impacts often associated with unchecked urban growth.

7. Urban Redevelopment and Regeneration Policies: To address land scarcity in the metropolitan area, policies focused on urban renewal, land reclamation, and regeneration of underdeveloped or dilapidated areas should be encouraged. This will optimize the use of available land and reduce pressure on rural and peripheral areas.

8. Public Participation and Stakeholder Involvement: Involving local communities, urban planners, and other stakeholders in land-use decisions through public hearings and consultations can help ensure that the needs and concerns of different sectors of society are addressed, leading to more



equitable and effective land-use management.

9. Transport and Infrastructure Planning: Integrating transportation and infrastructure planning with land-use management is vital. Regulatory measures should promote transit-oriented development (TOD) to reduce congestion and support sustainable growth by focusing on development around transport hubs like bus terminals and railway stations.

These regulatory measures, when effectively implemented under the Chattogram Metropolitan Master Plan, can help address the growing land-use challenges in the city and ensure a balanced, sustainable future.

4.8 Key Recommended Policies and Strategies for Effective Land use Management

POLICY LU-1: Building Height, Density and Use Control

A building height control policy shall be enforced in Chattogram to ensure harmonious urban form, infrastructure capacity alignment, and environmental safety, particularly in hilly and dense areas. Height limits will be guided by zoning, road width, and risk sensitivity to promote safe, livable, and well-ventilated urban environments.

The relevant Building Construction Rules determine a building's height based on zoning, its intended use, and the width of the access road. Building height should be aligned with the existing road width, while also allowing flexibility for vertical or horizontal expansion in the future as proposed road improvements are implemented.

Chapter-12 provides guidelines on building heights and use in hilly area of different conditions.

- **LU-1.1:** Follow the height restriction considering airport funnel, hill slope, Land use zoning, access road width and allowable limit by building construction act. Appendix-F has zoning maps for different regulatory landuse and height control.
- **LU-1.2:** A framework for building density control need to develop based on a comprehensive study.
- **LU-1.3:** Allow building permission based on zoning restriction (Appendix-F). Hospital/Clinic should not be allowed in Western Corridor and City Center Zone (Figure 4.8) due to it saturation and traffic congestion. At the same time, new schools are not recommended in the city center



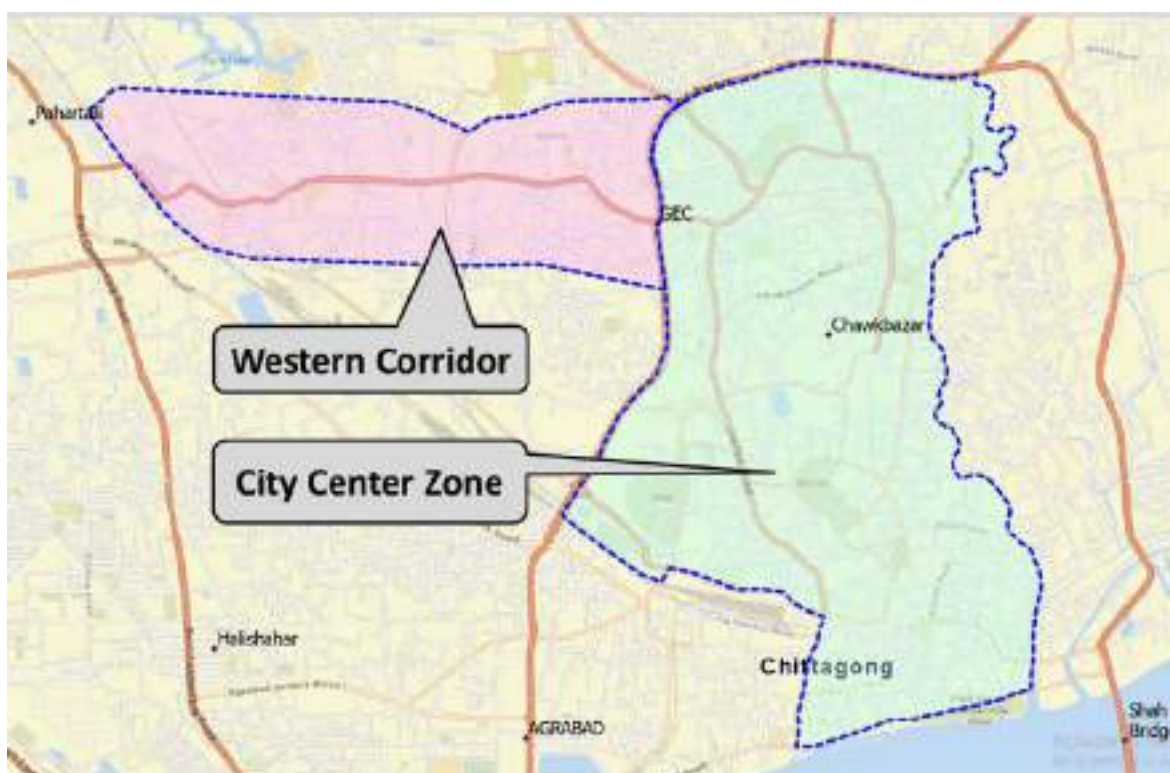


Figure 4-9: Building Use Restriction Zoning

POLICY LU-2: CDA as facilitator

For housing development, CDA shall act as a facilitator by enabling private and community-led initiatives through planning support, infrastructure provision, and policy guidance. It shall undertake development only for socially inclusive or benevolent housing projects, prioritizing public welfare over financial gain, and ensuring equitable and sustainable urban growth.

Chapter 9 (Section 9.4.7) has proposed several forms of GLD to adopt in CMMP area.

POLICY LU-3: Conservation of Nature

To preserve Chittagong's natural environment, strict regulations shall be enforced to conserve hills and water bodies, prevent encroachment and degradation, and promote ecological restoration.

Development activities must respect natural topography and waterways, ensuring sustainable land use that protects biodiversity, reduces disaster risks, and enhances environmental resilience across the metropolitan area.

POLICY LU-4: Polycentric Development

To promote balanced urban development, Chittagong Metropolitan Area shall adopt a polycentric growth strategy by strengthening secondary urban centers, improving connectivity, and decentralizing services and employment hubs, thereby reducing pressure on the city core, enhancing regional equity, and fostering sustainable, resilient, and inclusive urban expansion across multiple growth nodes. Chapter-9 (Section 9.4.2) has recommended several location for polycentric development.



POLICY LU-5: Betterment Fee

To ensure equitable urban development, a betterment fee can be imposed in the Chattogram Metropolitan Area on properties that gain value from public infrastructure projects, with collected funds reinvested in urban services, slum upgrading, and maintenance of critical infrastructure, ensuring inclusive growth and sustainable land value capture.

Possible options for betterment fees are:

- o **One-Time Betterment Levy:** A one-time fee charged to landowners whose property values increase due to public projects (e.g., new roads, drainage improvements, new hospital, parks etc).
- o **Impact Fees:** Charges imposed on new developments to cover the cost of additional infrastructure needed (e.g., water, sewer, roads).
- o **Incremental Contribution through FAR/TDR:** Developers who purchase additional Floor Area Ratio (FAR) or receive Transfer of Development Rights (TDR) may be required to pay a betterment fee based on the market value of the added development rights.
- o **Recurring Annual Charges:** A portion of the increased property tax (based on updated valuations) due to proximity to new infrastructure can be earmarked as betterment.

POLICY LU-6: Introducing Transfer of Development Rights:

To promote sustainable urban growth, Chattogram can implement a Transfer of Development Rights (TDR) policy enabling landowners in environmentally sensitive, heritage, conservation, water body or low-

density zones to transfer unused development potential to designated high-growth urban areas, thereby balancing conservation with densification and infrastructure efficiency.

A study should be conducted to determine the appropriate ratio between the 'sending zone' and the 'receiving zone'. For example, preserving a 100 sq.m pond could entitle the landowner to 100 sq.ft of additional FAR, which they may sell or transfer to another property for development. This ratio may vary between areas inside the city and those outside. Similarly, additional FAR can be offered in exchange for preserving hilly land. It is essential to maintain official records of all designated 'sending zones' to ensure that no double benefit is claimed or transferred. The study should also define the maximum allowable FAR that can be added to any building, in accordance with the prevailing Building Construction Rules.

POLICY LU-7: Regulate Land use Intensity

To ensure compatible and sustainable urban growth, land use development in Chattogram, it is recommended to follow a defined intensity-based hierarchy: Industry > Commercial > Institutional > Mixed-use > Residential > Green/Open Space. Figure 4-4 has illustrated it in order visually. Higher-intensity land uses shall not be permitted within zones designated for lower-intensity functions to prevent environmental stress and infrastructure overload. However, lower-intensity uses may be allowed within higher-intensity zones where appropriate. This policy will guide zoning decisions, promote orderly development, and help preserve ecological balance and livability across the city.



POLICY LU-8: Invite Block-Based Guided Land Development at Fateyabad

To ensure orderly urban growth and prevent unplanned and haphazard development in the released areas of Fateyabad, development shall be permitted primarily through block-based guided land development rather than individual plot-based approvals. Development proposals must be prepared and implemented as integrated schemes over consolidated land parcels, ensuring coordinated provision of infrastructure, open spaces, and community facilities.

- **Designation of Block Development Areas**

CDA shall delineate specific zones within Fateyabad where development approval will be granted only through block-based schemes.

- **Minimum Land Assembly Requirement**

Development proposals shall cover a minimum contiguous land area of 3 acres, assembled through direct ownership, land pooling, or joint development agreements.

- **Integrated Development Plan Approval**

Developers shall submit a comprehensive land development plan covering land use, internal roads, drainage, utilities, open spaces, and phasing, to be approved as a single package.

Policy LU-9: Developer-Initiated Planned Development under Public Oversight (for Fateyabad and other potential site)

The Master Plan encourages developer-initiated development as a mechanism to mobilize private-sector investment while ensuring public planning

objectives. CDA shall act as the planning authority and regulator, guiding development through clear standards, design controls, and approval conditions.

- **Guided Land Development Scheme (GLDS)**

CDA shall introduce a standard framework for developer-led proposals, specifying submission requirements, planning parameters, and approval procedures.

- **Incentive-Based Compliance**

Developers complying with block-based planning standards may be offered incentives such as expedited approvals, flexible land-use mix, or additional FAR within defined limits. At the same time, they pay a betterment fee for such benefit and infrastructure services provided by CDA

- **Phased Implementation and Performance Conditions**

Approval shall be linked to phased infrastructure delivery, with development rights conditional on compliance with approved plans and timelines.

Policy LU-10: Prevention of Fragmented and Infrastructure-Deficient Development

To avoid fragmented construction and long-term infrastructure deficits, individual plot-based development shall be restricted in designated areas until block-level infrastructure and access are ensured through approved development schemes.

- **Temporary Restriction on Individual Approvals**

Individual building plan approvals shall be limited in block-based development zones unless they form part of an approved consolidated scheme.



- **Mandatory Infrastructure Provision**
All block-based developments must provide internal roads, drainage, utility corridors, and designated open spaces as a precondition for building construction.

- **Monitoring and Enforcement Mechanism**

CDA shall establish a monitoring system to ensure that developments are implemented according to approved layouts and that deviations are strictly controlled.

POLICY LU-11: Action Plan led Implementation

Implementation of the Chattogram Master Plan shall be guided by clearly defined, spatially referenced and sector-integrated Action Plans. Area-based and sectoral action plans shall serve as the primary instruments for translating land use proposals into phased, coordinated, and enforceable development interventions, ensuring alignment between land use regulation, infrastructure investment, and environmental management.

Institutionalize Area-Based Action Plans as Implementation Zones

Designate approved area-based action plans (e.g., Agrabad, Anowara Township, Char Bakalia) as priority implementation zones within the master plan period. Link land use permissions, density incentives, and development approvals within these

zones to compliance with the respective action plan provisions.

Integrate Sectoral Actions with Spatial Land Use Priorities

Align transport, environment, flood, and drainage sectoral actions with land use proposals identified in area-based action plans. Prioritize public investment in infrastructure and services in locations identified through action plans to guide planned urban growth.

Establish a Phased and Accountable Implementation Framework

Break down action plan proposals into short-, medium-, and long-term implementation phases, linked with realistic financing and institutional capacity. Introduce periodic review mechanisms to monitor progress and allow adjustment of actions based on changing urban conditions.

Link Development Control and Investment Decisions to Action Plans

Use action plans as a basis for prioritizing development approvals, land subdivision, and major development proposals. Encourage public-private partnerships and developer-led initiatives that conform to action plan objectives and spatial frameworks.



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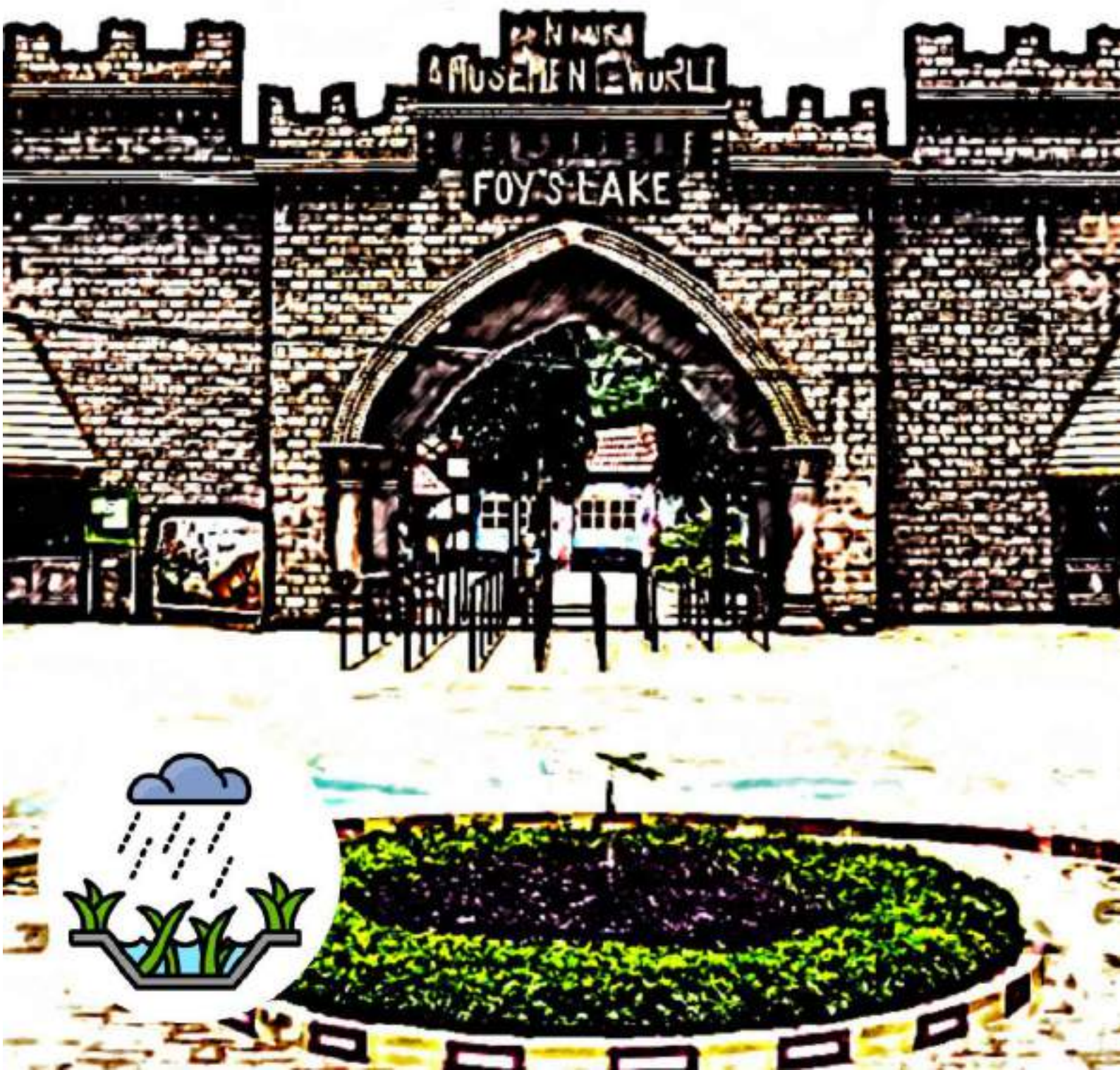
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Chapter Five

Drainage



Chapter Five: Drainage

5.1 Introduction

The natural drainage system in the Chattogram Metropolitan Area consists of an intricate network of rivers, canals, and low-lying water retention areas. The primary drainage channels include the Karnaphuli River and its tributaries, supported by an array of secondary and tertiary canals such as the Chaktai, Rajakhali, and Moheshkhal canals. Historically, these natural waterways effectively managed rainwater runoff and floodwaters, particularly during monsoon seasons. However, rapid urbanization has severely compromised this system. Over 70% of the city's natural water bodies have been filled in for urban development over the last four decades, severely reducing the capacity to manage stormwater. Hill cutting and deforestation in upstream areas also contribute to sedimentation in canals, further reducing their efficiency. Encroachments and waste dumping block the flow of water, leading to recurrent waterlogging in urban areas. Approximately 8.42% of the city's area is affected by waterlogging¹, with some zones at very high risk due to inadequate drainage capacity and rapid urbanization. Poorly maintained secondary and tertiary drainage systems exacerbate the problem, as they fail to channel rainwater effectively to primary canals. Despite substantial investments, including a BDT 11,344 crore megaproject to mitigate waterlogging, progress has been limited due to poor coordination

among agencies like the Chattogram Development Authority (CDA) and the City Corporation. The ineffective execution of drainage master plans and the absence of integrated urban water management strategies have left critical areas vulnerable, with significant economic and social impacts on residents and businesses. Preservation and restoration of these natural drainage channels are critical for mitigating urban flooding and sustaining the ecological balance of Chattogram. Addressing these challenges requires enforcing land use regulations, rehabilitating drainage networks, and restoring natural water bodies to enhance the city's resilience to waterlogging.

As a fast-growing metropolitan city, Chattogram has not developed the drainage system in a planned way. Consequently, blocking of drainage and water logging occur frequently within the core city area (Figure 5-1). Due to rapid urbanization with unplanned construction, most of the storm water drainage have been encroached, filled up, diverted and caused obstruction to the smooth flow of water to the Outfall Rivers, creating severe water logging in the city every year. On top of that, erratic weather patterns, rising sea levels, onrush of water from hills, and poor drainage system aggravate the problem.

CWASA has prepared a drainage master plan in 2017 that has identified many issues in their drainage area boundary. By combining this study with data collected through field visits a simulation model is prepared. Storm drainage planning is based on physical and hydrological conditions rather than administrative boundaries. Accordingly, the CDA area has been divided into **17 drainage** catchments, as detailed in

¹ Islam, M..R.; Raja, D.R. Waterlogging Risk Assessment: An Undervalued Disaster Risk in Coastal Urban Community of Chattogram, Bangladesh. *Earth* 2021, 2, 151–173. <https://doi.org/10.3390/earth2010010>



The map displays the Sacramento-San Joaquin River Delta, divided into 17 numbered regions. Waterlogged areas are indicated by hatched patterns and labeled with letters A through U. The map includes a coordinate grid with latitude and longitude markings. A legend in the bottom left corner identifies the hatched pattern as 'Waterlogged Area'. A north arrow and a scale bar (0 to 30 miles) are located in the bottom right corner. An inset map in the bottom left corner shows the location of the Delta within California.

5-2

5.2 Challenges

Obstruction of Drainage Systems: The accumulation of solid waste within Chittagong's drainage channels is one of the most critical factors contributing to the poor state of the city's drainage system. Domestic waste, industrial waste, and sewage are frequently disposed of into the channels due to an inefficient waste management system and the absence of a proper sewerage network. Plastic bags, combined with silt from the surrounding hills, create dense blockages that hinder water flow. Many drainage channels essentially function as open sewers during dry seasons, posing serious public health risks through waterborne diseases and polluted air.

Illegal construction and encroachment over khals have significantly reduced their width and flow capacity. Retaining walls, culverts, bridges, and utility lines are often constructed without adequate consideration for hydraulic requirements, causing blockages and sediment build-up. Properties adjacent to khals frequently extend into the channels, further reducing their effective width. These obstructions exacerbate flooding risks, especially during heavy rainfall. The lack of enforcement of land-use regulations and the unchecked expansion of private properties worsens this issue.

Rapid urbanization, driven by population growth and the expansion of residential and commercial areas, has placed immense pressure on Chittagong's drainage system. Natural retention basins and flood plains have been converted into impervious surfaces without adequate drainage provisions. Additionally, unauthorized

developments in low-lying areas disrupt natural water flow paths, causing waterlogging and localized flooding. While the Chittagong Development Authority (CDA) has prepared a Detailed Area Plan (DAP), its enforcement remains weak.

According to the CWASAs Drainage Master Plan 2017, 42% of the flow carrying capacity was lost due to siltation, encroachments, improper alignment of service lines etc². 19% of culverts over khals are restricting the flows causing overflows. In the case of roadside drains, 90% of existing roadside drains need immediate cleaning. Moreover 32% of existing roadside drains either broken or non-functional. 55% additional coverage is required for CWASA area.

² CWASAs Drainage Master Plan 2017



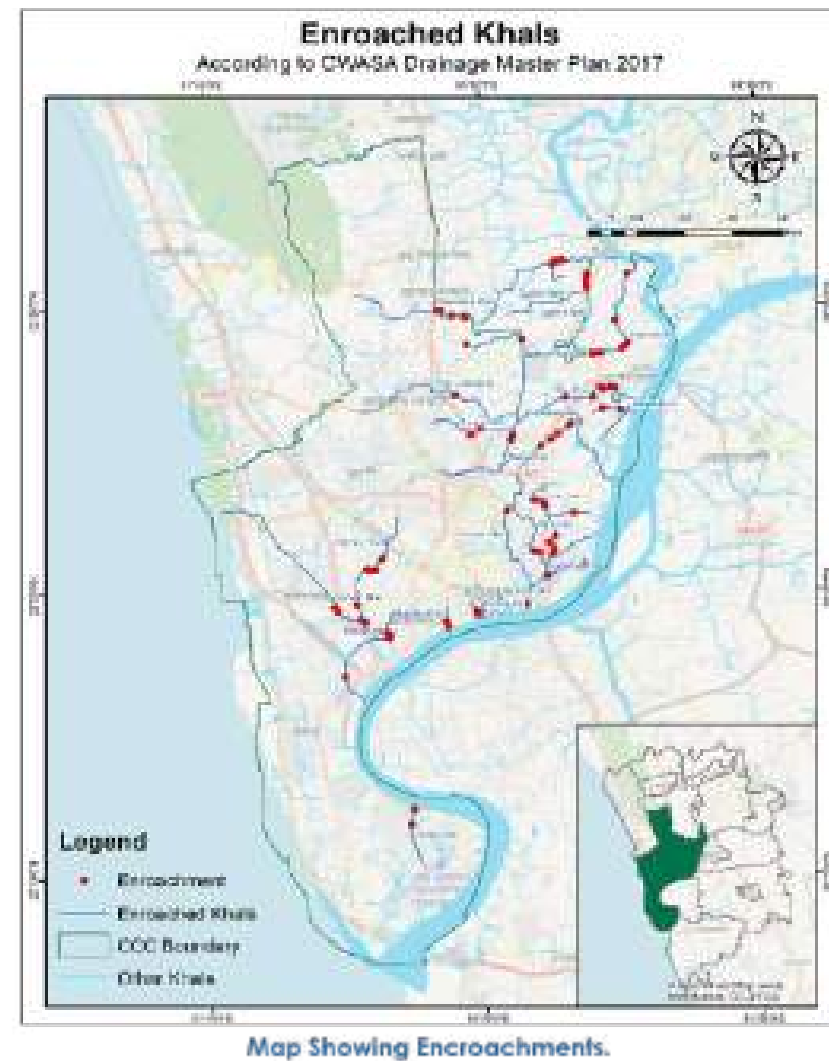
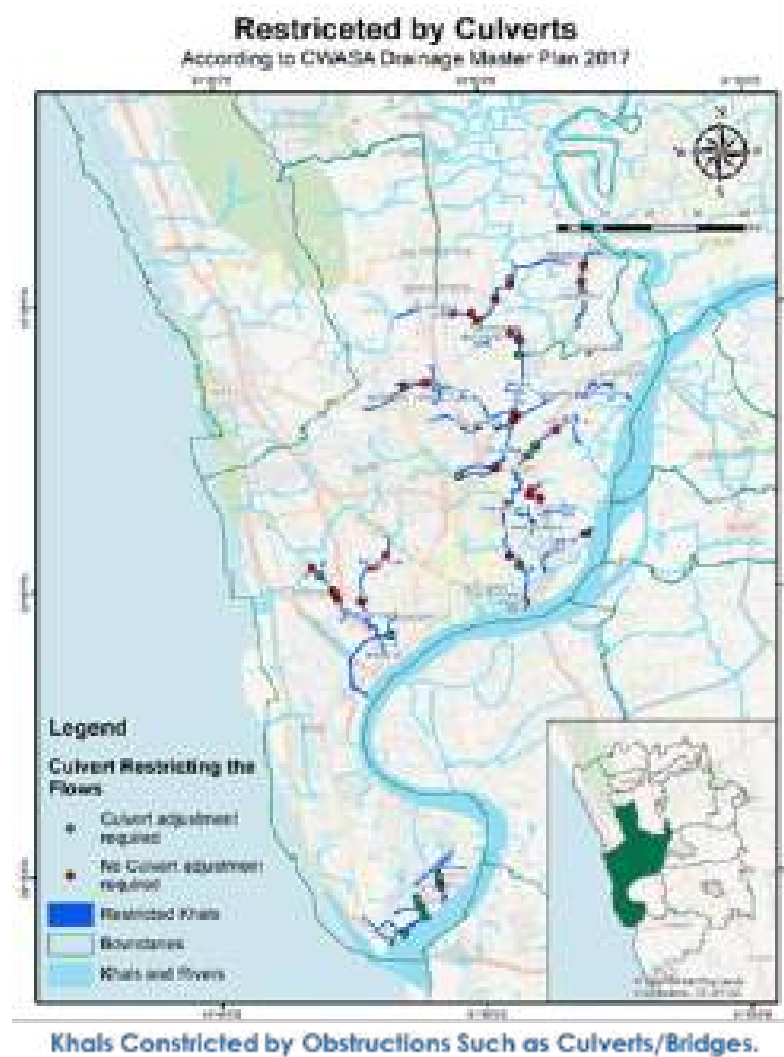


Figure 5-2: Khal Encroachment in CMA.

Siltation of Channels and Khals:

Excessive siltation, exacerbated by uncontrolled hill-cutting and urban development, severely reduces the capacity of Chittagong's khals to handle stormwater. Sediments carried by runoff from eroded hills are deposited in channels as the water velocity decreases upon reaching flat lowlands. This gradual accumulation of silt hardens over time, making it resistant to natural clearing, even during high flows. The limited capacity of silt traps, coupled with inadequate access for silt removal, renders these measures ineffective. Consequently, reduced channel capacity causes frequent overflows during rainfall, leading to urban flooding.

Hill-cutting, a widespread practice in Chittagong, contributes to high sediment loads in drainage channels. The lack of vegetation on these eroded slopes further accelerates soil erosion, compounding the problem of siltation. Deforestation also reduces the natural infiltration of rainwater, increasing surface runoff and overwhelming drainage infrastructure.

Lack of Tidal Regulators and Flood Control Mechanisms:

Many khals in Chittagong discharge directly into rivers or the Bay of Bengal without any control gates, making them vulnerable to tidal surges and cyclonic storms. During high tides, saline water often intrudes into the khals, further reducing their capacity to handle stormwater and causing localized flooding. This issue becomes critical during simultaneous high tides and heavy rainfall, as stormwater cannot discharge into rivers. The absence of tidal regulators also increases the risk of salinity intrusion, negatively impacting agricultural lands and water resources. Installing control gates at primary khal outlets, along with complementary flood control measures like embankments and storage ponds, is essential to mitigate these risks.

According to CWASA's Drainage Master Plan, 87% of existing silt traps are in dysfunctional mode and there is a lack of adequate flood protection along the Karnaphuli River.



Existing Silt Traps & Tidal Regulators

According to CWASA Drainage Master Plan 2017

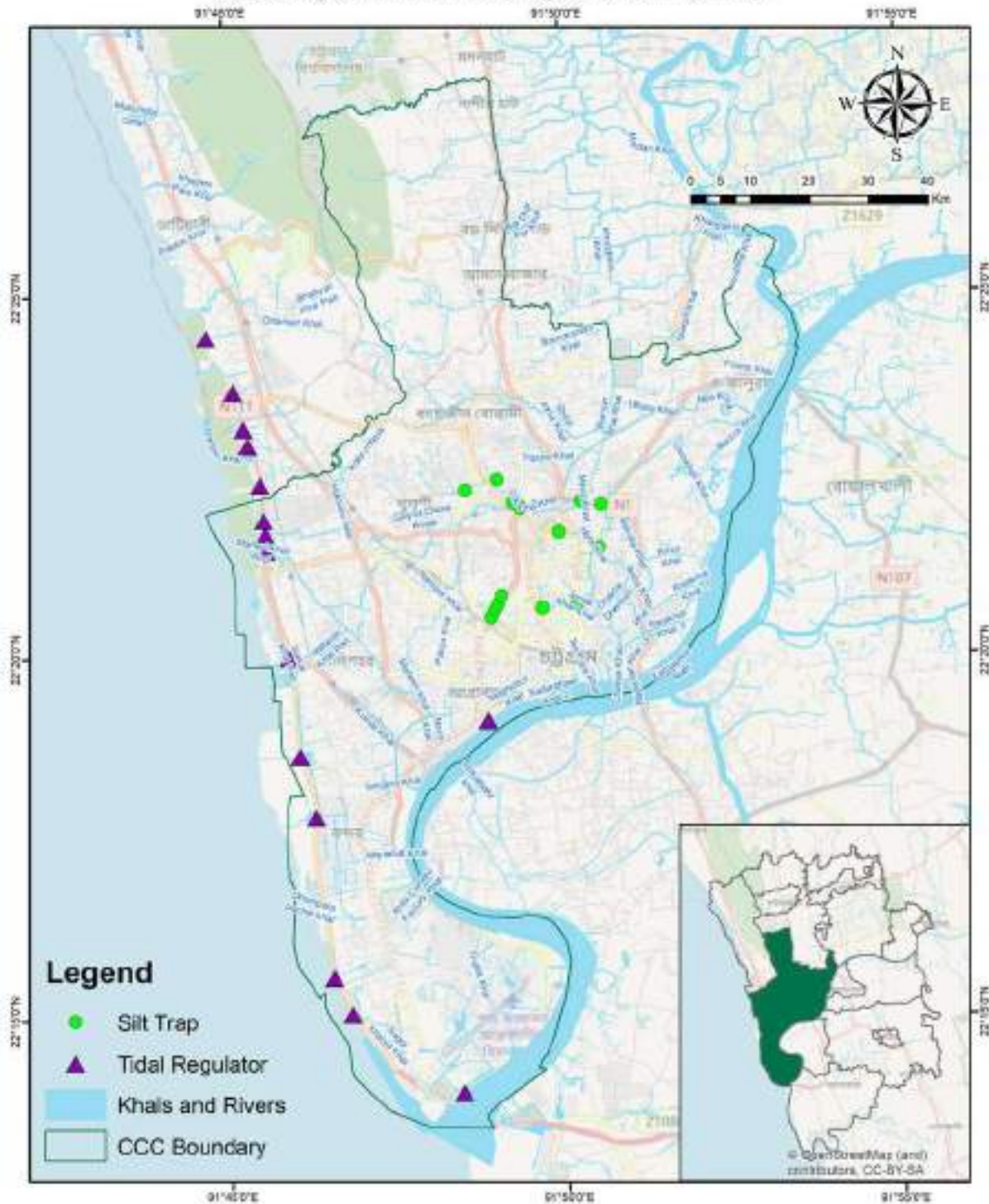


Figure 5-3: Existing Silt Traps & Tidal Regulators in CMA.



Inadequate Current Drainage System:

The primary khals, which are mostly natural channels, are often obstructed by encroachments, siltation, and poor planning, especially in areas where urban development extends to the channel's edge, restricting access for maintenance. Additionally, the secondary khals, which carry stormwater from tertiary systems to primary channels, suffer from similar issues such as poor alignment, insufficient cross-section, and blockages due to waste and encroachment. Many of these secondary channels were not designed to handle the increased flow from growing urban areas, leading to insufficient drainage capacity. Furthermore, tidal influences from the Halda and Karnaphuli rivers, which have fluctuating water levels, complicate drainage efforts, especially during peak monsoon seasons. The lack of proper planning and maintenance across both natural and man-made channels has resulted in an inefficient stormwater management system that struggles to cope with the city's rapid development and frequent flooding.

From the modeling exercise it has been found that some of prominent khals overflow during monsoon due to heavy rainfall accompanied by tidal effect. Khals namely Guptakhal, Maheshkhali Khal, Rampur khal, Chaktai khal, Chaktai diversion, Bamonshahi khal, Shitol jharna khal, Uttara khal, Mirja khal, Krishna khal and Noa khal. In most of the cases it has been found that the khals cross sections are not adequate to accommodate the runoff generated during heavy rainfall.

Inadequate Maintenance, Resource Constraints and Lack of Co-ordination:

The lack of regular operation and maintenance (O&M) severely affects the functionality of Chittagong's

drainage system. Channels remain clogged with debris, silt, and garbage for extended periods, drastically reducing their efficiency. Despite efforts by the Chittagong City Corporation (CCC) to clean and maintain the system, resource and budget limitations prevent comprehensive coverage. Existing mechanical equipment is insufficient, and cleaning processes remain largely manual and inefficient. Regular desilting, particularly of critical infrastructure like the Sheikh Mujieb Road box culvert, is urgently needed. Expanding the budget for maintenance and modernizing cleaning techniques with advanced equipment can address these systemic shortcomings.

The CCC's drainage management efforts are hampered by significant budgetary limitations. Unlike water supply systems, drainage facilities do not generate revenue, leaving O&M dependent on annual allocations, which are often inadequate. As a result, extensive cleaning, infrastructure upgrades, and other essential interventions are delayed or neglected. Introducing innovative financing models, increasing government support, and exploring public-private partnerships (PPPs) can help address the financial challenges in maintaining the drainage system.

Multiple agencies, including CCC and CWASA, are responsible for managing drainage infrastructure in Chittagong. However, poor coordination between these entities leads to fragmented efforts and inefficiencies. A centralized drainage management authority or a formal inter-agency coordination framework is necessary to streamline operations and ensure a holistic approach to drainage management.

The lack of a centralized sewerage system in Chittagong results in widespread disposal of domestic and



industrial wastewater into the drainage network. Septic tank sludge and other liquid waste are frequently discharged into nearby khals, further degrading water quality and reducing the system's capacity to handle stormwater. Developing a comprehensive sewerage system, along with proper treatment facilities, is critical to addressing this issue.

Public Awareness and Waste Disposal Practices: A lack of public awareness about proper waste disposal exacerbates the drainage issues in Chittagong. Many residents dispose of domestic waste directly into roadside channels and khals, oblivious to the long-term consequences. Similarly, construction materials stored near drainage inlets often clog the system. Public awareness campaigns, coupled with stricter penalties for improper waste disposal, are essential to changing this behavior.

Absence of a Sewerage System: The lack of a centralized sewerage system in Chittagong results in widespread disposal of domestic and industrial wastewater into the drainage network. Septic tank sludge and other liquid waste are frequently discharged into nearby khals, further degrading water quality and reducing the system's capacity to handle stormwater. Developing a comprehensive sewerage system, along with proper treatment facilities, is critical to addressing this issue.

5.3 Recommended Policy and Implementation Strategies

To improve the drainage situation in Chattogram, a set of comprehensive policy tagged with multi-pronged strategy should be adopted:

Policy DRN 1: Restore and Expand Natural Drainage Systems. Clear

blockages in primary and secondary canals like Chaktai and Rajakhali and excavate new canals as proposed in the drainage master plan. Reclaim and protect wetlands and low-lying areas to enhance rainwater retention capacity.

- **DRN-1.1:** Conduct a comprehensive hydrological survey to map all natural canals, khals, wetlands, and low-lying basins in the metropolitan area.
- **DRN-1.2:** Undertake a phased canal restoration program focusing first on severely silted canals like Chaktai, Rajakhali, and Mahesh Khal.
- **DRN-1.3:** Identify and reclaim illegally encroached wetlands and low-lying areas to re-establish natural water retention zones.
- **DRN-1.4:** Establish permanent green buffer zones along all major canals to prevent future encroachment and protect natural flow paths.
- **DRN-1.5:** Integrate upstream hill conservation measures to reduce sedimentation and improve downstream drainage capacity.

Policy DRN 2: Upgrade and Maintain Drainage Infrastructure. Conduct regular cleaning and desilting of secondary and tertiary drains to remove sedimentation caused by hill cutting. Upgrade aging drainage systems to accommodate increased runoff due to urbanization and climate variability. Provide tidal gates with adequate pumps. Construct and maintain silt traps and screens to remove solid waste.

- **DRN-2.1:** Implement routine desilting and mechanical cleaning programs for secondary and tertiary drains, especially before monsoon.



- **DRN-2.2:** Install modern tidal gates and pumping stations in coastal and tide-affected areas such as Patenga and EPZ surroundings.
- **DRN-2.3:** Construct silt traps, trash racks, and screens at major inlets to prevent solid waste from entering canals.
- **DRN-2.4:** Ensure drainage works adhere to standard engineering specifications and are integrated with adjacent road and utility projects.

Policy DRN 3: Integrate Urban Planning and Drainage Management. Prevent encroachments on natural drainage paths and restrict construction on floodplains and wetlands. Implement nature-based green infrastructure solutions, such as constructed wetland permeable pavements and rain gardens, to reduce surface runoff and recharge groundwater.

- **DRN-3.1:** Update zoning maps to designate floodplains, wetlands, and drainage corridors as protected zones with strict development controls.
- **DRN-3.2:** Require all new large developments to submit stormwater management plans, including on-site retention and infiltration systems.
- **DRN-3.3:** Promote nature-based solutions such as bioswales, rain gardens, retention ponds, and permeable pavements in residential and commercial projects.
- **DRN-3.4:** Incorporate drainage considerations into building permit approval and EIA processes to ensure compliance.
- **DRN-3.5:** Develop and introduce low-impact development (LID)

guidelines to reduce runoff in new growth areas.

Policy DRN 4: Strengthen Institutional Coordination.

Ensure better coordination between the CDA, CCC, WASA, and other agencies managing drainage projects. Align all drainage-related projects under a single, updated master plan.

- **DRN-4.1:** Establish a unified Drainage Coordination Committee (DCC) comprising CDA, CCC, WASA, BWDB, and Deputy Commissioner's office.
- **DRN-4.2:** Adopt the Drainage Master Plan (part of CMMP) and keep updating it as the reference framework for all drainage-related projects.
- **DRN-4.3:** Conduct quarterly multi-agency review meetings to track progress, resolve bottlenecks, and avoid overlap or duplication.

Policy DRN 5: Engage Communities and Promote Public Awareness.

Educate residents on the importance of maintaining local drainage systems and preventing waste dumping along with proper waste collection facilities. Encourage community involvement in minor drainage repairs and cleaning efforts.

- **DRN-5.1:** Launch public awareness campaigns emphasizing the impact of waste dumping and encroachment on waterlogging.
- **DRN-5.2:** Provide waste bins, collection points, and regular solid waste pickup to reduce drain blockage.
- **DRN-5.3:** Conduct school and ward-level training programs on



household-level stormwater management practices.

resilience against flooding and drainage-related challenges.

Policy DRN 6: Adopt Technological

Solutions. Use GIS and remote sensing tools to monitor drainage efficiency and identify problem areas. Implement Internet of Things (IoT) based drainage sensors to detect blockages and prevent overflows.

- **DRN-6.1:** Develop a GIS-based drainage information system for real-time monitoring and maintenance tracking. And allow other related agency to have access to synchronize planning and implementation.
- **DRN-6.2:** Use drones and remote sensing (at least annually) to detect illegal encroachments, siltation, and blocked canals.

Policy DRN 7: Policy and Funding.

Ensure sufficient funding for maintenance and new drainage infrastructure projects. Impose penalties for violations such as illegal hill cutting, encroachments, and waste dumping.

- **DRN-7.1:** Allocate dedicated annual budgets for drainage maintenance and small-scale improvement works.
- **DRN-7.2:** Introduce financial penalties for illegal hill cutting, wetland filling, and obstruction of drainage channels.
- **DRN-7.3:** Mobilize funds through donor agencies (ADB, World Bank) for large-scale drainage and waterlogging mitigation projects.

By integrating these strategies into the city's urban management framework, Chattogram can significantly mitigate waterlogging and enhance its



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Chapter Six

Environment



6 Chapter Six: Environment

6.1 Background

Chattogram plays a pivotal role in the nation's economic growth. However, rapid urbanization, industrial expansion, and population pressure have significantly strained the city's natural environment. The environmental challenges facing Chattogram include degradation of water bodies, unplanned hill cutting, air and water pollution, solid waste mismanagement, traffic-related emissions, and increasing vulnerability to climate change-induced disasters such as flooding and landslides. The city's ecological assets-such as hills, rivers, canals, wetlands, and coastal areas-are under serious threat from encroachment, overuse, and poor governance.

A sustainable future for Chattogram depends on proactive and integrated environmental management. Key focus areas include improvement of drainage and waste management systems, pollution control, climate adaptation, and enforcement of environmental regulations. Effective implementation will require coordinated efforts from government agencies, private sector stakeholders, and the local community. The overarching goal is to build a resilient, livable, and environmentally sustainable Chattogram through informed planning, regulation, and investment in green infrastructure.

6.2 Air Pollution

Chattogram faces severe air pollution from industrial activities, vehicular emissions, and construction dust, with PM_{2.5} levels often exceeding WHO guidelines. For example, recorded PM_{2.5} levels of 25.9 µg/m³ are 5.2 times above the

safe limit¹. Key contributors include fossil fuel use, unregulated industries, and brick kiln emissions, worsening during dry months. This pollution causes respiratory and cardiovascular diseases, reducing life expectancy. To address these challenges, require stricter industrial regulations, cleaner technologies, improved public transportation, and better urban planning to protect health and the environment.

Industrial Emissions and Air Quality Challenges in Chattogram:

Chattogram, home to heavy industries like ship-breaking yards, steel rerolling mills, cement factories, and chemical plants, faces severe air pollution. These industries emit significant amounts of PM_{2.5}, PM₁₀, SO₂, NO₂, VOCs, and CO. Ship-breaking releases heavy metals and toxic fumes, while SO₂ from coal-fired power plants, brick kilns, and smelting contributes to acid rain and respiratory issues. CO emissions from industrial combustion further degrade air quality, posing cardiovascular and respiratory health risks. Targeted measures are crucial for effective air quality management in the region.

Air Pollution from Mobile Sources:

Chattogram's rapid urbanization and economic growth have led to increased vehicle ownership, including older, poorly maintained trucks and buses using low-grade fuels. These vehicles emit significant levels of CO, hydrocarbons (HCs), and NO₂. Traffic congestion exacerbates emissions by increasing idling times. In 2022, air quality data from the Department of Environment (DoE) revealed alarming PM₁₀ (173.1 µg/m³) and PM_{2.5} (94.6 µg/m³) levels in Agrabad, and NO₂ concentrations of 23.9 µg/m³ in Khulshi, highlighting

¹<https://www.iqair.com/bangladesh/chittagong>



the urgent need to address vehicular emissions.

Area Source Pollution in Chattogram:

Rapid urbanization and infrastructure projects, such as road construction and building demolition, release large amounts of PM10 and PM2.5, worsening air quality, especially during the dry season. Open burning of municipal and industrial waste in peri-urban areas emits hazardous pollutants like dioxins, furans, and fine particulate matter, further degrading air quality and posing severe health risks. Robust strategies are needed to mitigate pollution, protect public health, and ensure compliance with environmental standards.



Figure 6-1: Air Sensitive Location

6.3 Water Pollution

Chattogram faces severe water pollution due to unregulated industrial discharge, untreated sewage, and encroachments on

natural water bodies. The city generates 400 million liters of sewage daily, mostly untreated, flowing into rivers like Karnaphuli and Halda, and the Bay of Bengal. Only 7% of 539 cubic meters of daily fecal sludge is managed, threatening human health and marine ecosystems. Key canals like Chaktai and Rajakhali are heavily polluted by industrial and household waste. Chattogram City Corporation lacks adequate sanitation systems, with 47% of non-slum residents using septic tanks (often discharging into drains) and 23.5% directly disposing of waste into sewers. Coastal seawater in Bhatiary Union is severely polluted by ship scrapping, with turbidity (2624 NTU), BOD (11.30 mg/L), and Pb (0.07018 mg/L) exceeding permissible limits, endangering biodiversity and environmental health². Poor drainage, encroachments, and saltwater intrusion worsen the crisis, necessitating urgent interventions like centralized wastewater treatment and pollution regulation enforcement.

Surface Runoff

Rapid urbanization has increased impervious surfaces, preventing rainwater absorption and raising surface runoff. This runoff carries pollutants like oils, heavy metals, chemicals, and plastics into water bodies, exacerbating water pollution and harming aquatic ecosystems. It also overwhelms drainage systems, causing flooding and spreading contaminants.

Wastewater Drainage System

Chattogram's poorly managed drainage system lacks proper sewage treatment. Untreated waste

²Water Pollution and Its Adverse Effect on Biodiversity in Ship Breaking Area of Bhatiary, Chattogram



from sanitary, kitchen, and washing activities flows directly into rivers, canals, and coastal waters, degrading water quality and increasing waterborne disease risks. The absence of treatment facilities makes it difficult to meet safe drinking water standards.

Solid Waste Dumping

Poor solid waste management results in improper disposal of residential and industrial waste into open spaces, water bodies, and drainage systems. This clog drains, pollutes water, and depletes dissolved oxygen, harming aquatic life. Non-biodegradable waste like plastics breaks into microplastics, entering the food chain and threatening marine ecosystems and human health. Clogged drainage systems also cause flooding, spreading contaminants further.

6.4 Noise Pollution

Chattogram faces severe noise pollution, primarily driven by rapid urbanization, traffic congestion, and unregulated construction activities. A recent study revealed that the average noise levels in the city reach 75 decibels (dBA), surpassing the Department of Environment (DoE) and World Health Organization (WHO) recommended limits of 55 dBA for daytime and 45 dBA for nighttime in residential areas. Specific locations, such as those near major urban roads and industrial zones, report even higher levels, ranging from 80 to 90 dBA. Approximately 12 wards in the central and southern parts of the city experience noise levels that are classified as "unacceptable" due to proximity to heavy traffic and industrial activities³.

³ Masum, et al, (2021), Spatiotemporal monitoring and assessment of noise pollution

The excessive noise impacts public health, contributing to hearing loss, stress, sleep disturbances, and cardiovascular diseases. It also affects productivity and disrupts community life. Addressing this issue requires comprehensive urban planning measures, strict enforcement of noise regulations, and the implementation of noise barriers and green buffers to mitigate the problem.

Traffic Noise: The continuous movement of heavy vehicles such as trucks and buses, coupled with an increasing number of motorcycles and auto-rickshaws, creates persistent noise pollution. Poor traffic management and disregard for traffic regulations exacerbate this issue, making residential and sensitive areas vulnerable to high noise level. Locations of sensitive areas are shown in Figure 6-2.



Figure 6-2: Noise Sensitive Location

in an urban setting, Vol.5, Environmental Challenges



6.5 Recommended Policy Guidelines and Strategies for Protecting Environmental

Policy ENV-1: Protect and Restore Natural Ecosystems (Hills, Rivers, Canals, large water bodies)

- **ENV-1.1:** Demarcate and legally protect all hills, rivers, canals, and prominent water bodies as ecological conservation zones.
- **ENV-1.2:** Implement large-scale restoration-hill afforestation, canal re-excavation, and water body recovery to revive natural drainage and biodiversity.
- **ENV-1.3:** Enforce strict penalties for hill cutting, water body encroachment, and illegal structures along riverbanks and canals.

Policy ENV-2: Improve Air Quality and Reduce Urban Emissions

- **ENV-2.1:** Regulate emissions from vehicles, brick kilns, steel mills, shipyards, and industries through continuous monitoring and compliance with DoE standards.
- **ENV-2.2:** Promote cleaner fuels, electric public transport, non-motorized transport, and green buffers along key road corridors.
- **ENV-2.3:** Establish real-time air quality monitoring stations across the metropolitan area and publish daily AQI for public awareness.

Policy ENV-3: Strengthen Integrated Waste Management and Pollution Control

- **ENV-3.1:** Develop modern waste collection, recycling, composting, and safe landfill facilities to reduce environmental contamination.

- **ENV-3.2:** Enforce mandatory waste segregation at source for residential, commercial, and industrial areas.
- **ENV-3.3:** Monitor effluent discharge from factories, shipyards, and workshops and require installation of ETP/STP units.

Policy ENV-4: Control Noise Pollution in Urban and Industrial Areas

- **ENV-4.1:** Enforce national noise standards in residential, commercial, industrial, and silence zones (schools, hospitals, religious institutions) through regular monitoring and penalties.
- **ENV-4.2:** Restrict high-noise activities such as construction, heavy vehicle movement, and industrial operations during nighttime; require use of sound barriers and low-noise equipment.
- **ENV-4.3:** Establish digital noise monitoring stations in high-risk areas such as GEC Circle, Agrabad, CEPZ, and transport hubs to identify hotspots and inform enforcement actions.
- **ENV-4.4:** Conduct awareness campaigns on noise reduction, particularly targeting transport operators, construction firms, and commercial establishments.

Policy ENV-5: Enhance Climate Resilience through Green Infrastructure

- **ENV-5.1:** Adopt nature-based solutions such as rain gardens, retention ponds, urban forests, and green roofs to absorb runoff and reduce heat stress.
- **ENV-5.2:** Strengthen coastal resilience by restoring mangroves in coastal areas and establishing green belts.

Policy **ENV-6:** Strengthen
Environmental Governance, Data
Systems, and Community
Engagement

- **ENV-6.1:** Develop a city-wide environmental database using GIS, remote sensing, and real-time sensors to support evidence-based policymaking.
- **ENV-6.2:** Conduct regular community awareness programs on waste reduction, water conservation, pollution control, and urban greenery initiatives.

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Chapter Seven

Climate Change, Disaster and Resilience



Chapter Seven: Climate Change, Disaster and Resilience

Chattogram, a major coastal city in Bangladesh, is highly vulnerable to climate change impacts such as sea level rise, cyclones, and flooding. Projections indicate that a 1 meter rise in sea level by 2100 could inundate up to 20% of the city and displace hundreds of thousands. Its low lying coastal geography makes it especially prone to storm surges and frequent flooding. In recent years, heavy monsoon rains combined with inadequate drainage have led to widespread waterlogging, affecting 30–40% of city streets during the rainy season.

Cyclones most notably Cyclone Mahasen in 2013, have already had devastating impacts, with thousands displaced and significant damage to homes, infrastructure, and livelihoods. In particular, the coastal belt is prone to storm surges and tidal flooding, which compounds the damage caused by heavy rainfall. The 1991 cyclone, which killed over 138,000 people in Chattogram and neighboring areas, remains a stark reminder of the region's vulnerability. Moreover, rapid urbanization and environmental degradation—such as deforestation and unregulated construction along the coastline—have exacerbated the city's exposure to climate related risks.

Chattogram is working to build climate resilience through improved disaster management, infrastructure upgrades, and the Bangladesh Climate Change Strategy and Action Plan, which emphasizes coastal protection, water management, and early warning systems. However, major challenges persist, including the need for integrated planning, stronger

interagency coordination, and greater investment in resilient infrastructure. Strengthening institutions, raising public awareness, and promoting community based adaptation are key to securing the city's future.

7.1 Tropical Cyclone Risk Assessment

The Tropical Cyclone Risk Assessment focuses on the growing risks posed by tropical cyclones in Chattogram, one of the most cyclone prone regions globally, due to its location along the Bay of Bengal. Between 1970 and 2023, the region experienced 263 major cyclones, resulting in 1.9 million deaths and \$26 billion in average annual damages. Chattogram's vulnerability is amplified by dense populations, low elevation, and proximity to cyclone paths.

Climate change is increasing the frequency and severity of tropical cyclones, with rising sea levels and unpredictable weather patterns worsening the risks. Storm surges, high winds, and heavy rainfall frequently devastate communities, overwhelming infrastructure and disaster management systems.

This study uses a geospatial risk assessment framework incorporating the Analytical Hierarchy Process (AHP) to analyze 14 criteria, such as storm surge height, cyclone frequency, and proximity to shelters. The findings categorize Chattogram into five risk levels, with 61% facing very low risk, 27% moderate hazard levels, and 4% identified as very high hazard zones. Over 70% of the area has high to very high vulnerability, emphasizing the need for enhanced mitigation strategies.





7.1.1 Frequent and Severe Storm Surge

Storm surges are one of the most catastrophic impacts of tropical cyclones, especially in low lying coastal areas of Chattogram. Historical data indicates that surges of up to 6.5 meters have inundated vast areas, destroying infrastructure, agricultural lands, and homes. The proximity of many communities to the coastline exacerbates the issue, as does the lack of adequate physical barriers like embankments. These surges are particularly devastating because they often result in rapid flooding, leaving little time for evacuation and causing long term damage to livelihoods and local ecosystems.

7.1.2 Inadequate Cyclone Shelters

The lack of sufficient cyclone shelters in many parts of Chattogram remains a critical issue. Existing shelters are often overcrowded, poorly maintained, or inaccessible to vulnerable populations such as the elderly, disabled, and women with children. Additionally, shelters are unevenly distributed, with remote and coastal areas particularly underserved. This limits the ability of these communities to seek refuge during cyclones, increasing casualties and losses.

7.1.3 Limited Early Warning Systems

While Bangladesh has made significant progress in cyclone early warning systems, many communities, especially in remote areas, still receive delayed or insufficient warnings. This limits their ability to evacuate or prepare adequately. The issue is compounded by a lack of awareness and trust in warning systems, as well as limited access to communication channels like radios or mobile phones. These gaps leave many communities

unaware of the impending danger until it is too late.

7.1.4 High Population Density in Vulnerable Areas

High population density in lowlying and coastal areas increases exposure to cyclone risks. Settlements in these regions are often informal, with inadequate infrastructure and limited access to evacuation routes. This not only amplifies the immediate impacts of cyclones but also complicates recovery efforts. Overcrowded conditions make it difficult to provide emergency services and relief, further exacerbating the challenges faced by affected populations.

7.1.5 Insufficient Coastal Vegetation

The loss of coastal vegetation, such as mangroves, has significantly increased the vulnerability of Chattogram's coastline to cyclones. Coastal forestation like mangroves act as natural barriers, reducing the impact of storm surges and high winds. However, due to deforestation, landuse changes, and development activities, many coastal areas lack this critical layer of protection. This has led to increased erosion, higher inundation levels, and greater damage to coastal infrastructure and ecosystems.

7.1.6 Uneven Distribution of Mitigation Resources

Mitigation resources, such as health facilities, cyclone shelters, and emergency response systems, are unevenly distributed across Chattogram. Coastal and rural areas often lack adequate access to these critical resources, leaving communities underprepared and vulnerable during cyclones. This disparity hinders the region's ability to respond effectively to disasters and prolongs recovery times for underserved areas.

7.2 Macro and Micro Climate Change

Chattogram, a low lying coastal city in Bangladesh, is highly vulnerable to the impacts of climate change. Rising sea levels, increased frequency of extreme weather events like cyclones and floods, and salinity intrusion threaten its infrastructure, ecosystems, and livelihoods. With large portions of the city located less than 5 meters above sea level, coastal communities face displacement, and vital ecosystems such as mangroves and wetlands are at risk. Additionally, the city's growing population and reliance on freshwater resources make it increasingly difficult to secure safe drinking water. The socioeconomic consequences of climate change, including poverty, unemployment, and social unrest, particularly affect vulnerable populations.¹

7.2.1 Urban Heat Island¹

The Urban Heat Island (UHI) effect in Chattogram has become a growing concern due to its rapid urban expansion and intensifying temperature disparities between urban and surrounding rural areas. Between 2001 and 2021, the city's land surface temperature (LST) increased significantly, with urban areas showing daytime temperatures 3–4°C higher than adjacent regions, and reaching up to 4°C during the 2016–2021 period. The problem is even more distinct at night, where the absence of solar radiation and weakened atmospheric turbulence trap heat within urban structures, leading to nighttime temperature differences as high as 5.5°C during winter. Materials like concrete and

asphalt, prevalent in urban areas, absorb and retain heat during the day, gradually releasing it at night, further intensifying the UHI effect. This phenomenon poses critical issues, including heightened discomfort for residents, increased energy demands for cooling, and deteriorating air quality due to pollutants being trapped under stable atmospheric conditions. The combination of rising temperatures and poor air quality heightens health risks such as respiratory issues, while also straining energy resources.

7.2.2 Fluctuation in Rainfall Pattern¹

The rainfall pattern in Chattogram is expected to undergo significant changes due to climate change, with notable uncertainties across different scenarios and time periods. Projections for the near future (2020–2059) indicate a potential decrease in rainfall, particularly under high emission scenarios like SSP37.0, which could see declines of up to 33.73%. Even in lower emission scenarios (SSP11.9 and SSP24.5), rainfall decreases of up to 25% are possible. Conversely, projections for the far future (2060–2099) suggest a general increase in rainfall across most scenarios, ranging from 1% to 9%, with the wettest scenario (SSP58.5) indicating a potential rise of 8.77%.

The variability is further highlighted by individual GCM outputs, with some models, such as MRIESM20, forecasting stark decreases in the near term (34.94% under SSP37.0) and moderate increases under middle ground scenarios like SSP 24.5 (18.56%). This variability underscores the inherent uncertainty in rainfall projections for Chattogram.

¹ Working Paper on Micro and Macrocclimate Changes and Sea Level Rise.

The primary issues stemming from these changes include potential water scarcity due to decreased rainfall in the near term, affecting agriculture, water supply, and ecosystems. Conversely, an increase in rainfall in the far future could exacerbate flood risks, strain drainage infrastructure, and disrupt livelihoods. The uncertainty of these projections complicates planning, necessitating robust and adaptive water resource management strategies to prepare for both drought and excess rainfall scenarios.

7.2.3 Increasing Sea Level²

The rising sea levels along Chattogram's coastline is projected to increase by 0.21 to 0.27 meters by 2060 and 0.4 to 0.72 meters by 2100 under varying SSP scenarios. The most extreme projection under SSP58.5 indicates a sea level rise of 0.72 meters by 2100, with significant implications for land inundation. Coastal areas, particularly in the northwestern region, are at high risk of submergence, jeopardizing critical infrastructure such as fisheries, ports, and riverside communities. The Karnaphuly River may see alterations in its course, further threatening riverside ecosystems and settlements. Additionally, low lying urban zones, like Potenga and Kotowali Thana, are projected to face isolation and infrastructure challenges due to inundation. Beyond physical land loss, the encroachment of seawater threatens the accessibility of clean drinking water through saline intrusion, compounding the challenges of urban water scarcity and sanitation.

The consequences of sea level rise extend to severe ecological and

socioeconomic impacts. Salinity intrusion into freshwater aquifers and rivers could severely degrade agricultural productivity, disrupt local fisheries, and endanger biodiversity. This environmental imbalance would cascade through the food chain, threatening livelihoods and food security. Additionally, infrastructure erosion and the displacement of residents from inundated areas would strain existing urban systems and resources.

7.3 Seismic Hazard

Chattogram, located in southeastern Bangladesh, is one of the most seismically vulnerable regions due to its tectonic positioning. Situated near the intersection of the Indian and Burmese tectonic plates, Chattogram lies along the Chittagong-Tripura fold belt, which is part of an active subduction zone. This region experiences ongoing tectonic deformation, making it susceptible to seismic events. The area's vulnerability is compounded by the presence of significant fault lines, including the Dauki Fault, which has been active multiple times over the past millennium. Notably, the 1897 Great Indian Earthquake, caused by the Dauki Fault, resulted in widespread devastation in Dhaka and adjacent areas. Current seismic studies highlight potential magnitudes ranging from 7.5 to 9.0, which could have catastrophic impacts on urban infrastructure.

Bangladesh's urban centers, including Chattogram, are particularly vulnerable due to dense populations, rapid urbanization, and noncompliance with building codes. Approximately 40% of Chattogram's soils are classified as loose or soft, with shear wave velocities below 180 m/s, amplifying ground shaking during an earthquake. Furthermore,

² Working Paper on Micro and Macroclimate Changes and Sea Level Rise.



probabilistic seismic hazard analysis (PSHA) reveals high peak ground acceleration (PGA) values, reaching up to 0.688g at ground surface for a 2% exceedance probability in 50 years, underscoring the severity of seismic risks.

Issue 1: Population Density and Urban Growth³

The population of the Chattogram Development Authority (CDA) area, as reported in the 2011 Population and Housing Census, is 4,776,545. The annual growth rate in Chattogram Metropolitan Master Plan (CMMP) areas is 1.06%, slightly below the national average of 1.34%. However, specific regions, including Patiya, Hathazari, Raozan, and Anowara Upazilas, as well as Wards 4, 7, 8, 24, and 39 of Chattogram City Corporation (CCC), have shown higher growth rates. From 2001 to 2011, Chattogram's urban population nearly doubled, increasing from 22.22% to 39.01%. This rapid urbanization has led to unplanned expansion, increasing the vulnerability of densely populated areas to seismic risks.

High population density in unplanned urban areas results in inadequate infrastructure, congestion, and challenges in disaster management, particularly during earthquakes. Limited space for evacuation and overcrowded residential zones exacerbate the risks. Rapid growth in peripheral areas often lacks alignment with the CDA's master planning, contributing to urban sprawl and heightened disaster vulnerabilities.

Issue 2: High Building Density Without Setback Spaces

In Chattogram, buildings are often constructed adjacent to one another without sufficient setback spaces, violating FAR, urban planning norms and safety guidelines. This practice, common in both residential and commercial zones, limits ventilation, emergency accessibility, and resilience against seismic events. Buildings constructed without adherence to the Bangladesh National Building Code (BNBC) are structurally vulnerable, increasing the likelihood of collapse during earthquakes.

The lack of setback spaces also complicates firefighting and evacuation efforts, as narrow gaps between buildings hinder access for emergency vehicles. High density construction in older areas of Chattogram poses additional risks due to outdated structural designs and inadequate retrofitting measures.

Issue 3: Narrow Roads and Limited Accessibility

Chattogram has several neighborhoods with narrow roads, making access difficult for emergency vehicles such as fire trucks and ambulances. These roads are particularly common in older parts of the city and areas developed without proper urban planning. In the event of an earthquake or other disaster, the inability to navigate narrow streets severely hampers rescue operations and the evacuation of affected residents.

This issue is compounded by high building density and unauthorized street encroachments, further reducing road width and exacerbating delays in emergency responses.

³ CMMP Working Paper: Population Study.

Issue 4: Insufficient Evacuation Spaces and Capacity

Chattogram faces a severe shortage of evacuation spaces, such as parks, open fields, and public plazas, to accommodate displaced populations during disasters. Existing evacuation areas lack the capacity to support the city's growing population. This deficiency is particularly concerning in densely populated wards and Upazilas, where residents may have limited options for safe assembly during emergencies.

The issue is aggravated by encroachments on public lands and the absence of detailed planning for evacuation site management. Many existing spaces are poorly maintained and lack essential amenities like water, sanitation, and first aid facilities, further reducing their utility during disasters.

By addressing these challenges, Chattogram can build a more resilient urban environment, reducing vulnerabilities to disasters while ensuring the safety and wellbeing of its residents.

7.4 Soil Liquefaction

The Soil Liquefaction Hazard Assessment focuses on mitigating risks from liquefaction, a phenomenon where saturated soils lose strength during seismic events, threatening infrastructure and urban environments. Chattogram, located in Zone III (moderate seismic hazard zone) with a Peak Ground Acceleration (PGA) of 0.28g, is highly susceptible to liquefaction due to its sandy and silty soils and shallow groundwater. The study, based on 100 boreholes and 47 secondary data points, found 40% of the areas have high liquefaction potential, 34% moderate, and 26% low. High risk zones include Patenga, Halishahar, and Chattogram Port. Bangladesh's position near active fault lines amplifies the risk, highlighting the need for mitigation. High liquefaction potential in key urban and industrial areas, including critical infrastructure like ports, poses a significant threat to Chattogram's development and safety.



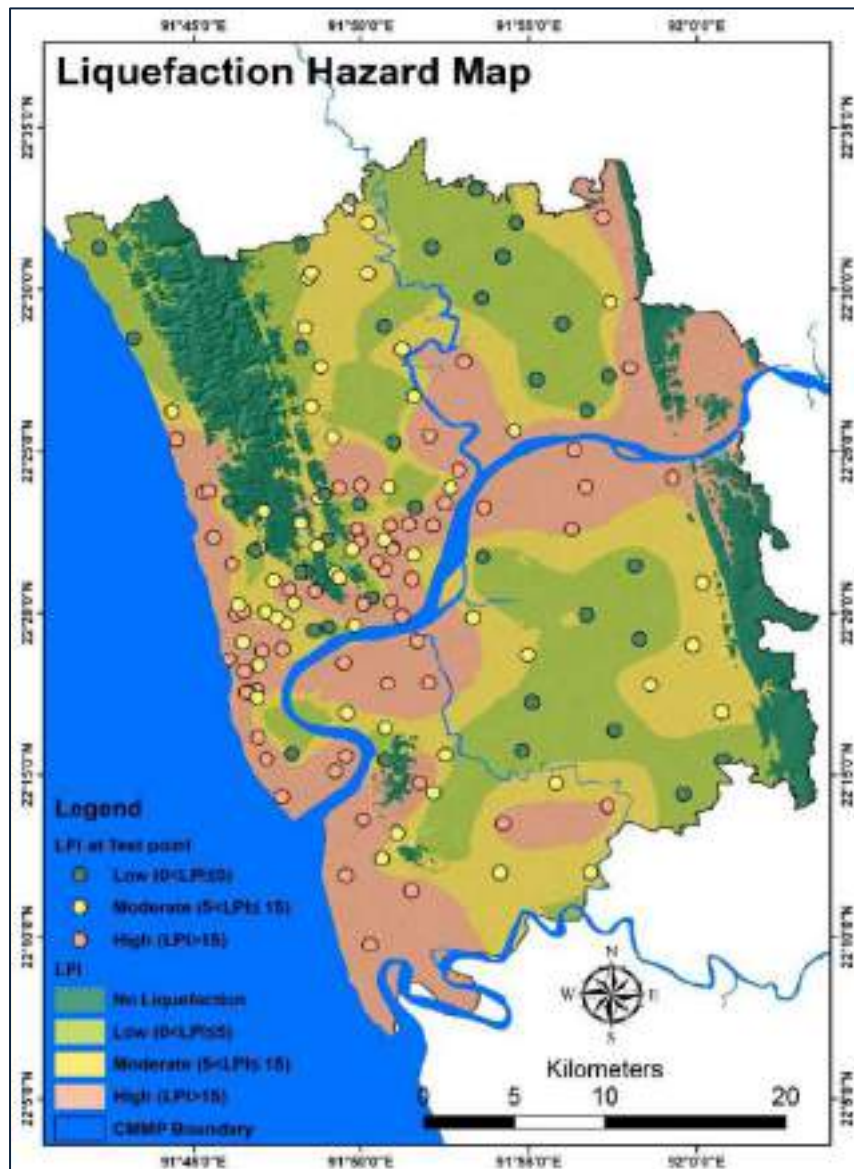


Figure 7-1: Seismically Induced Liquefaction Hazard Map for CDA Project.

Issue: High Liquefaction Potential in Key Urban and Industrial Areas

The study reveals that regions such as Chattogram Port, Patenga, Chandgaon, Bakalia, Karnaphuli, Haliashahar, Kotwali, Pahartali, EPZ, Anwara, and Panchlaish have high liquefaction potential, with Liquefaction Potential Index (LPI) values exceeding 15. This indicates a significant risk of soil failure during seismic events, potentially causing infrastructure damage and

economic losses. The underlying factors contributing to this high risk include the presence of sandy and silty soils with low plasticity, high saturation levels due to shallow groundwater, and proximity to the Karnaphuli River, which increases the sand content and reduces clay stability. The findings highlight the vulnerability of critical infrastructure, such as industrial facilities and transportation hubs, to operational disruptions and long term damage.



7.5 Landslide Hazard and Risk Perception of the Local Population

Chattogram, one of Bangladesh's most land slide prone regions, faces recurring disasters due to its geological vulnerability, rapid urbanization, and climate impacts. Major events, such as the 2007 landslide that claimed 127 lives and displaced over 200 households, and the 2012 landslide in Khulsi Thana with 26 fatalities, highlight the severity of the issue. Intense rainfall, exacerbated by climate change, is a primary trigger, while seismic activity in Zone-III adds to the risks. The Chattogram Development Authority has identified 30 hazardous hills with informal settlements, including Tankir Pahar and Batali Hill, further threatened by deforestation, hill cutting, and improper landuse. With over 235 lives lost in recent decades, the CMMP area's increasing vulnerability underscores the urgent need for effective mitigation strategies and risk management.

Geological issue

Chattogram City is highly vulnerable to landslides due to its natural terrain and climatic conditions. The hilly areas of the city are made up of porous and permeable materials like sandstone, which allow rainwater to easily infiltrate. This increases the weight of rocks, causing them to become unstable. The city receives heavy rainfall, especially during the monsoon months (June to October), with an average annual rainfall of around 2,794 mm. The combination of steep slopes, ranging from 34 to 84 degrees, and excessive rainfall significantly heightens the risk of landslides. These natural factors, including the region's geology and

climate, contribute to frequent landslides that pose significant threats to the city.

Human Induced Factors

Human activities in Chattogram have further exacerbated the risk of landslides. Unplanned hill cutting for construction and the expansion of settlements, especially in steep areas, has destabilized the natural slopes. Deforestation is another major contributor, as the removal of trees weakens the soil's ability to hold together, making it more prone to erosion. Additionally, inadequate drainage systems and poor urban planning have worsened the situation, as water accumulates and increases pressure on the hills. The rapid urbanization of the city, combined with the lack of effective landuse planning and enforcement, has led to further destabilization of the environment, increasing the occurrence and severity of landslides.

The community's perception of landslide risk in the CMMP Area shows varied levels of understanding. A large portion of respondents (39.8%) rated the risk as very low, while 17.8% considered it low, 21.2% moderate, 12.4% high, and 8.9% very high, suggesting that many individuals do not view landslides as an immediate or severe threat. When asked about personal experience, 46.5% reported never experiencing a landslide, 34.5% encountered one only once in their lifetime, and 2.7% faced landslides more than once a year. The majority (45.1%) perceived the severity of the last landslide as very low, and 28.2% rated it as low. Only 6.3% considered it highly severe, indicating that while landslides are acknowledged, their impact is often seen as minimal, especially in areas

less affected by recent events. Early warning systems were available to 91.9% of respondents, but the effectiveness of these systems varied, with many perceiving warnings as moderately accurate (39.5%) or low (35.5%), and only a small group (1.8%) felt they were very accurate. Despite these warnings, 74.3% did not evacuate during landslides, suggesting that the danger is often downplayed. Evacuations were primarily organized by local authorities (36.5%) or neighbors (24.0%).

7.6 Fire Hazard, Vulnerability, and Risk in Chattogram

Fire hazards are a growing concern in Bangladesh, particularly in urban areas like Chattogram, due to rapid urbanization, high population density, and inadequate firefighting infrastructure. The city's fire risk is exacerbated by unplanned developments, narrow roads, lack of water sources, and the presence of high-risk industries. Fire incidents are particularly common in commercial and industrial zones, such as the Dhaka-Chattogram industrial corridor, where flammable materials are

stored in large quantities. Moreover, densely populated areas like Riazuddin Bazar and the Chittagong Export Processing Zone (CEPZ) face elevated risks due to their congested infrastructure and limited emergency response capabilities.

The challenges faced by firefighting agencies, such as the Fire Service and Civil Defence (FSCD), include insufficient water pressure in hydrants, difficulty accessing water reservoirs, and limited road width for fire trucks. Additionally, certain buildings, such as rooftop restaurants and structures located under high voltage wires, pose increased risks due to their design and location. A lack of awareness and negligence regarding fire safety further contribute to the rising number of fire incidents. The vulnerability of Chattogram is also heightened by the loss of natural water bodies, which traditionally served as emergency water sources. The increasing number of high rise buildings, without proper adherence to the Bangladesh National Building Code (BNBC 2021), adds to the challenge of fire risk mitigation.

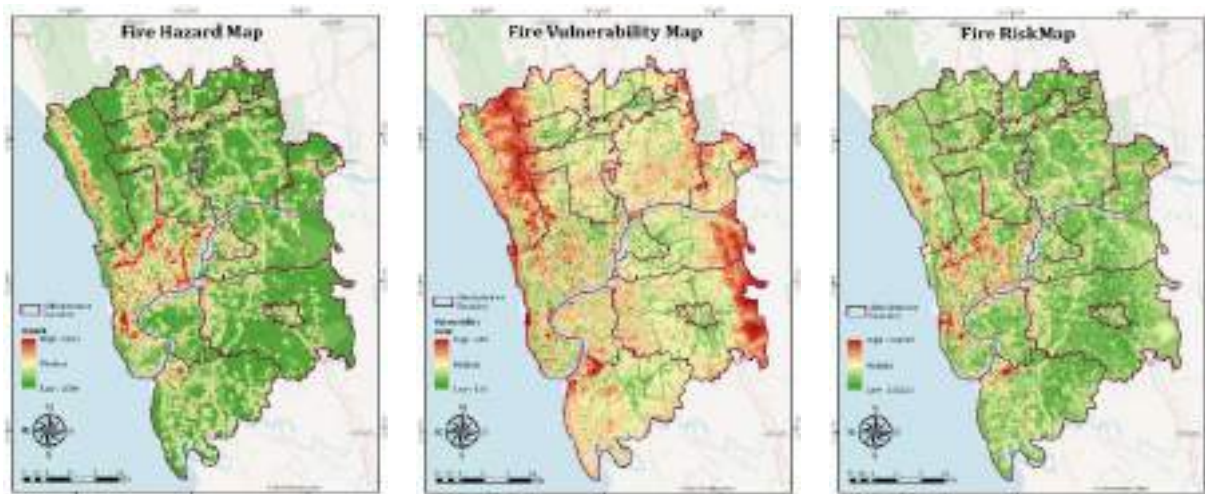


Figure 7-2: Fire Hazard, Vulnerability and Risk Map



7.6.1 Insufficient Water Pressure and Incompatible Hydrant Couplings

One of the primary issues in firefighting operations in Bangladesh, especially in Chattogram, is the low pressure of WASA fire hydrants. These hydrants are directly connected to the main water supply, which leads to inadequate water flow during emergencies. Moreover, the hydrant couplings are not compatible with fire service equipment, making it difficult to refill fire trucks or provide a continuous water supply at fire scenes. Additionally, WASA does not provide 24/7 access to water in specific hydrants, causing delays in firefighting efforts when they are needed the most.

7.6.2 High Fire Risk in Certain Buildings

Some types of buildings pose a higher fire risk due to their structure, materials, and location. Rooftop restaurants, for instance, are highly vulnerable as evacuation during a fire is difficult due to limited exit routes. Buildings constructed under high voltage power lines are also at increased risk due to potential electrical faults that can ignite fires. Many such buildings do not comply with proper fire safety measures, making them particularly hazardous.

7.6.3 Challenges with Spectators at Fire Incidents

During fire incidents, large crowds of spectators often gather at the scene, obstructing the movement of emergency personnel and vehicles. These bystanders interfere with firefighting operations, delay response times, and, in some cases, put themselves in danger. The lack of proper crowd management

strategies makes it difficult for firefighters to operate efficiently.

7.6.4 Declining Water Resources and Inaccessibility of Building Reservoirs

The depletion of natural water sources in Chattogram has worsened fire response capabilities. Many waterbodies have been filled due to urban development, and groundwater levels have decreased, making it harder to source water during fires. Additionally, some buildings have reservoirs that could be used for firefighting but are not easily accessible to emergency responders.

7.6.5 Fire Risks in High Risk Areas (Markets, Industrial Zones, and Tunnels)

Certain areas, such as Riazuddin Bazar, Terry Bazar, and Chaktai, are particularly vulnerable to fire incidents due to their dense structures, narrow roads, and high volume of flammable materials. Additionally, the Karnaphuli Tunnel poses a unique fire hazard as a fire inside the tunnel would be difficult to control due to its confined space and limited access points.

7.6.6 Critical Fire Emergency Access Constraints

Narrow roads in certain areas prevent fire vehicles from reaching emergency sites, leading to delays in firefighting and rescue operations. The lack of adequate access routes increases the risk of property damage and casualties during fire incidents.

7.6.7 Recommended Policy Guidelines and Strategies to Prevent Fire Hazard

Policy FIRE 1: Conservation of Water bodies and Water Sources

Ensuring adequate water supply is crucial for firefighting. Enforcing BNBC2021 for building water storage and preserving waterbodies can mitigate water shortages and fire risks.

- FIRE 1.1: Map and classify all existing water bodies (ponds, canals, reservoirs) for potential fire fighting use and integrate them into emergency response plans. An outcome of this CMMP project.
- FIRE 1.2: Enforce BNBC requirements for onsite water storage tanks and fire reserves in all new medium and high rise buildings.
- FIRE 1.3: Rehabilitate filled-in and abandoned ponds and community water reservoirs in dense commercial areas such as Reazuddin Bazar and Terri Bazar to enhance water availability.
- FIRE 1.4: Install fire hydrants at strategic points connected to reliable water mains, especially in markets, industrial zones, and high density neighborhoods.

Policy FIRE 2: Implementation of National Building Code

Strict enforcement of BNBC ensures fire exits, fire resistant materials, and proper safety systems in buildings, reducing fire hazards.

- FIRE 2.1: Establish a joint inspection team (CDA, CCC, Fire Service, BNBC Cell if any) for preconstruction, construction phase, and post occupancy compliance checks.

- FIRE 2.2: Require mandatory Fire Safety Certificates for high risk facilities such as shopping centers, warehouses, and chemical industries.
- FIRE 2.3: Enforce installation of fire alarms, sprinklers, smoke detectors, and emergency power systems in all buildings as per BNBC.
- FIRE 2.4: Implement periodic structural and fire safety audits for existing old buildings, especially in congested commercial districts.
- FIRE 2.5: Maintain a digital monitoring system (can be tagged with GIS database) to track building compliance, renewal, and violation histories.

Policy FIRE 3: Proper LandUse Zoning

Landuse zoning should enforce fire resistant buildings, create buffer zones, ensure evacuation routes, and strategically place firefighting infrastructure to enhance fire safety.

- FIRE 3.1: Identify high risk zones- markets, storage areas, old mixed use neighborhoods- and enforce fire resistant construction standards.
- FIRE 3.2: Designate buffer zones between hazardous industries (chemical, petroleum, warehouses) and residential settlements.
- FIRE 3.3: Prohibit new development in narrow lane networks unless road widening or alternative fire access provisions are ensured.

Policy FIRE 4: Fire Access Corridor Enhancement

Prioritize widening key roads to a minimum of 15 meters in high risk areas to ensure fire vehicles can reach emergency scenes promptly.

- FIRE 4.1: Identify priority fire access corridors in densely built



neighborhoods like Anderkilla, Khatunganj, and Chaktai based on response time analysis.

- FIRE 4.2: Widen critical roads to a minimum of 15 meters or create alternative parallel access routes where widening is not feasible.
- FIRE 4.3: Install clear signage, reflective markers, and nighttime lighting along designated fire access corridors.

Policy FIRE 5: Public Awareness Generation

Fire safety education, drills, and training at schools, wards, and community levels can prevent fire incidents. Digital platforms and social organizations should promote fire safety awareness.

- FIRE 5.1: Conduct regular fire drills at schools, markets, factories, and community centers in coordination with Fire Service and Civil Defence.
- FIRE 5.2: Launch citywide awareness campaigns using television, radio, social media, and mobile apps to inform citizens about fire prevention practices.
- FIRE 5.3: Develop ward level volunteer fire response teams

trained in basic fire suppression and evacuation procedures.

- FIRE 5.4: Promote household level fire safety measures, including safe cooking practices, electrical wiring checks, and LPG cylinder handling.

Policy FIRE 6: Management of Potential Fire Sources

Regular inspections, relocating hazardous industries, underground utilities, and enforcing fire safety in homes can reduce fire risks in Chattogram.

- FIRE 6.1: Conduct regular inspections of markets, warehouses, chemical storage facilities, and informal workshops to identify high risk fire sources.
- FIRE 6.2: Relocate highly hazardous industrial activities (chemical mixing, metal workshops, fuel storage) away from dense residential areas.
- FIRE 6.4: Enforce mandatory electrical safety audits in old buildings to prevent short circuits, the leading cause of fires.
- FIRE 6.5: Regulate and monitor the safe installation and maintenance of LPG, gas pipelines, backup generators, and battery storage systems.



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Chapter Eight: Municipal Services

Chattogram grapples with significant challenges in municipal services, including inconsistent water supply, inadequate sanitation, and poor waste management. Many residents, especially in informal settlements, lack access to safe drinking water and proper sewage systems, leading to environmental pollution and health risks like waterborne diseases. The city generates large amounts of solid waste, but limited collection and inefficient management cause urban flooding and public health hazards. Informal settlements further strain municipal services, while environmental degradation worsens due to unmanaged waste and sewage.

Despite recent improvements, access to safe drinking water remains inconsistent, especially in informal settlements. The Chattogram Water Supply and Sewerage Authority (CWASA) increased water supply capacity from 172 million liters per day in 2010 to 3.6 billion liters per day, installing 40 communal taps in slum areas. However, many residents still rely on illegal tube wells, leading to revenue losses and potential contamination. Sanitation infrastructure is inadequate, with many households lacking proper sewage connections, resulting in environmental pollution and health risks.

The city generates substantial solid waste daily, with a significant portion remaining uncollected due to limited resources and inefficient management systems. Uncollected waste accumulates in open areas, clogging drainage systems and contributing to urban flooding. This situation poses serious environmental

and public health risks, including the spread of vector-borne diseases.

Inadequate municipal services have direct implications for public health. The city reports high incidences of waterborne diseases such as diarrhea and typhoid, with annual cases estimated at 614 and 68 per thousand population, respectively. Poor waste management exacerbates these health risks, particularly in densely populated low-income neighborhoods. Rapid urbanization has led to the proliferation of informal settlements lacking basic amenities. Residents in these areas often face limited access to clean water, sanitation, and waste disposal services, further exacerbating health and environmental challenges. The cumulative effect of inadequate municipal services contributes to environmental degradation. Unmanaged waste and sewage contaminate water bodies, while clogged drainage systems increase the risk of urban flooding, threatening both the environment and the city's infrastructure.

8.1 Water Supply Issues

Chattogram, the second-largest city in Bangladesh, faces significant challenges in managing its water supply to meet the needs of its growing population, estimated at about 6 million in the city corporation area.¹ Chattogram's water supply system, managed by the Chattogram Water Supply and Sewerage Authority (CWASA), serves approximately 3.2 million people with a daily water production capacity of 450 million liters (MLD) through

¹ <https://ccc.gov.bd/site/page/68a6b4b6-426a-49eb-89fb-842eb7d91922/->



surface and groundwater sources.² The city's reliance on the Halda River, Karnaphuli River, and deep tube wells for water sources is compounded by pollution, saltwater intrusion, and seasonal variations. Major projects like the Rangunia and Mohra Water Treatment Plants, alongside the Bhandal Jhuri Water Supply Project, aim to meet rising demands, expected to reach 1.22 billion liters daily by 2040. However, challenges remain, including aging infrastructure, with 400 km of outdated pipelines, high non-revenue water losses (25-30%), and inconsistent supply in peripheral, limited coverage in informal settlements, and the impacts of climate change. Additionally, illegal connections, water turbidity during monsoons, and reliance on antiquated systems exacerbate the situation. New initiatives, such as smart meters, the establishment of 46 District Metering Areas, and advanced monitoring technology, aim to improve efficiency and reduce losses. However, corruption and management inefficiencies persist as barriers to equitable water distribution.³

8.1.1 Water Supply Deficit and Overdependence on Alternative Sources

CWASA is the primary provider of piped water in the CCC area. But only 35% of the total demand was supplied by the city's infrastructure for producing water. Only 7.5% of homes had access to piped water, and the piped network was in poor condition while the rest depended on alternative sources including shallow

tube wells with questionable water quality³.

Three water treatment facilities exist under CWASA. To supplement the city's water supply, the Authority also manages 49 deep tube wells. 80% of the water produced at this time comes from the surface. Operated by CWASA are three raised water storage tanks and fourteen service reservoirs⁴. The present water demand for Chattogram is about 511 MLD⁵ as compared to a total installed production capacity of only 450 MLD⁶.

The water transmission and distribution pipelines consist of different pipe materials such as ductile iron, asbestos cement, and PVC; with a total length of 770 kilometers⁷. However, CWASA is unable to cover the whole city corporation with distribution pipelines and a significant part of the distribution network is old and requires rehabilitation.

The unreliability of the water supply system forces residents to rely on ground water by using deep tub wells in houses premises. As such, outside the city, inhabitants of rural areas and municipalities rely on ground water or untreated surface sources. These two factors combined put a large pressure on the ground water level of the whole area, especially during dry seasons. Added with this is the reduction of water bodies⁸ that play a big role in ground

³ Chittagong Water Supply Improvement and Sanitation Project (World Bank, 2021)

⁴ CWASA Annual Report (2021-2022)

⁵ Chattogram Sanitation Master Plan (2017)

⁶

⁷ <https://cwasa.portal.gov.bd/site/page/a5b96c00-39a8-455d-8d19-bce46266ee96/->

⁸

⁸ <https://cwasa.portal.gov.bd/site/page/a5b96c00-39a8-455d-8d19-bce46266ee96/->



water recharge. The result of all these is slowly becoming apparent as in recent ground water supplied by deep tube wells in the city area have slight hardness and salinity to taste during both dry summer and winter months.

8.1.2 Water Quality Concerns

A study was conducted to assess drinking water quality of Chattogram city in 2022. This study assessed the quality of these water sources through analytical methods and residents' perceptions. Samples were collected from six locations (Kotwali, Halishahar, Bayzid, Chandgaon, Bandar, and Soraipara), and physical and chemical properties such as pH, TDS, TSS, bicarbonate, EC, salinity, and microbial load were analyzed. The pH values across all sources were within the permissible range of 6.5–8.5, but TDS levels in tube-well water at Bandar and Halishahar exceeded the standard limit of 1000 mg/L. TSS levels were notably high, surpassing the permissible limit of 10 mg/L in many locations, particularly in CWASA and tube-well water, while jar water generally remained compliant. Bicarbonate levels in untreated tube-well water exceeded the standard (500 mg/L) across all locations and remained high even after treatment. Similarly, the electrical conductivity (EC) and salinity levels of tube-well water were often above acceptable thresholds, with salinity levels surpassing the 0.6 ppt standard in several areas. Microbial contamination was a critical concern, with all sources showing microbial loads beyond permissible limits (0 CFU/mL), rendering the water unsafe for drinking. Household water treatment methods, including boiling and filtration, were largely ineffective in addressing these contaminants.

Residents reported issues with CWASA water, including unpleasant odors and suspended particles, while tube-well water was considered more acceptable, and commercial jar water was viewed positively despite safety concerns due to unlicensed suppliers.⁹

8.1.3 Inadequate Access to water Supply System

Chattogram's water supply system faces significant challenges, marked by insufficient coverage, outdated infrastructure, high water losses, and inequitable service delivery, particularly for marginalized communities. Despite a total pipeline network of 770 kilometers, many wards, especially those in less central areas, remain underserved due to the lack of proper infrastructure. A substantial portion of the distribution network is outdated, with materials like asbestos cement still in use, posing health risks and exacerbating water losses through leaks. Inefficient distribution leads to high Non-Revenue Water (NRW), as leaks, theft, and billing issues further reduce the already limited effective supply. Access to piped water remains critically low, with only 7.5% of households connected, leaving the majority dependent on unreliable alternative sources. While CWASA has installed 689 street hydrants and provided 31 water connections for slum areas, these efforts fall short of addressing the needs of the city's 1.5 million floating population and urban poor. Inequitable service delivery further exacerbates the problem, as some wards, such as Ward 24 and Ward 26, benefit from a higher pipeline density, while others,

⁹ Debnath, P., Al Mamun, M. A., Karmakar, S., Uddin, M. S., & Nath, T. K. (2022). Drinking water quality of Chattogram city in Bangladesh: An analytical and residents' perception study. *Heliyon*, 8(12).



including Ward 1 and Ward 5, lack pipelines entirely, deepening access disparities. The city's large floating population faces compounded barriers to accessing clean water, further straining an already overstretched system.

8.1.4 Financial and Institutional Challenges

Chattogram's water management system is heavily reliant on external funding, with most water-related projects being financed by organizations such as the World Bank, JICA, and the Government of Bangladesh, underscoring a lack of financial self-sufficiency. While CWASA has initiated several projects to improve water supply, slow implementation delays the resolution of critical issues, prolonging the challenges faced by residents. Additionally, institutional gaps persist despite efforts to enhance governance, as CWASA's capacity to manage and expand services effectively remains limited, hindering its ability to meet the growing demands of the city.

Chattogram WASA is undertaking several major water supply projects. The Bhandaljuri Water Supply Project is completed and it features a 45 MLD water treatment plant with transmission and distribution pipelines near the Karnaphuli River.¹⁰ Upcoming projects include the Purified Water Supply Project from the Meghna River in Mirsarai Economic Zone, which will provide 500 MLD intake capacity and a 50-crore-liter treatment plant, costing Tk 8,952 crore. The Chittagong Water Supply Development Project, funded by the World Bank and the

government (Tk 3,744.75 crore), focuses on rehabilitating supply networks, establishing 46 DMAs, reducing Non-Revenue Water (NRW), and enhancing operational capacity. The Mohra Water Treatment Plant Augmentation Project aims to address salinity issues with a 610 MLD intake, a 200 MLD treatment plant, pipelines, and reservoir construction, costing Tk 4,380 crore. These initiatives aim to improve water infrastructure and supply reliability in the region.¹¹

The Bhandaljuri Water Treatment Plant in Boalkhali, Chattogram, was built for Tk1,994 crore to supply 6 crore liters of water daily to industrial and residential users. Despite project completion in June, operations remain stalled due to insufficient subscribers, with only one industrial connection (Chittagong Urea Fertilizer Limited) and 650 residential connections secured against targets of 13 industrial and 10,000 residential connections. Challenges include lack of infrastructure, coordination, and interest, as many users rely on deep tube-wells. Industrial zones like Korean and China EPZs cite incomplete supply lines, while residential areas like Karnaphuli face funding issues for connection. Experts criticize the lack of foresight, calling the project an inefficient use of public funds.

¹⁰<https://ctg-wasa.org.bd/site/page/4ca0bb44-fcda-42f4-9df7-4bb779b6abc7/->

¹¹<https://ctg-wasa.org.bd/site/page/0ec9c706-8f0e-4860-b36d-feccf39b8ee0/->





Figure 8-1: Bhandalajuri Water Treatment Plant.

8.1.5 Recommended Policy Guidelines and Strategies for Water Supply

Policy WS-1: Ensure Universal Access to Safe and Reliable Water Supply

- WS-1.1: Expand water supply networks to underserved wards, Pourashavas, and peri-urban upazilas through phased infrastructure development.
- WS-1.2: Prioritize high-demand and low-access areas for new service connections, especially informal settlements and rapidly growing suburban zones.
- WS-1.3: Increase the number of community-based water points and public standposts in dense or low-income neighborhoods until full household coverage is achieved.

Policy WS-2: Strengthen and Diversify Water Sources for Supply Security

- WS-2.1: Protect and enhance the Halda River and other existing surface water sources through strict enforcement against

pollution and upstream extraction.

- WS-2.2: Develop additional surface water treatment plants and explore alternative water sources such as rainwater harvesting and controlled groundwater extraction.
- WS-2.3: Introduce watershed conservation programs, including reforestation and wetland protection, to improve long-term water availability and quality.

Policy WS-3: Improve Water Distribution Efficiency Through Infrastructure Upgrading and Smart Management

- WS-3.1: Install smart metering, systems, and pressure control technologies to improve efficiency and detect anomalies in real time.
- WS-3.2: Conduct regular maintenance and hydraulic modeling to optimize network performance and ensure consistent pressure across the metropolitan area.



8.2 Sanitation Issues

Concerns have been on the rise around the globe regarding better sanitation management, which is one of the basic human rights, owing especially to the present goal of sustainable development, more specifically Sustainable Development Goal (SDG) 6. Proper sanitation management is a challenging issue in Chattogram. In Chattogram, sanitation is available in 85% of schools and 48% of commercial establishments. CWASA is responsible for providing water, sewerage, and drainage services in Chattogram City. Due to population expansion and the rise of industrial and commercial activities, the gap between the demand and supply of these facilities has widened significantly.

The sanitation situation in Chittagong City and its surrounding municipalities is marked by the absence of a piped sewerage system, with households relying on on-site sanitation solutions such as septic tanks or pit latrines. Inadequate management of wastewater is a significant issue, as sullage from kitchens and showers is commonly discharged into roadside drains, which also receive septic tank overflows when they are full. The collected fecal sludge, when removed, is either transported to landfill sites by CCC trucks or disposed of in nearby drains by private cleaners. In the Upazillas and Municipalities the practice remains the same, where off-site management is conducted by Municipal Authorities but rural population relying on unimproved on-site systems such as pits or single use septic tanks.¹²

This practice, combined with the lack of dedicated wastewater collection infrastructure, forces the stormwater drainage system to serve as an informal conduit for both stormwater and wastewater, leading to frequent blockages caused by sedimentation and solid waste.

Moreover, limited space in urban streets and the unavailability of land for centralized sewage treatment plants further hinder the development of a comprehensive sewerage network. While the Haliashahar area has been identified as a potential site for a centralized Sewage Treatment Plant (STP), CWASA's limited capacity and experience in managing large-scale sewerage projects present additional challenges.¹²

The KOICA Master Plan proposed constructing a sewerage system to gradually separate from the drainage network and serve 80% of the city population by 2031, but the technical feasibility, especially regarding the connection of areas to designated STP sites, was not thoroughly explored. The pumping scheme seemed insufficient due to the area's flat topography, and the financial allocation for sewers in Stage 1, with USD 88.42 million for an STP and only USD 5.88 million for the sewer network, raised concerns. Due to further urban development and encroachments, the construction of STPs, pumping stations, and trunk sewers is now more challenging, and the initial target of serving 80% of the city with sewerage will likely need to be revised in favor of improved on-site sanitation.¹²

Inadequate Off-site Fecal Sludge Management System

The sanitation services provided by the Chittagong City Corporation

¹² Chittagong Water Supply Improvement & Sanitation Project (CWSISP). (CWASA 2017).



(CCC) are insufficient to meet the city's needs. Only two vacuum trucks are available for septic tank sludge collection, and they are constrained by their size, making them unsuitable for areas with narrow roads. The Chattogram City Corporation lacks a suitable sanitation disposal system. 47% of non-slum dwellers have septic tanks, but they send their sanitary waste to the closest drain.¹³ Consequently, only a small fraction of the daily demand for sludge collection is met, leaving a significant gap of approximately 100 m³/day, much of which is addressed by manual cleaners or "methors." Furthermore, there is no facility for treating the collected faecal sludge in the CCC area, and the adjacent municipalities within the sanitation planning area also lack sludge collection trucks or treatment sites.

Non-sanitary toilets remain a concern, with 11.4% of households in CCC and over 20% in some municipalities like Patiya and Hathazari relying on unimproved sanitation facilities. Although open defecation is rare, affecting less than 1% of the population, the absence of proper faecal sludge treatment plants underscores the need for a regional facility to address this critical gap.¹²

Currently CWASA has ongoing and upcoming projects regarding implementation of a centralized sewerage system and improvement of the fecal sludge management system, as shown in the table below:

¹³ Ferdous S, Chowdhury FN, Ali ML, Bodrud-Doza M and Rahman MM (2022) Assessment of urban sanitation status and management gaps in a metropolitan city, Bangladesh: Potential challenges to achieve SDG 6. *Front. Water* 4:950887. doi: 10.3389/frwa.2022.950887



Table 8-1: List of Ongoing¹⁴ and Upcoming¹⁵ Projects of CWASA regarding Sanitation System.

SL.	Project Name	Project Description	Other Info.
Ongoing			
1.	Chittagong Metropolitan Sewerage Project (1st Phase)	• Introduction of sewerage system for the metropolis by constructing sanitation facilities; • Construction of sewage treatment plant with a capacity of 100 million liters per day. • Construction of 300 cubic meter daily capacity faecal sludge treatment plant-1. • Laying of trunk main and collection sewer pipelines of various diameters (2100 mm to 115 mm) -200 km. • Purchase of faecal sludge management equipment.	Project Cost: 3,808.5877 Crore Taka.
Upcoming			
1.	Chittagong Sewerage Development Project (Catchment 2 & 4)	• Sewerage Treatment Plant- 60,000 cubic meters (per day) and main sewer line 11 km and branch sewer line 70 km: construction service line and domestic connection- 70 km and providing 14,000	Estimated cost of the project: Tk 5194.64 crore (Government of Bangladesh Tk 1,000.89 crore, JICA Tk 4,154.75 crore and Chittagong WASA Tk 39.00 crore).
2.	Acquisition of land for construction of sewage treatment plant in Kalurghat area of Chittagong metropoliton.	• Project Land Acquisition/Purchase Land • Development and Construction Works (Gates, Boundary Walls, • Construction of Bridges/Culverts, Roads etc).	Estimated cost of the project: 2163.27 Crore Taka (Government of Bangladesh 2163.27 Crore Taka).
3.	Chittagong City Sewerage Installation	• Construction of 60 MLD daily capacity sewage treatment	Estimated cost of the project:

¹⁴ <https://ctg-wasa.org.bd/site/page/4ca0bb44-fcda-42f4-9df7-4bb779b6abc7/->

¹⁵ <https://ctg-wasa.org.bd/site/page/0ec9c706-8f0e-4860-b36d-feccf39b8ee0/->



SL.	Project Name	Project Description	Other Info.
	Project (Catchment-3)	plant. • Construction of 58.30 KM Sewer Pipeline for Sewage Treatment Plant. • Construction of Faecal Sludge Treatment Plant with a capacity of 100 cubic meters per day.	3360.53 crores (Tk. 1249.92 crores, EDCF- Tk. 2110.61 crores).
4.	Chittagong Metropolitan North Kattoli Catchment Sewerage Project (Catchment-5)	• Construction of Sewage Treatment Plant - 50 MLD. • Pipe line network - 98 km. • Home connection - 8100.	Estimated cost of the project: Tk 2835.14 crore, (GOB- Tk 913.00 crore, AFD, France- Tk 1912.14 crore, Chittagong WASA- Tk 10.00 crore).
5.	Chittagong City Sewage System Installation Project (Catchment-6)	• Construction of 5 crore liter daily capacity purification plant. • Construction of 68 km pipeline for collection and transportation of domestic waste. • Construction of 01 low-lift pump station. • Providing teleconnection to about 11,000 households.	Estimated cost of the project: Tk 9,897.50 crore.



Chattogram WASA is implementing a BDT 38.08 billion sewerage system project to address sewage disposal issues in the port city. The project involves constructing a main treatment plant on 165 acres in Haliashahar, which is to be completed in 2026 and dividing the city into six zones, each with a catchment sewage treatment plant. Phase-1, currently underway, includes 200 km of pipelines, 3,620 manholes, 15 pump stations, and 100 small treatment plants. Contracts have been awarded to firms from South Korea and China. Feasibility studies for catchments 2, 3, and 4 are ongoing, with the system expected to benefit over 20 lakh residents by eliminating the need for septic tanks.¹⁶



Figure 8-3: CWASA Proposed Sewerage System¹⁷.



Figure 8-2: Proposed STP location

8.2.1 Recommended Policy Guidelines and Strategies for Sanitation Improvement

Policy SAN-1: Expand Access to Safe, Hygienic, and Inclusive Sanitation Services

- SAN-1.1: Increase coverage of hygienic household toilets and community sanitation facilities in low-income settlements, slums, and high-density neighborhoods.
- SAN-1.2: Construct gender-sensitive and disability-friendly public toilets at markets, transport hubs, parks, beaches, and major commercial areas.
- SAN-1.3: Promote low-cost sanitation technologies (e.g., twin-pit latrines, shared facilities)

¹⁶ [WASA implementing sewerage system in Ctg | The Financial Express](#)

in areas where sewer connections are not feasible.

Policy SAN-2: Improve Fecal Sludge Management (FSM) and Wastewater Treatment

- SAN-2.1: Establish a citywide fecal sludge management system with designated collection points, transfer stations, and a centralized treatment facility.
- SAN-2.2: Introduce scheduled desludging services and regulate private vacuum trucks through licensing, monitoring.
- SAN-2.3: Develop decentralized wastewater treatment systems (DEWATS) in densely populated areas and new urban growth zones where sewer networks are limited.

Policy SAN-3: Strengthen Institutional Capacity, Regulation, and Community Awareness for Sanitation

- SAN-3.1: Clarify the roles of CCC, WASA, DPHE, and Pourashavas by establishing a coordinated sanitation management framework.
- SAN-3.2: Enforce regulations against illegal discharge, and unsafe dumping of fecal sludge into canals and wetlands.
- SAN-3.3: Implement community awareness programs on hygienic sanitation practices, proper toilet use, and the importance of fecal sludge treatment.



8.3 Solid Waste Management

Chattogram faces a critical challenge in managing the 2,000–2,500 metric tons of solid waste generated daily by its rapidly growing population of over 8 million. The city's waste collection efficiency stands at approximately 60%, leaving a significant portion of waste uncollected and improperly disposed of in open dumps or waterways. This practice contributes to severe environmental degradation, including contamination of rivers like the Karnaphuli and canals, and increases public health risks due to exposure to toxic substances and disease vectors. Moreover, only 10–15% of recyclable materials are recovered, highlighting the lack of an organized waste segregation and recycling system. The landfill at Halishahar, covering around 17 acres, is nearing capacity and operates without modern waste processing technologies, leading to leachate seepage and methane emissions.

Informal waste disposal practices, coupled with the absence of adequate waste-to-energy facilities, exacerbate the problem, resulting in heightened air and water pollution. The challenges are exacerbated by social, financial, and institutional factors. In response, the Japan International Cooperation Agency (JICA) developed a Waste Collection & Transportation Plan in 2021, emphasizing public participation, waste reduction, and improved waste management practices.

The situation calls for urgent intervention, including increasing waste collection coverage, implementing waste segregation at the source, and introducing modern recycling and composting facilities. Strengthening regulatory

enforcement and promoting community awareness are also critical to addressing the escalating solid waste management crisis in Chattogram.



Figure 8-4: Halishahar Landfill Sites.

8.3.1 Institutional Challenges in CCC's Solid Waste Management (SWM)

Chattogram City Corporation (CCC) faces several institutional challenges in solid waste management. The SWM standing committee lacks experts, NGOs, or researchers, while the Waste Management Cell (WMC) operates without defined roles. Key vacancies in conservancy and engineering departments and reliance on temporary staff impair operational efficiency. Budgeting

issues include discrepancies between plans and expenditures, insufficient allocation for landfill components, promotional activities, and staff training. Administrative setup inefficiencies, lack of decentralized waste management authority, and absence of a dedicated Waste Management Department (WMD) exacerbate coordination problems. Financial constraints hinder repairs, and no regulations exist for integrated waste systems. Data scarcity and lack of awareness of new SWM rules further challenge strategic planning. Additionally, CCC's landfill sites lack Environmental Clearance Certificates (ECCs) and Environmental Management Plans (EMPs), breaching legal requirements.

8.3.2 Issues in Primary Collection Service

The primary waste collection system in Chattogram City Corporation (CCC) faces numerous challenges that hinder its efficiency and effectiveness. These issues include the lack of a clear primary waste collection policy that addresses storage, segregation, and the involvement of the private sector. The system suffers from a shortage of manpower and equipment, with an insufficient number of primary waste collectors and waste collection vehicles to meet the growing demands of waste generation in various wards. Inadequate maintenance of the collection vehicles, particularly the Rickshaw Vans (RVs), results in frequent breakdowns and inefficiencies. The improper use of 3-wheeler (Tom-Toms), such as diverting them for construction waste, further hampers the coverage of the primary collection service. Additionally,

narrow roads and lack of full-service coverage in certain wards lead to ineffective waste management. To engage the private sector for primary collection services, charging citizens separately may face resistance, as they are used to the current system. Furthermore, primary collection workers often lack access to essential personal protective equipment (PPE), creating unsafe working conditions. The population growth in the city, projected to reach 6.65 million by 2041, will exacerbate these challenges, leading to a significant increase in waste generation.

8.3.3 Issue in Secondary Collection Service

Chittagong City Corporation (CCC) faces significant challenges in its secondary waste collection services due to a range of inefficiencies. Key issues include a lack of coordination between primary and secondary collection schedules, RVs and secondary collection vehicles frequently experience timing mismatches, causing delays in the waste transfer process. The mismanagement and improper placement of Secondary Collection Points (SCPs) exacerbate the problem, with many locations near roads or water bodies, leading to drainage blockages, pollution, and poor sanitation. Additionally, due to poor infrastructure and road conditions, lack of proper waste collection vehicles there is inefficient usage of Secondary Transfer Stations (STS). The absence of a clear secondary collection policy and lack of proper planning for waste collection routes also contribute to inefficiencies, as does insufficient manpower for handling the existing waste load. These challenges collectively impact Chattogram City



Corporation's ability to manage municipal waste effectively.

8.3.4 General issues

The Chattogram City Corporation (CCC) faces multiple challenges in its solid waste management system. One significant issue is the lack of promotional activities aimed at waste reduction and source segregation, primarily due to insufficient budget allocations. This has resulted in the failure to activate waste reduction initiatives, composting programs, and recycling efforts within the city. Additionally, CCC does not have a budget for public awareness campaigns, hindering its ability to educate citizens on waste segregation, disposal, and the importance of reducing environmental impact. Citizens of CCC are legally obliged under the City Corporation Act 2009 to dispose of their waste at specified locations but many remain unaware of these regulations due to a lack of widespread publicity. The absence of community participation guidelines also impedes citizen involvement in waste management activities, further complicating efforts to improve waste handling in the city. Lastly, the absence of a clear enforcement system for littering and illegal dumping, coupled with a lack of punishments, allows these issues to persist, exacerbating the city's waste management problems.



Figure 8-5: Various Types of Primary Waste Collection Vehicles.

8.3.5 Recommended Policy Guidelines and Strategies for Solid Waste Management (SWM)

Policy SWM 1: Strengthen Institutional Framework and Coordination for Effective SWM

- SWM-1.1: Develop an integrated SWM plan aligned with national policies and the Chattogram Metropolitan Master Plan in leadership with City Corporation.
- SWM-1.2: Create standard operating procedures (SOPs) for collection, transport, and disposal across all agencies involved.
- SWM-1.3: Improve financial sustainability by adopting user fees,

cost-sharing mechanisms, and incentives for compliance.

Policy SWM 2: Improve and Expand Primary Collection Services

- SWM-2.1: Expand door-to-door primary collection to all wards through community-level service units.
- SWM-2.2: Provide standardized waste bins at household and commercial levels (color-coded for segregation).
- SWM-2.3: Introduce fixed collection schedules and digital tracking (mobile apps/SMS alerts) for residents.
- SWM-2.4: Roll out household-level segregation (kitchen waste / recyclable/general) in phases, starting with dense wards.

Policy SWM 3: Strengthen Secondary Collection Service

- SWM-3.1: Increase the number of secondary waste containers based on waste generation density.
- SWM-3.2: Implement route optimization for secondary collection trucks.
- SWM-3.3: Schedule frequent clearing of high-density commercial areas (markets, schools, hospitals).

Policy SWM 4: Modernize and Optimize Secondary Transfer Stations (STS)

- SWM-4.1: Construct new STSs in strategically selected locations to reduce transport distance to landfill.
- SWM-4.2: Upgrade existing STSs with covered platforms, compactors, drainage systems, and leachate controls.
- SWM-4.3: Introduce mechanical waste compactors to reduce volume and transportation cost.

Policy SWM 5: Enhance Street Sweeping and Public Space Cleanliness

- SWM--5.1: Increase manpower and supply modern sweeping equipment (mechanized sweepers, vacuum sweepers).
- SWM-5.2: Establish a ward-based sweeping schedule covering early morning and evening shifts.
- SWM-5.3: Prioritize sweeping in sensitive zones (markets, bus terminals, schools, tourist areas).
- SWM-5.4: Install street litter bins and enforce anti-littering regulations.

Policy SWM 6: Promote Public Awareness, Waste Reduction, and Behavior Change

- SWM--6.1: Conduct mass awareness campaigns on waste segregation, composting, and recycling.
- SWM--6.2: Run school and college programs on waste management and recycling habits.
- SWM-6.3: Involve NGOs, CBOs, and religious institutions in promoting proper waste disposal.
- SWM-6.4: Develop mobile apps, social media campaigns, and local announcements for reporting waste issues.

Policy SWM 7: Ensure Safe and Environmentally Sound Final Disposal

- SWM-7.1: Upgrade the existing landfill to a sanitary landfill with leachate treatment and gas management.
- SWM-7.2: Promote composting, recycling, and waste-to-energy pilot projects to reduce landfill burden.
- SWM-7.3: Restrict e-waste, medical waste and hazardous waste disposal and establish separate treatment facilities.



8.4 Recreation and Open Space Facilities

Recreation and open space facilities in Chattogram, as in other major cities in Bangladesh, face significant challenges due to inadequate availability, uneven distribution, and lack of adherence to urban planning standards. For Chattogram, a needs-based assessment of open space requirement has been done which takes into account the population, density, demographics, and recreational preferences. After the assessment, a standard of 1 acre of minimum open space (per 1000 population) is set, where at least 0.75 acres of local level parks and playground and 0.25 acre of city level

park is recommended. A comparison of the standards of different national and international organizations is shown in Figure 8-6.

The current demand and supply of recreation and open space is presented in Table 8-2. Chattogram Municipalities currently have only 22 acres of local parks, 198 acres of playgrounds, 34 acres of city park and 202 acres of recreational open spaces. However, the demand exceeds the supply by many folds showing the deficit is around 93% of the total demand. This acute deficiency highlights the urgent need for a systematic approach to developing recreational spaces in Chattogram city and the other municipalities within the CMMP area.

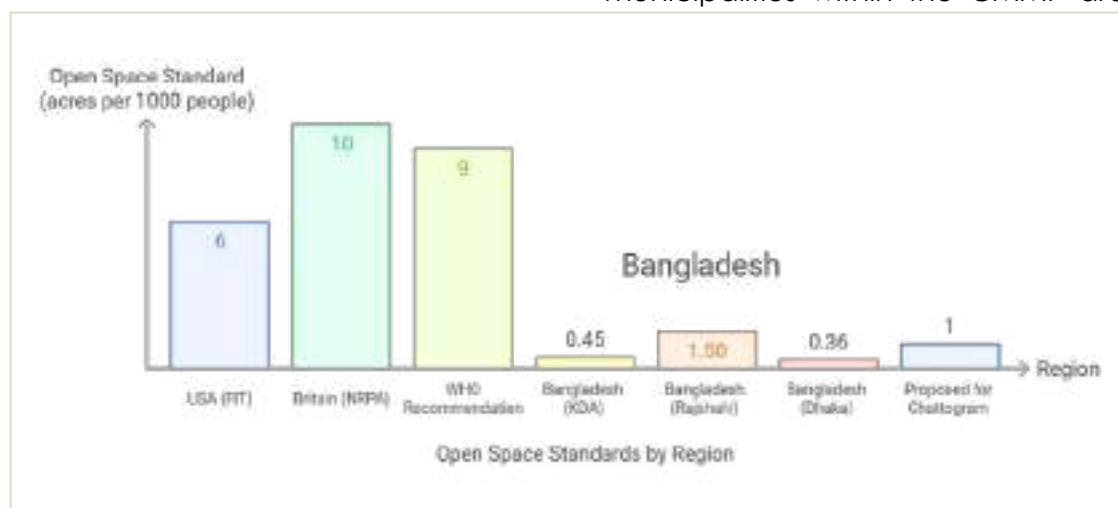


Figure 8-6: Recreational Facilities Location in the CMMP Area.

Table 8-2: Distribution of Demand and Supply of Open Space in Chattogram.

Type	Supply (Number)	Supply (acre)	Demand (acre)	Deficit (acre)	% Deficit
Playground	423	198	2686	2466	92%
Local Park	23	22			
City Park	4	34			
Total	450	254	3494	3240	93%
Recreational Open Space	21	202	-	-	-



8.4.1 Issues of Functional Open Space

Acute Shortage of Open Space: The data analysis shows that there is a very small amount of local open space, both in terms of quantity and area. Currently, municipal areas of CMMP have only 7% of the required open spaces. This has two effects: first, the city is failing to provide its residents with enough local open space; second, Chittagong's population lacks access to parks and other urban spaces (such as plazas and streets), which would allow them to experience a sense of openness in a crowded environment.

Failure to implement DAP policies: DAP has proposed 20 zones that can be used as potential recreational open space facilities, including community parks, playgrounds, civic squares and lake-based parks. It also provides standards for parks from a neighborhood to a regional level, with additional policies encouraging public engagement in developing local level parks through community engagement. However, none of these policies were properly realized and exercised. Moreover, many of these designated recreational open space zones have been converted to residential use, except for those in DPZ 01, 02, and 04.

Limited Municipal Budget for Urban Green Space Development: The city authorities did not allocate sufficient funds for the development and maintenance of parks and open spaces. In many cases, priority was given to infrastructure development, like roads and buildings, over public spaces. Even when open spaces are created, maintaining them requires ongoing financial resources for landscaping, cleaning, security, and facilities management. Limited funds mean that many existing parks and open areas are neglected, reducing their usability and appeal.

Inadequate Revenue Generation

Mechanisms: From a purely financial perspective, open spaces do not directly generate significant revenue compared to other landuses such as commercial or residential development. As a result, local governments are less incentivized to invest in these spaces, focusing instead on revenue-generating projects. However, open spaces, parks, and recreational areas can generate income through user fees, events, related commercial facilities, concessions, and other forms of monetization, but such revenue streams are often underdeveloped in Chattogram. The lack of strategic planning to leverage these spaces for income generation means they are not seen as financially viable.

Dependence on Government Funding through Project:

Open space projects often rely on government fundings. The project proposals of this kind often failed to demonstrate the benefit-cost ratio and IRR (internal rate of return) to be beneficial. This is often attributed to the high cost of urban land and acquisition compensation. As such, the decision makers often reluctant to support such project and give priorities to other

Private Sector involvement: Private developers are often more interested in maximizing profit from land by building commercial open spaces including theme parks and Astro turfs. These are certainly important inclusions for the city. However, as these are not free, these are not accessible for all.

Limited accessibility of the playgrounds:

Playgrounds in Chattogram suffer from inadequate planning and limited public access. Most are owned by educational institutions and are not available for general public use, leaving urban residents with few recreational options.



Development plans for cities like Dhaka and Chattogram have failed to establish clear standards for playgrounds, often relying on dual-use schoolyards as substitutes. Unlike some other cities, Chattogram has no structured approach to providing various types of playgrounds, such as playlots, playgrounds, and playfields, to meet the needs of children of different ages.

8.4.2 Issues of Non-functional Open Space

In the Chattogram Master Plan, open spaces are designated to improve environmental quality, urban livability, and public health. However, in practice, many of these open spaces are either encroached upon or remain underutilized due to the absence of basic facilities. Several parks, playgrounds, and waterfront open spaces lack proper lighting, safety arrangements, public toilets, seating, and regular maintenance, making them unusable for daily public activities. As a result, these areas often become informal dumping grounds or are gradually occupied by unauthorized uses. The gap between planning intent and on-ground management has reduced the functional and social value of open spaces in Chattogram, despite their critical role in climate resilience, recreation, and community well-being.

8.4.3 Recommended Policy Guidelines and Strategies for Open Space and Recreational Facilities

Policy OSR 1: Protect and Enhance Existing Open Spaces, Parks, and Playgrounds

- OSR-1.1: Prepare an updated inventory and GIS-based mapping of all existing parks, playgrounds,

urban forests, waterfronts, and green spaces.

- OSR-1.2: Launch restoration and beautification programs for neglected parks and lakes (e.g., CRB Hill, Patenga Beachfront).
- OSR-1.3: Reserve minimum green coverage requirements for each ward and enforce compliance during building permit approval.

Policy OSR 2: Expand Open Spaces and Recreational Facilities to Meet Future Demand

- OSR-2.1: Identify and reserve land for new parks, children's play areas, community greens, and sports fields in new growth areas such as Anwara, Patiya, and Hathazari.
- OSR-2.2: Develop large metropolitan parks in peri-urban areas (e.g., themed park at Bayezid, riverfront park along Karnaphuli, Char Bakalia).
- OSR-2.3: Promote multi-use recreational complexes combining sports fields, jogging tracks, libraries, and cultural spaces.
- OSR-2.4: Convert vacant government land, abandoned railway property, and unused institutional grounds into temporary or permanent public parks.

Policy OSR 3: Ensure Equitable Distribution of Recreational Facilities Across the Metropolitan Area

- OSR-3.1: Set minimum open space standards—e.g., 1 m² per capita at ward level—and use these indicators for planning resource allocation.
- OSR-3.2: Provide inclusive recreational facilities for elderly people, persons with disabilities, and vulnerable groups.



- OSR-3.3: Integrate open space development into area plans, DAPs, and local-level plans.

Policy OSR 4: Promote Green Corridors and Ecological Connectivity

- OSR-4.1: Develop green corridors linking major parks, hills, rivers, and wetlands to ensure biodiversity movement.
- OSR-4.2: Establish linear parks along major canals (e.g., Chaktai Khal, Rajakhali Khal) with walkways and green buffers.
- OSR-4.3: Promote roadside greening with shade trees, bioswales, and landscaped medians to reduce heat island effects.

Policy OSR 5: Improve Institutional Coordination for Open Space Management

- OSR-5.1: Establish an "Urban Green and Recreation Unit" jointly operated by CDA and CCC for coordinated planning and maintenance.
- OSR-5.2: Develop annual ward-level green budgets to finance urban parks and recreational improvements.
- OSR-5.3: Invite private investors for park development, maintenance through co-management models.

Policy OSR 6: Revitalization and Protection of Non-Functional Open Spaces

- OSR 6.1: Conduct a citywide inventory to identify non-functional open spaces and classify them based on size, ownership, location, level of encroachment, and potential for public use.

- OSR 6.2: Physically demarcate all designated open spaces on the ground and enforce land use regulations to prevent further encroachment, with priority action in environmentally sensitive and high-density areas.
- OSR 6.3: Upgrade non-functional open spaces by ensuring minimum facilities such as lighting, paved walkways, seating, public toilets, waste bins, and barrier-free access to make them usable for all age groups and genders.
- OSR 6.4: Promote regular recreational, cultural, and physical activities (e.g., walking tracks, children's play zones, community events) to encourage continuous public presence and reduce misuse.
- OSR 6.5: Assign clear custodianship for each open space to relevant agencies such as CDA, Chattogram City Corporation, or ward-level authorities, with defined operation and maintenance plans and budgets.
- OSR 6.6: Encourage partnerships with local communities, NGOs, and the private sector for co-management, maintenance, and programming of open spaces under clear regulatory frameworks.



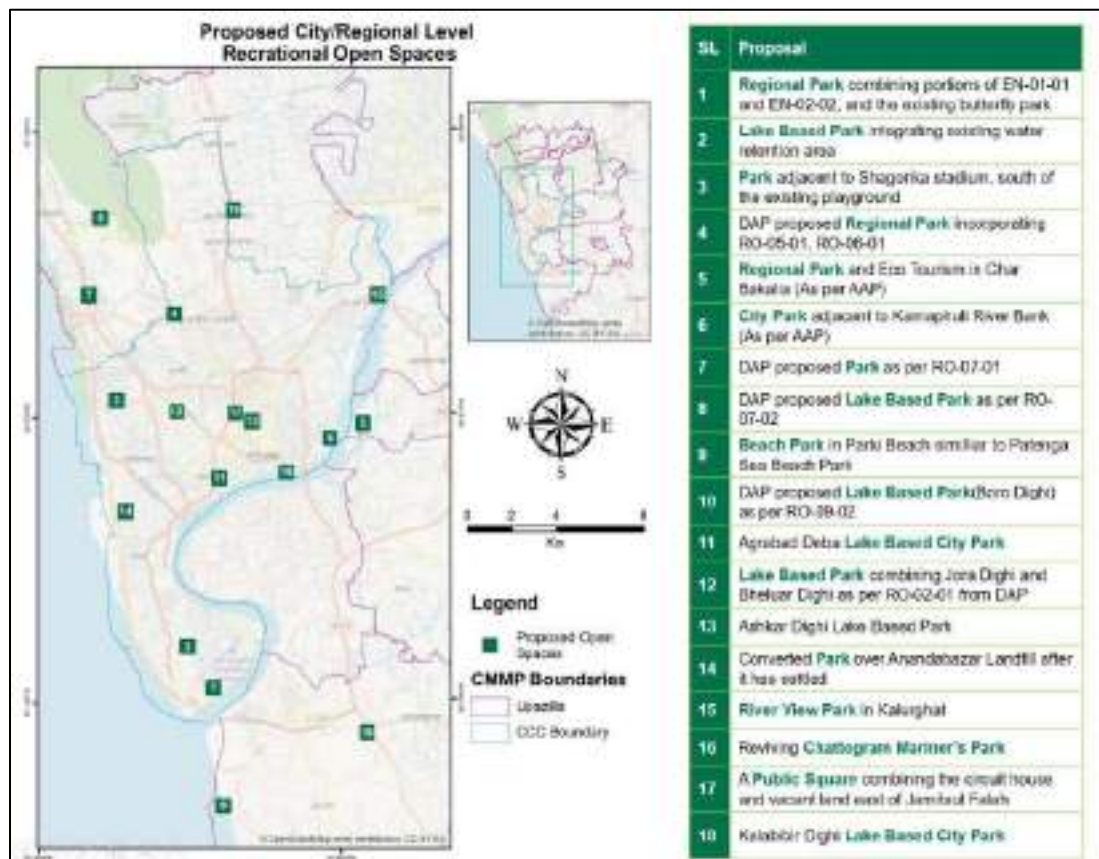


Figure 8-7: Proposed Parks and Open Spaces



8.5 Graveyard Facilities

The CMMP area contains 4,258 graveyards, but the vast majority are family-owned, with only seven community graveyards serving the entire region (Figure 8-8). As the population continues to grow, there is a risk of burial space shortages, particularly in the city, where many residents do not have access to family graveyards. To address this issue, a city-level graveyard and additional community graveyards are needed to accommodate future demand and ensure accessible burial spaces for all residents.

The 2005 DAP policy (Comm-02-01) proposes the establishment of a National/Regional Graveyard covering 20–25 acres, with the remaining area designated for an Eidgah or a mosque (Figure 8-9). This initiative aims to address the shortage of burial spaces, particularly in the city, where most residents lack access to graveyards. However with the increasing urbanization, demand for graveyards for at least zonal level

has become an essential. City Corporation and Pourashava concern can take lead in developing such humanity service. Implementing this proposal would help meet future demand and ensure proper burial facilities for the growing population.

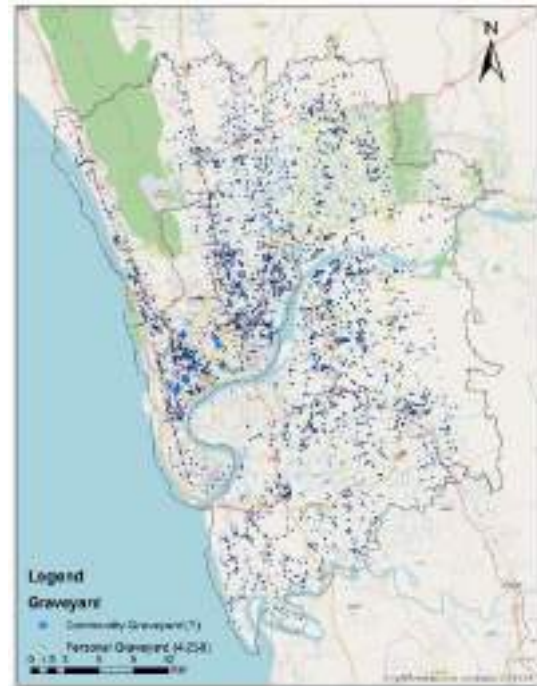


Figure 8-8: Location of Existing Graveyards



Figure 8-9: Proposed location of National/Regional Graveyard

The prevalence of privately owned family graveyards in Chattogram has created several urban management and land use challenges. Individual graveyards are often scattered, unplanned, and developed without adequate environmental, access, or long-term management considerations, resulting in inefficient land utilization and fragmentation of developable land. In many cases, these small graveyards also limit opportunities for road expansion, infrastructure provision, and organized urban development. In contrast, the development of a limited number of well-planned community-level graveyards can ensure more efficient land management, better environmental and sanitary control, improved accessibility, and provision of supporting facilities such as internal roads, drainage, landscaping, and maintenance services. Community-based graveyards can also reduce pressure on urban land while promoting a more organized and sustainable approach to burial management within the metropolitan area.

electricity, while more than 10% of households outside CCC lacked access. In the city there are multiple instances of illegal connections that pose both a safety hazard and causes inefficiency in the power supply system. These lines are joined randomly from main power lines to homes resulting in electric blackouts due to falling branches and also poses a risk for those who work on parallel internet cables.



Figure 8-10: Cluster of Wires

8.6 Utility Facilities and Infrastructure

8.6.1 Electricity in the CMMP Area

The Bangladesh Power Development Board (BPDB) and the Rural Electrification Board (REB) are responsible for electricity distribution in the CMMP area.

However, significant disparities were noted, with areas like Anowara, Fatikchhari, and Mirsharai having over 35% of households without access. In contrast, nearly all households in the Chattogram City Corporation (CCC) area had

8.6.2 Gas Supply in the CMMP Area

The demand for natural gas in Chattogram, Bangladesh's commercial hub, has grown due to industrial and commercial expansion. To manage this demand, the Karnaphuli Gas Distribution Company Ltd. (KGDCL) was established in 2010 to serve the greater Chattogram region. The KGDCL operates in several CMMP areas, including Hathazari, Sitakunda, and Patiya. The power and fertilizer sectors are the largest consumers of natural gas,



while domestic gas consumption has gradually declined since its peak in the 2016-17 financial year. Figures 8-11 highlight the category-wise gas

consumption trends, revealing steady usage in the commercial and CNG sectors and increased consumption in industrial and power sectors.

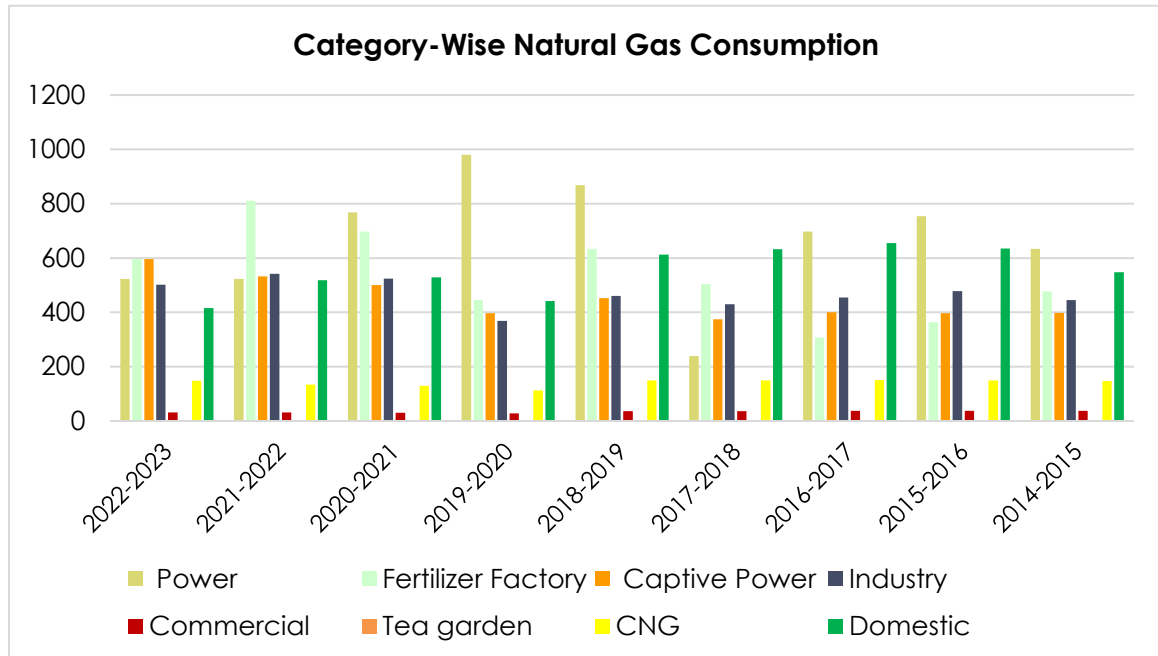


Figure 8-11: Category Wise Natural Gas Consumption (2014-2023).

Currently no new gas connections are being provided to residential households, and a large part of the residence rely on LPG cylinders for cooking.

8.6.3 Internet and Telecommunications

The internet and telecommunications setup in the area has some noticeable issues. Cables for internet and television are poorly managed, creating a messy and cluttered appearance. Many households in the same building use different internet service providers (ISPs), resulting in a lot of extra cables. Connection boxes are often left

much to say about the quality of the connections since the market is competitive, and providers generally meet customer demands. However, the lack of proper cable organization makes the system look untidy and disorganized.



Figure 8-12: Tangled Power and Internet Cables.

hanging outside instead of being installed properly indoors. There isn't



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Chapter Nine

Housing



Chapter Nine: Housing

9.1 Background

The national policy regarding "Housing" is based on the goal of ensuring "Housing for All" by harnessing the potential of the public, private / corporate and household sectors. It aims to ensure effective housing and shelter options for all citizens, especially for the vulnerable groups and the poor, by creation of adequate housing stock on either rental or ownership basis. It envisages the role of the public agencies as facilitator through policy and strategic interventions. Housing has a strong spatial relationship with employment, social services and other urban activities. The policy for development of housing could act as major tool for influencing the efficiency and equity of urban areas, besides its direct role in the provision of shelter.

The housing sector in the Chattogram Metropolitan Area faces critical challenges that must be addressed in the master plan to ensure sustainable urban development. Rapid population growth, coupled with unplanned urbanization, has led to a significant shortage of affordable and adequate housing, particularly for low- and middle-income groups. Informal settlements are expanding, often in environmentally sensitive areas such as hills and wetlands, exacerbating ecological degradation and increasing vulnerability to disasters like landslides and flooding. Additionally, the high cost of land and housing, lack of regulatory enforcement, and inadequate infrastructure in many

residential areas further contribute to the housing crisis.

The distribution of residential areas in Chattogram varies significantly with high-density blocks concentrated in the city and surrounding Paurashava (municipal) areas. The city itself, particularly areas like Agrabad, Halisahar, Cox's Bazar Road, and the commercial hub of Shah Amanat, features a dense population due to urbanization and economic activity. In contrast, the residential zones in peripheral areas such as Pahartali, East Nasirabad, and West Mirzapur are less congested and tend to have more spacious homes. According to the 2022 population census, Chattogram city has an estimated population of over 3 million, contributing to the growing demand for residential spaces.

The master plan should prioritize strategies to promote affordable housing, enforce zoning regulations, and integrate green infrastructure to create sustainable, inclusive, and resilient communities. Addressing these challenges requires a balanced approach that combines government intervention, private sector participation, and community involvement to meet the diverse housing needs of the metropolitan population while protecting the environment.



Table 9-1: Residential Landuses in Chattogram

Landuse	Area (Sq.Km.)	Percentage (%)
Planned Residential & Apartment Block	10.04	2.85
High Rise - High Density (unplanned)	40.34	11.47
Low Rise - High Density	2.54	0.72
High Rise - High Density	0.39	0.11
Mixed Height - High Density	18.13	5.15
Modarate Density – Urban	16.42	4.67
Modarate Density – Rural	1.81	0.51
Slum	5.67	1.61
Low Density - Rural	248.23	70.59
Low Density - Urban	1.68	0.48
Hilly Area Residence	6.51	1.85
Total	351.76	

Source: CMMP Physical Feature Survey

The development pattern in the map shows a high-density distribution in city area; followed by Paurashava.



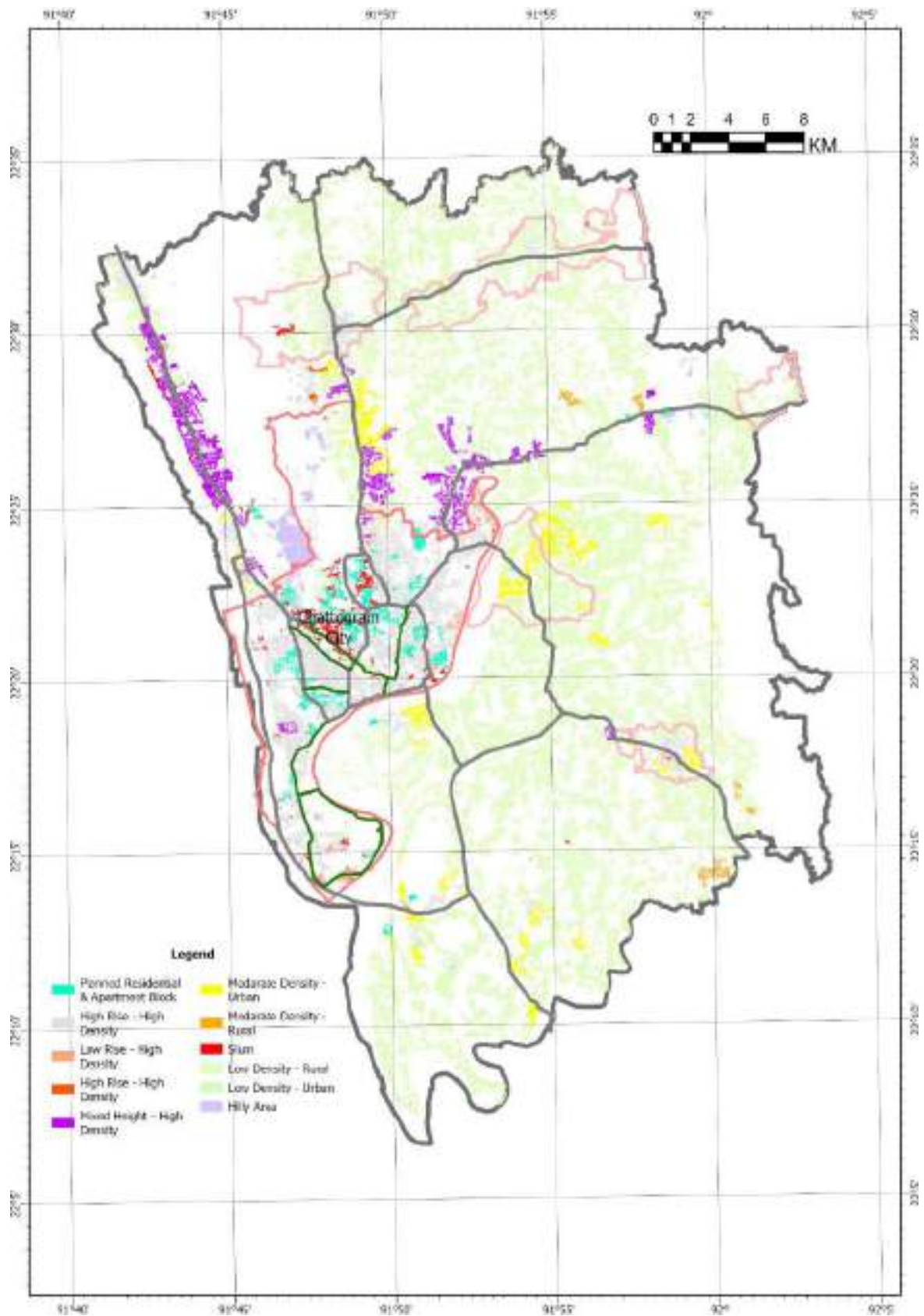


Figure 9-1: Residential Area in CMA.



9.2 Housing Landscape in Chattogram

The housing supply in Chattogram faces significant challenges in meeting the demands of its growing population, which is projected to exceed 10 million by 2035. While the city has seen a steady increase in housing developments, especially in areas like Agrabad, Haliashahar, and Khulshi, much of the housing supply caters to middle- and high-income groups, leaving a significant gap for low-income households. According to a report by the Bangladesh Institute of Planners (BIP), over 35% of

the city's population resides in informal settlements due to the lack of affordable housing. Public housing initiatives, such as those by the Chattogram Development Authority (CDA), have been limited and insufficient to address the demand. Additionally, rapid urbanization and land scarcity have driven up real estate prices, making housing even less accessible for low-income groups. To bridge this gap, the city needs targeted interventions such as public-private partnerships, inclusionary zoning policies, and incentives for affordable housing development.

Table 9-2: General HH by Structure of Main Dwelling in Chattogram Metropolitan Area

Administrative Area in CMA	General HH by Structure of Main Dwelling		
	Katcha	Semi-Pucca	Pucca
Chattogram City Corporation	72741	175879	525877
Pourashava in CMA	25402	15435	33928
Upazila (Rural) in CMA	293570	111017	220005
Total	391713	302331	779810

Source: BBS 2022.

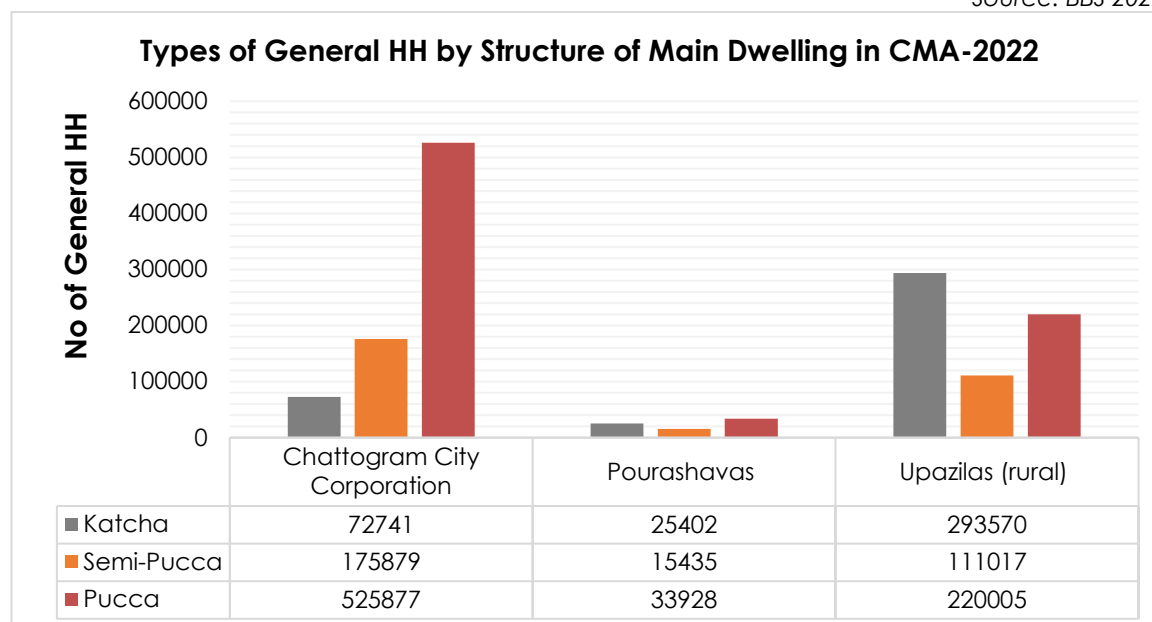


Figure 9-2: General HH by Structure of Main Dwelling in CMA – 2022.

To address the housing shortage, CDA has taken different initiative in the

past. The figure below shows the location. At the same time private

developed has come forward in Chattogram to offer residential and commercial land for development. The below shows the location of those project location. It appears most of the projects are located within city and the buyers are relatively affluent person or company who does not

(including Paurashava), and 236 mohallas, with a population of 3.38 million. The city has experienced a real estate boom, second only to Dhaka. According to the Bangladesh Bureau of Statistics (2010), there are around 0.9 million municipal holdings in Chattogram, with approximately 0.6

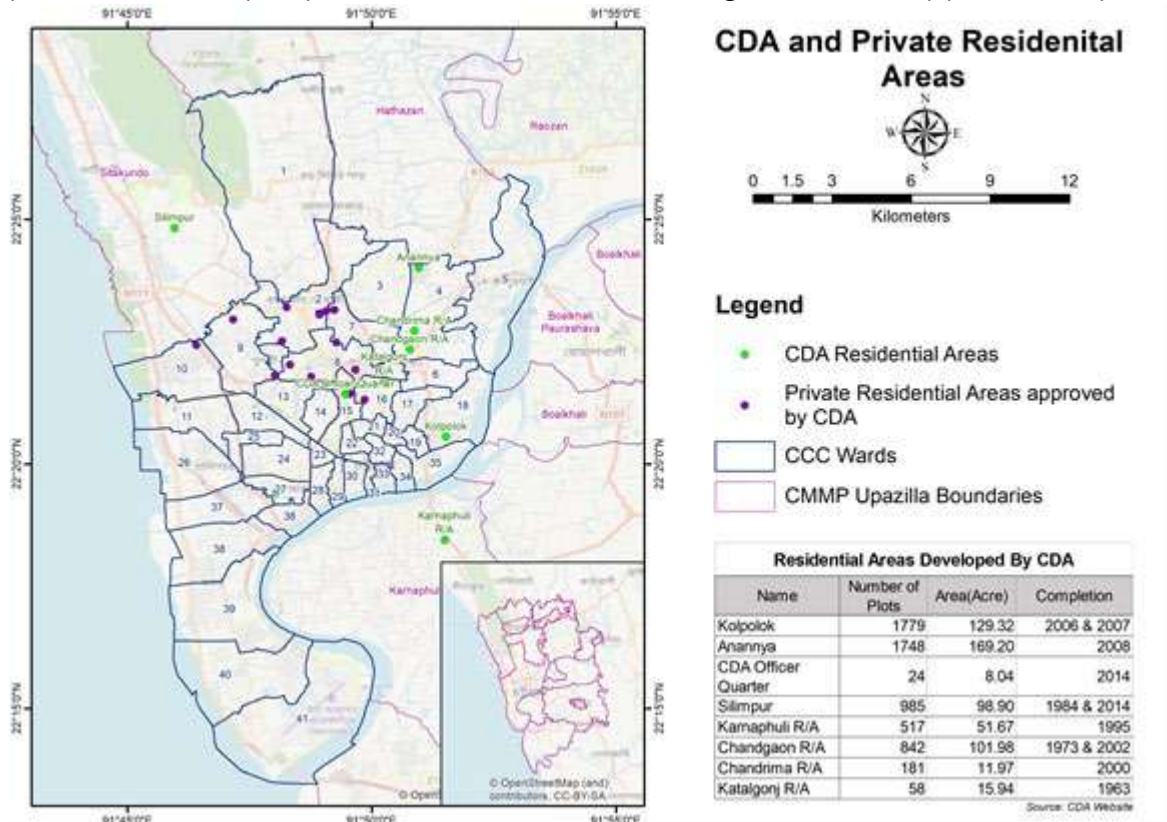


Figure 9-3: CDA and Private Residential Areas

want to develop outside the city.

9.3 Challenges

9.3.1 Increasing Housing Demand

Chattogram, Bangladesh's second-largest city, faces significant challenges in its housing sector due to rapid urbanization and population growth. As of the 2022 Population and Housing Census, the Chattogram district recorded a population of approximately 9.17 million.

The Chattogram Metropolitan Master Plan (CMMP) spans 1,255 square kilometers, encompassing six metropolitan thanas, 68 wards

million being residential. Despite this growth, housing shortages persist, particularly for low-income residents. An estimated 35% of the city's population resides in informal settlements or slums, lacking access to adequate housing and essential services.

The informal housing sector in Chattogram is characterized by makeshift structures, often developed without proper planning or consideration for geographical and environmental factors. This situation exacerbates vulnerabilities, especially for economically disadvantaged groups. Efforts to address these challenges include proposals for



mixed-income housing schemes that subsidize lower-income categories through profit-sharing mechanisms, aiming to create sustainable and inclusive housing solutions.

In summary, while Chattogram has witnessed significant growth in its housing stock, the city continues to grapple with substantial housing shortages, particularly affecting low-income populations. Addressing these challenges requires comprehensive planning and targeted interventions to ensure equitable access to housing for all residents.

9.3.2 Increasing Population in Slum and Low-Income Housing

Chattogram, Bangladesh's second-largest city, faces significant challenges in addressing the living conditions of its slum dwellers. According to the 2022 Population and Housing Census, approximately 301,871 individuals reside in slum areas within the Chattogram City Corporation. These informal settlements are often characterized by overcrowding, inadequate housing structures, and limited access to essential services such as clean water, sanitation, and electricity. These informal settlements, such as Barisal Colony, Station Road area, and Jamtoli Bosti, are characterized by overcrowding, inadequate housing structures, and limited access to essential services like clean water, sanitation, and electricity.

The rapid urbanization and influx of migrants have led to the proliferation of these settlements, with many located in environmentally hazardous areas, exacerbating residents' susceptibility to natural disasters. Notably, the Jamtoli Bosti at Enayet Bazar and Motijharna Slum at Lalkhan Bazar have experienced deadly

landslides, with over 40 fatalities in a decade at Motijharna.

A study by Young Power in Social Action (YPSA) indicates that 25-30% of the population in around 600 slums are climate refugees, highlighting the environmental vulnerabilities contributing to urban migration. The rapid urbanization and influx of migrants have led to the proliferation of these settlements, with many located in environmentally hazardous areas, exacerbating residents' susceptibility to natural disasters. Efforts to improve living conditions in these slums require comprehensive planning, infrastructure development, and policies aimed at providing secure housing and essential services to this marginalized population.

9.3.3 Weak Housing Policy and Regulatory Enforcement

One of the most pressing challenges in Chattogram's housing sector is the lack of a comprehensive and coordinated housing policy, along with weak enforcement of existing regulations. The absence of a unified housing strategy means that development efforts are often fragmented, reactive, and limited in scope. Urban growth is outpacing planning capacity, and many housing initiatives-whether by public or private actors-do not align with long-term land use plans or infrastructure availability. Building codes and zoning regulations are often outdated or inconsistently enforced, resulting in unsafe, overcrowded, and poorly serviced housing developments. Informal construction without approved plans is common, particularly in peripheral areas, hillsides, and low-lying zones are vulnerable to natural disasters. Regulatory agencies such as the CDA and CCC face institutional and resource constraints, limiting their ability to monitor and guide housing



growth effectively. Furthermore, coordination among various departments-housing, land, environment, and utilities-is often weak, leading to delays, legal disputes, and planning overlaps. Without strong policies and effective enforcement, unplanned densification, informal settlements, and unsafe construction will continue to undermine the city's livability, resilience, and sustainability. Strengthening institutional capacity, modernizing regulatory frameworks, and promoting accountability in enforcement are essential steps toward improving housing governance in Chattogram.

9.3.4 High Land Prices and Speculation

Escalating land prices and rampant speculation pose significant obstacles to equitable and inclusive housing development in Chattogram. As the city expands and infrastructure improves, land in strategic urban locations becomes increasingly valuable, often pricing out low- and middle-income residents. Real estate developers, investors, and landowners frequently engage in speculative landholding-purchasing and withholding land with the expectation of future value increases-rather than using it for productive or residential purposes. This limits the availability of land for affordable housing and inflates housing costs across the market. In many cases, land is fragmented, poorly documented, or tied up in legal disputes, making it difficult for government agencies and developers to acquire and utilize it for planned housing projects. Moreover, land use conversion and unauthorized subdivision are common, driven by profit motives rather than planning guidelines. The result is an unbalanced housing market where formal housing supply caters mostly to high-income

groups, while the majority struggle to access secure, affordable shelter. This trend exacerbates inequality, encourages informal settlements, and disrupts spatial planning. Addressing this challenge requires better land valuation mechanisms, active land banking, regulatory controls on speculation, and policy interventions that prioritize land use for inclusive urban housing.

9.4 Housing Strategy

There are several strategies for improving the housing sector in Chattogram, Bangladesh, with a focus on inclusivity, sustainability, and resilience. Key ones are:

- Promote affordable housing
- Encourage Planned Decentralization
- Regularize informal settlements
- Strengthen Housing Finance Mechanisms
- Enhance Governance and Institutional Capacity

9.4.1 Promote Affordable Housing

To promote affordable housing in Chattogram, several strategies can be implemented to ensure housing is accessible for a broader population. Here are some key actions to consider:

1. **Incentivize Private Sector Investment:** Government can offer tax incentives, land subsidies, or reduced fees for developers who commit to building affordable housing units. This would encourage private developers to invest in lower-cost housing projects.
2. **Land Use Policy and Zoning Reforms:** CDA can revise zoning laws to allocate land for affordable housing development, especially in underutilized or peripheral areas. By allowing mixed-use zoning, they



can encourage developers to build affordable residential complexes alongside commercial spaces.

3. **Public-Private Partnerships (PPP):** CDA, NHA can collaborate with private developers, NGOs, and other stakeholders in joint ventures to finance and build affordable housing. These partnerships can lower the financial risks and increase the number of available affordable units.
4. **Infrastructure Development:** By investing in infrastructure such as roads, water supply, and sewage systems in peripheral or underdeveloped areas, more areas can be made attractive for affordable housing projects. Improved infrastructure can reduce the overall cost of housing construction.
5. **Subsidies and Financing Support:** HBRI and Bangladesh Bank can collaborate with banks and financial institutions to create low-interest housing loans or provide subsidies for low-income families. Additionally, they can facilitate easy access to government housing schemes that offer financial support.

9.4.2 Encourage Polycentric Development

As the city grows, it appears to have few centers organically in Chattogram. As infrastructures are not planned, those centers are not in use as per their potential. Those need to recognize in plan and lay the infrastructure and services accordingly. Polycentric growth or satellite towns in Chattogram offers several benefits, including reduced congestion in the city center, better distribution of resources, and improved quality of life for residents. By decentralizing urban development,

pressure on infrastructure, housing, and transportation can be alleviated, while promoting balanced economic growth in multiple areas. Satellite towns also help to enhance connectivity, create job opportunities in suburban regions, and encourage sustainable land use.

A polycentric development approach for the Chattogram Metropolitan Area requires identifying a set of strategically located urban centers that can share the burden of population, employment, and services currently concentrated in the core city. Several emerging nodes show strong potential to function as secondary urban centers due to their economic roles, connectivity, and land availability.

- **Hathazari**, located in the north, is already growing around major educational institutions such as the University of Chittagong and the Veterinary University, making it suitable to evolve into an education- and research-driven knowledge city.
- **Patiya** possesses large areas of peri-urban land and strong highway access, making it an ideal location for developing a residential satellite town.
- **Sitakunda-Barabkunda corridor** is expanding rapidly with logistics and industrial activities, positioning it as a future logistics and manufacturing service hub.
- **Anwara-Karnaphuli area**, linked by the Karnaphuli Tunnel, offers exceptional potential for a new township supporting residential, commercial, and CIEZ-related growth. Additionally,
- **Rangunia** can serve as an eastern agri-business and administrative hub.
- **Boalkhali-Sadar corridor** presents opportunities for medium-density housing and wholesale markets.



Together, these centers create a balanced urban structure that supports decentralization, reduces pressure on the core city, and promotes sustainable metropolitan.



Figure 9-4: Urban Sprawl vs Planned Densification.

9.4.3 New Planned Area Development

The creation of new residential or mixed neighborhoods can help in reducing the housing shortage both within the city and in suburban zones, the demand for housing can be better met. New neighborhoods can reduce the concentration of people in central areas, where housing demand is highest. This decentralization can ease pressure on existing infrastructure and create a more balanced distribution of population across the city and surrounding regions.

9.4.4 Encourage Densification and Stop Sprawling

Densification can significantly help in addressing housing shortages in Chattogram, especially in areas with limited space for horizontal expansion. By increasing the density of existing residential areas, more housing units

can be accommodated without the need for extensive land development. Areas like Agrabad, Shah Amanat, and Nasirabad, which are already urbanized but face space constraints, are prime candidates for densification. In these areas, taller buildings, mixed-use developments, and the redevelopment of underutilized properties can provide additional housing while optimizing existing infrastructure. Densification can also improve public transportation efficiency and reduce urban sprawl, creating a more sustainable urban environment.

9.4.5 Restructuring and Upgradation of existing Area

Redesign and upgradation of existing areas can significantly help in reducing housing pressure in Chattogram. By improving and optimizing the use of land in already developed zones, it is possible to create more housing without the need for large-scale urban expansion. In densely populated areas like Agrabad, Shah Amanat, and Chawk Bazar, restructuring can involve demolishing or repurposing old, underutilized buildings, and replacing them with taller, more efficient residential complexes. This increases housing capacity without encroaching on new land.

In areas with informal settlements or slums, such as parts of Pahartali or Boalkhali, upgrading can include redevelopment projects, where dilapidated housing is replaced with modern, affordable housing. This not only adds housing but also improves the overall quality of life for residents. Also, by incorporating green spaces, energy-efficient designs, and sustainable infrastructure can help in area upgradation, existing areas can become more attractive to residents while preserving the environment,



contributing to long-term urban sustainability. Through these approaches, the pressure on existing housing stocks can be reduced, while ensuring that urban growth is both sustainable and inclusive.

9.4.6 Housing for Poor

Housing for the poor is crucial in Chattogram, as it addresses the pressing need for shelter among vulnerable populations who often live in substandard and unsafe conditions. With rapid urbanization and population growth, many low-income families are forced to reside in informal settlements or slums such as Halishahar and Akbar Shah, which lack basic amenities like clean water, sanitation, and electricity. This exacerbates their vulnerability to health risks, economic instability, and climate-induced disasters like flooding and landslides. Affordable and sustainable housing solutions not only improve living standards but also enhance social equity, reduce urban inequality, and foster economic productivity. By investing in housing for the poor, Chattogram can ensure inclusive growth, mitigate the expansion of

unplanned settlements, and create a more resilient urban environment. Access to safe, secure, and dignified housing can empower marginalized communities, providing them with a stable foundation for education, livelihood, and overall well-being.

9.4.7 Promoting Guided Land Development

Chattogram is experiencing rapid urbanization, but much of this growth is unplanned, leading to urban sprawl, congestion, informal settlements, environmental degradation, and infrastructure strain. The city's unique geography, with hills, rivers, and flood-prone areas, makes uncontrolled land development risky. Since development has reached to different part of the city before the 'plan implementation' has arrived, Guided Land Development (GLD) could be a sustainable and practical solution. GLD ensures that urban expansion is systematic, sustainable, and resilient, addressing key challenges.

Table 9-3: GLD approach suggested for different areas in Chattogram

Method	Applicable Areas	Why It's Suitable
Tripartite Land Readjustment Program (TLRP)	Any land locked area within the metropolitan where development density is low	It avoids the traditional long process of land acquisition and compensation estimation. Local people preferable stay on the same land with smaller plot size.
Land Pooling / Land Readjustment	South Halishahar, Anwara, Patiya, Hathazari, and Sitakunda	These areas are experiencing peri-urban expansion, and land pooling can help in planned township development.
Land Banking	Patenga, Bayezid, Boalkhali, and Mirsarai Economic Zone	Government-led land acquisition can support industrial expansion, housing

Method	Applicable Areas	Why It's Suitable
		projects, and commercial growth.
Land Use Zoning & Density Control	GEC, Agrabad, Halishahar, Chawkbazar, and Khulshi	High-rise construction and commercial activity need strict zoning regulations to prevent congestion and infrastructure overload.
Public-Private Partnership (PPP) for Urban Expansion	Outer Ring Road, Bayezid Bostami Corridor, and Airport Road	These major corridors have potential for mixed-use development, requiring private sector investment under guided planning.
Transit-Oriented Development (TOD)	Metro/BRT corridor (proposed), Outer Ring Road, and areas near future transport hubs	TOD will ensure high-density development near transit nodes, reducing traffic congestion.
Regularization & Upgrading of Informal Settlements	Lalkhan Bazar, Akbar Shah, CRB, and low-income areas in Halishahar	Instead of eviction, infrastructure and tenure security improvements will enhance living conditions.

9.4.8 Tripartite Land Readjustment Program (TLRP)

Under the Requisition of Immovable Property Act, 2017, government organizations are required to pay three times the average market value of land during acquisition. This makes traditional land acquisition for urban redevelopment projects financially unsustainable and time-consuming. This has been hindering development projects that require to acquire land. As an alternative to it, Tripartite Land Readjustment Program (TLRP) can be adopted in which land locked and low development area can be developed through a collaborative partnership between CDA, the Public (landowners), and Private Developers, where development rights are transferred instead of land ownership being acquired with cash. Through TLRP private developers bring

investment, technical expertise, and project management skills, accelerating the pace of development without relying solely on public funds. The challenges of such projects are unreliability to development authority or developer, legal coverage in transferring the land rights.





Figure 9-5: Concept of TLPR

9.5 Recommended Policies and Strategies for Housing Sector Management

HOU-1: Affordable Housing Development Policy

CDA must adopt a dedicated policy to promote affordable housing for low- and middle-income groups. This includes mandating a percentage of new residential developments as affordable units, offering incentives (allowing additional FAR) to developers who build smaller apartments (for example, less than 70 sqm). Government-backed housing finance schemes and public-private partnerships (PPPs) should be introduced to expand the housing supply in planned areas, reducing the proliferation of informal settlements.

- HOU-1.1: Introduce inclusionary zoning requiring a percentage of units in large projects to be designated as affordable housing.
- HOU-1.2: Develop rental housing schemes for low and middle income groups with regulated rents and secure tenure.

HOU-2. Slum Upgrading and Regularization Policy

Instead of forced evictions, Chattogram should adopt a policy

focused on upgrading and regularizing informal settlements. This includes providing secure tenure, improving basic services (water, sanitation, electricity), and ensuring access to community facilities. Participatory planning with slum dwellers can help prioritize needs and build community ownership. Such policies reduce vulnerability, promote dignity, and integrate slums into the formal urban fabric without displacement.

- HOU-2.1: Implement in-situ slum upgrading (roads, sanitation, lighting) without displacing existing residents.
- HOU-2.2: Offer tenure regularization or community leases to prevent eviction and improve investment security.

HOU-3. Hill and Hazard Zone Housing Control Policy

To prevent disasters, a strict policy is needed to regulate housing in environmentally sensitive areas such as hills, wetlands, and flood-prone zones. The policy should prohibit new construction in high-risk zones, relocate existing vulnerable settlements with proper rehabilitation, and strictly enforce building codes. Ecologically safe designs and climate-resilient construction methods should be encouraged for any permitted housing near hazard-prone areas.

- HOU-3.1: Identify and map all hazard-prone areas (landslide zones, steep slopes, floodplains) as restricted housing zones.
- HOU-3.2: Restrict families living in high-risk hill slopes.
- HOU-3.3: Enforce strict regulations against hill-cutting, unauthorized structures, and unsafe building practices in hazard zones.

HOU-4: Public Housing and Cooperative Housing Policy



The government should revive and expand public housing programs and support cooperative housing models to serve low-income groups. Public land and financing can be used to develop rental or ownership units managed by government or housing cooperatives. This model enhances affordability, reduces developer profit-driven pricing, and promotes community-based management and maintenance, making housing more sustainable in the long term.

- HOU-4.1: Develop multi-storey public housing blocks on government land for government employees and LIG households.
- HOU-4.2: Support cooperative housing associations through subsidized service land, technical support, and low-interest loans.
- HOU-4.3: Promote PPP-based housing estates or Tripartite Land Readjustment Program (TLRP) integrating schools, health centers, and community facilities.
- HOU-4.4: Enforce large plot in private residential area design for cooperative housing

HOU-5: Strengthening Building Code Enforcement Policy

Chattogram must strengthen the enforcement of building codes and regulations to ensure safety, resilience, and quality in housing. The policy should include digitized permit systems, increased capacity of CDA and CCC, regular inspections, and penalties for non-compliance. Special attention must be given to structural safety, fire protection, parking, drainage, and ventilation. Transparent, accountable regulatory systems will improve housing quality across all income levels.

- HOU-5.1: Establish a specialized housing safety inspection cell within CDA or CCC to monitor BNBC compliance.

- HOU-5.2: Introduce digital building approval systems with GIS verification and automated compliance checks.
- HOU-5.3: Conduct periodic audits of old and structurally vulnerable residential buildings, especially in dense neighborhoods.

HOU-6: Climate-Resilient and Green Housing

A forward-looking housing policy in Chattogram must focus on climate-resilient design and green building practices. This includes promoting energy-efficient buildings, rainwater harvesting, solar energy integration, and the use of sustainable construction materials. Incentives for green certification and environmentally friendly housing technologies should be offered. This policy ensures long-term sustainability, reduces urban heat, and prepares the housing sector to withstand climate-related shocks.

- HOU-6.1: Promote new housing developments to incorporate green design elements (stormwater retention, solar energy, cross-ventilation) by introducing building star rating and allowing incentives.
- HOU-6.2: Provide incentives for using eco-friendly materials, rainwater harvesting, and energy-efficient appliances.

HOU-7: Non-Mortgage Housing Loan

To expand housing access for low-income and informal workers, Chattogram should introduce a non-mortgage housing loan scheme. This policy would provide small, collateral-free loans through microfinance institutions, cooperatives, or public banks for home improvement, extension, or new construction. The loan should be tailored to those without formal property titles or stable income records. The scheme would increase financial inclusion, reduce slum



dependency, and empower vulnerable households to invest in safe, decent housing.

- HOU-7.1: Introduce small-scale, low-interest loans for incremental housing improvements for households without formal land titles.
- HOU-7.2: Partner with microfinance institutions to provide secure, flexible financing for slum upgrading, building repairs, and extensions.
- HOU-7.3: Establish government-backed guarantee schemes to reduce risk for lenders and expand credit access to low-income households.

HOU-8: Promote Guided Land Development

CDA and CCC should adopt Guided Land Development (GLD) policy to promote planned urban expansion in peri-urban and fringe areas. This approach involves public-private collaboration to provide infrastructure (roads, drainage, water supply) before or alongside development, guiding orderly land subdivision and use. The policy helps prevent informal sprawl, ensures equitable access to services, and optimizes land value capture, creating sustainable and well-structured new neighborhoods aligned with the city's master plan.

HOU-8.1: Identify peri-urban land suitable for future residential expansion and develop roads, utilities, and drainage before subdivision.

HOU-8.2: Implement land readjustment programs (different forms of GLD) allowing landowners to pool land for planned development.

HOU-8.3: Require minimum open space, community facilities, and plot standards in all new layouts of Guided Land Development.

HOU-9: Residential Projects in Small Urban Centers

CDA's development initiatives have been predominantly concentrated within the City Corporation area, leaving smaller urban centers - such as Pourashavas and Upazilas - largely unattended and underserved. To ensure balanced urban growth, CDA should undertake development projects in these peripheral areas, including residential zones, community centers, parks, playgrounds, and schools. Such initiatives will strengthen public confidence in CDA, demonstrate equitable service delivery, and reinforce its role in guiding inclusive and integrated metropolitan development.

- HOU-9.1: Promote new housing schemes in secondary towns like Sitakunda, Hathazari, Patiya, and Anwara to distribute population pressure.
- HOU-9.2: Provide incentives for private developers to build housing estates near industrial zones and transport hubs.
- HOU-9.3: Develop integrated township projects with schools, health centers, and recreation facilities to attract households away from the core city

The proposed projects to implement the policies and relevant strategies are listed in the table in Appendix-A.



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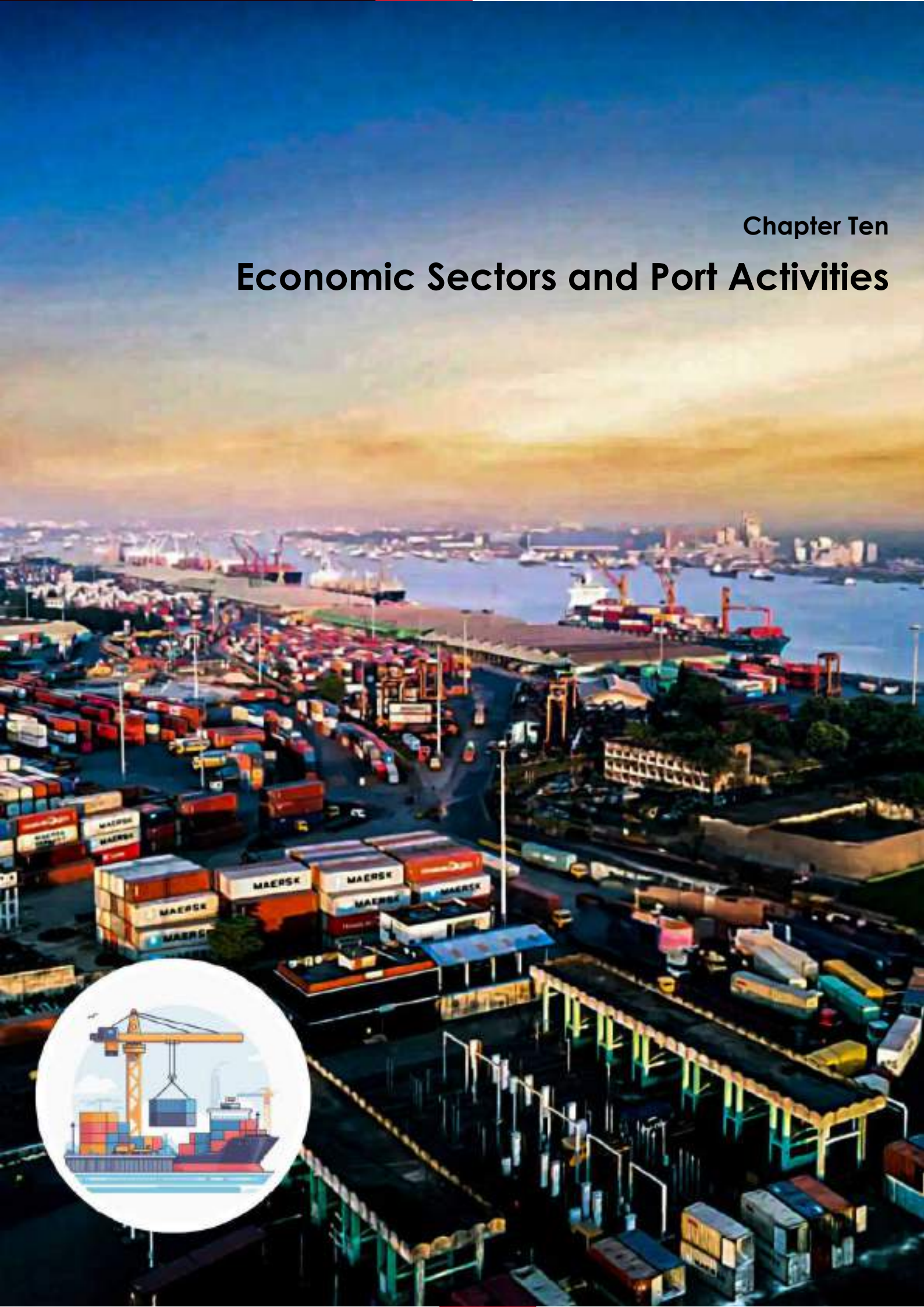
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Chapter Ten

Economic Sectors and Port Activities



Chapter Ten: Economic Sectors and Port Activities

10.1 Background

Chattogram is the trade capital of Bangladesh, the country's main port city, largest industrial center, and a rapidly growing service hub. The city's strategic location on the Karnaphuli River, its access to the Bay of Bengal have historically made it the nation's maritime gateway, linking Bangladesh to global trade routes and regional markets. Over time, this geographical advantage has attracted industries such as shipbreaking, steel, cement, garments, and logistics, all of which depend on the port as the central driver of their growth. The surrounding upazilas are increasingly tied into this growth dynamic, contributing labor, land, and services that complement the city's industrial and commercial base.

At the core of Chattogram's economy is its sectoral composition, which has shifted significantly in the last decade. While agriculture remains important in the hinterlands, it has steadily declined in relative importance, giving way to industry and services. Industrial growth has been especially strong, anchored in the Export Processing Zone, the new economic zones in Anwara and Karnaphuli, and the industrial belt in Sitakunda. Services- particularly trade, transport, education, and health- have also expanded, reflecting the city's role as a regional service hub. The Location Quotient and Shift-Share analyses confirm that Chattogram holds a comparative advantage in industry and services relative to the national economy. This specialization provides opportunities for trade not only with global partners but also within the country, as other regions can benefit from sourcing industrial and

service outputs from Chattogram while supplying goods and labor in return.

Yet this structural strength also brings new challenges. The very success of the port-driven industry has produced concentration risks that might affect the city's resilience to external economic shocks. Industrial clustering in and around the city center has increased congestion, strained infrastructure, worsened air and water quality, and reduced overall livability. Ecological stresses are visible in the cutting of hills for development, the filling of wetlands for industry and housing, and the growing vulnerability of coastal and low-lying areas to salinity and flooding. If left unchecked, such pressures will undermine both the ecological systems that sustain the economy and the city's quality of life. A long-term plan is therefore required to spatially diffuse industrial concentration, encouraging new growth centers away from the city core while retaining the port as the hub of logistics and trade. This would ease congestion, reduce ecological damage, and more evenly spread economic opportunities across the region.

Another defining feature of Chattogram's economy is the informal sector, which, despite being often overlooked, plays a vital role in sustaining livelihoods and supporting urban services. Informal work dominates in areas such as construction, transport, small-scale retail, and even parts of the shipbreaking industry. While informality reflects precarity and lack of regulation, it is also a source of creativity and resilience. Innovation often emerges in the informal economy, where people facing constraints must find practical solutions that the formal sector cannot easily



provide. Recognizing, supporting, and gradually formalizing these innovations- through access to credit, training, and regulatory inclusion- can be a key driver of broader economic transformation.

The sustainability of Chattogram's economic future is also tied to its geology, ecology, and property rights regime. The city's hills, rivers, floodplains, and coastlines are not just environmental backdrops but are fundamental to the city's economy. Their degradation- through uncontrolled land development, poor drainage, and encroachment on wetlands- directly increases economic costs by destabilizing infrastructure, raising disaster risks, and reducing agricultural productivity. Land and property rights further complicate the picture. Formal titles, informal occupations, and politically mediated claims overlap, creating insecurity and speculation. This not only inflates the cost of industrial and housing land but also accelerates ecological loss when fragile areas are converted without accountability. Reforms that secure land rights and protect ecological

commons are therefore central to both economic efficiency and sustainability.

Chattogram's context thus presents a dual reality. On the one hand, it has a robust and growing industrial and service base, clear comparative advantages, and a central role in the national economy. On the other, it faces structural vulnerabilities- overdependence on port-linked industry, uneven development across its upazilas, widespread informality, ecological fragility, and contested property rights. The long-term challenge is to turn specialization into a sustainable advantage: to leverage the port and its industries while diversifying the economy spatially and sectorally, to support innovation in both the formal and informal sectors, and to align economic growth with ecological stewardship. This chapter addresses these issues by first examining the structure of the economy and its diagnostic indicators, and then outlining strategies and policies to guide Chattogram toward a resilient, inclusive, and sustainable economic future.

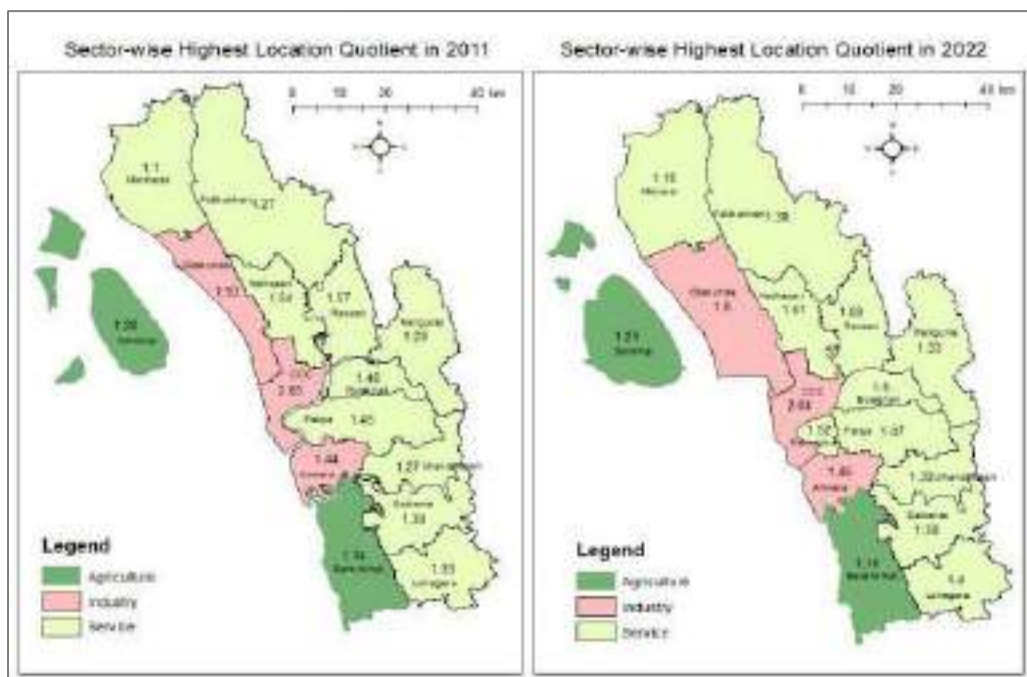


Figure 10-1: Sector Wise Highest Location Quotient from 2011 – 2022.



Chattogram Port, located at the estuary of the Karnaphuli River serves as the gateway for 92% of the country's international trade. Its history dates back to the 9th century, when it was a key maritime hub under Arab traders, and it later gained prominence during the British colonial era. Historically known as Porto Grande De Bengala during the Portuguese colonial period, it served as a vital trading post for European merchants engaged in the spice trade. In the 17th century during the Mughal period, the city's strategic importance was recognized, leading to further development and prosperity in maritime commerce. British colonial rule from the 18th to the 20th century brought significant modernization and expansion to Chattogram Port, facilitating the export of raw materials and strengthened its position as a key maritime gateway through infrastructure improvements like railways. Today, the port operates through modern container and bulk cargo terminals, handling over 3 million TEUs (twenty-foot equivalent units) annually, and is ranked among the top 100 container ports globally.

The port faces challenges such as congestion due to limited berths, aging infrastructure, inefficient hinterland connectivity, and siltation in the Karnaphuli River, which impacts navigation. The increasing volume of trade, driven by Bangladesh's economic growth, has put additional pressure on the port's capacity. Moreover, environmental issues, including pollution and climate change, threaten its operations.

To address these issues, initiatives such as the construction of the Bay Terminal, modernization of cargo-handling equipment, and digitalization of customs and logistics processes are underway. Enhanced rail and road links to connect the port with industrial zones and neighboring countries can

further boost its efficiency and regional significance. Improved dredging practices and adoption of green port technologies can mitigate environmental concerns, ensuring sustainable growth.

10.2 Situation Analysis and Diagnosis

The economic structure of Chattogram reveals a striking departure from the national average and underscores the city-region's role as Bangladesh's principal industrial and service hub. While agriculture still provides livelihoods in surrounding upazilas, the economy of the district has shifted decisively toward industry and services. In 2022, only 17.5 percent of the workforce in Chattogram was employed in agriculture, compared to 40.6 percent nationally. By contrast, industry employed 28.7 percent of the local workforce (versus 20.4 percent nationally), and services accounted for 53.8 percent (compared to 39.0 percent nationally). This composition reflects the impact of the port, the industrial zones, and the metropolitan service economy, positioning Chattogram as a diversified but strongly port-dependent economy.

10.2.1 Employment Structures

The City Corporation area has a highly urban profile, with less than two percent of its workers in agriculture and over 40 percent in industry and more than half in services. The surrounding upazilas, however, show a more mixed pattern. Areas such as Banshkhali, Rangunia, and Chandanaish still retain strong agricultural employment, while Sitakunda, Anwara, and Karnaphuli are increasingly industrialized due to their proximity to the port and new economic zones. Hathazari, Raozan, and Patiya show service-oriented



profiles, often linked to education, commerce, and health functions that serve both local and metropolitan populations.

10.2.2 Informal Economy

The informal economy in Chattogram is deeply intertwined with port activity, industrial expansion, and rapid urbanization, providing livelihoods in transport services, construction, petty trade, recycling, shipbreaking support services, and small logistics operations. However, its scale also reflects structural challenges. Informal workers and enterprises operate with limited access to secure land, finance, skills training, and social protection, reinforcing cycles of vulnerability and low productivity. Spatially, informal activities often concentrate along port access roads, industrial corridors, riverbanks, and vacant or hazardous land, contributing to congestion, unsafe working conditions, and environmental degradation. Weak coordination between land-use planning, transport management, and labor regulation further marginalizes informal actors, while periodic evictions and enforcement actions disrupt livelihoods without offering viable alternatives. As port expansion and industrial diffusion accelerate, unmanaged informality risks intensifying social exclusion, urban disorder, and ecological stress rather than supporting inclusive growth.

10.2.3 Location Quotient (LQ) Results

The LQ analysis confirms the areas of specialization within the district relative to the national economy. Chattogram City Corporation shows very high LQs in industry (≈ 2.0) and services (≈ 1.5), reflecting its keystone role in Bangladesh's trade and commerce. Sitakunda also stands out with an industry LQ of about 1.7, tied to

shipbreaking and heavy industries. Anwara has a strong industrial profile ($LQ \approx 1.5$), reflecting recent investments in economic zones. In contrast, Banskhali is one of the few areas with an agriculture LQ close to the national average (≈ 1.2), but no upazila shows a sustained agricultural specialization beyond this. Service specialization is prominent in Hathazari, Raozan, Karnaphuli, and Boalkhali, where LQs range from 1.4 to 1.6, indicating their growing role as service hubs. These patterns confirm that the keystone sectors of the Chattogram economy are industry and services, with agriculture steadily losing relative importance.

10.2.4 Shift-Share Insights

Although precise upazila-level employment baselines from 2011 are incomplete, the broader trends are clear. Between 2011 and 2022, Chattogram's industrial share grew by more than four percentage points, while services fell slightly and agriculture remained almost unchanged. Nationally, agriculture declined significantly, industry grew, and services remained steady. This indicates that Chattogram has benefited from the positive "industry-mix effect" of being specialized in a nationally fast-growing sector. The modest decline in the service share at the district level, despite national stability, suggests some local displacement as industry expanded. The "regional shift" component appears strongest in port-linked industries, where local growth outpaced the national trend. Agriculture in Chattogram, though declining nationally, has maintained its relative weight, which may reflect stronger local competitiveness in coastal and peri-urban agriculture despite ecological stress.



10.2.5 Keystone Sectors

From this analysis, three clusters emerge as keystone sectors for Chattogram:

- Port and logistics: anchoring both industry and services, sustaining comparative advantage in trade.
- Heavy industry and manufacturing: concentrated in Sitakunda, Anwara, and the city, spanning shipbreaking, steel, cement, and garments.
- Services hubs: education, health, commerce, and administration, especially in Hathazari, Raozan, and Boalkhali.

These sectors not only support local employment but also function as economic bases that generate trade flows beyond the region, reinforcing Chattogram's role in the national economy.

10.2.6 Spatial Economic Dynamics

The geography of Chattogram's economy reflects the interplay of the port, industrial corridors, and peri-urban transitions. Industrial concentration remains heaviest in the city core, Sitakunda, and emerging zones in Anwara and Karnaphuli, driven by port proximity. Services are strongest in the metropolitan periphery, where urban institutions and consumer markets support education, health, and retail. Agriculture is receding but remains significant in more distant upazilas, though often challenged by salinity and land conversion. The spatial pattern thus reveals both the opportunities and risks of industrial concentration: while proximity to the port drives efficiency and growth, congestion, ecological pressure, and reduced livability make spatial diffusion of industry an imperative.

Developing secondary growth poles in peripheral areas can ease pressure on the core while extending economic opportunities across the district.

In sum, the diagnosis reveals a region with clear comparative advantages in industry and services, strong linkages to national and global trade, and a growing spatial division between the industrial core and the agricultural periphery. At the same time, it highlights vulnerabilities in ecological resilience, overconcentration, and governance of land and property. The challenge is not whether Chattogram can remain an economic powerhouse, but whether it can do so in ways that are ecologically sustainable, spatially balanced, and socially inclusive.

10.3 Chattogram Sea Port

The Chattogram Port serves as a cornerstone of economic development and urban transformation for Chattogram city and Bangladesh. Its extensive impacts shape the city's economic, social, and infrastructural framework.

The Chattogram Sea Port, located along the Bay of Bengal in southern Chattogram, is a vital hub for maritime trade and economic activity. Flanked by the city to the west and the Karnaphuli River to the east, it integrates seamlessly with urban infrastructure, industrial zones, and global shipping networks. The Port can be divided into three major parts: New Mooring Container Terminal (NCT), Chattogram Container Terminal (CCT) and General Cargo Berth (GCB).

Chattogram Port significantly impacts the city, particularly its road network, due to the large volume of cargo transported to and from the port. The heavy dependence on road-based freight movement, coupled with the



city's lack of alternative freight corridors, creates severe congestion on key arterial roads. For example, roads such as the Chattogram-Khagrachari Highway and Port Access Road frequently experience bottlenecks due to the high volume of container-laden trucks. These traffic congestions disrupt the daily lives of residents, increase travel time, and elevate vehicle emissions, contributing to environmental degradation. The port's proximity to the main city further exacerbates these issues, as many roads are not designed to handle the weight and frequency of heavy goods vehicles. Moreover, the lack of integrated multimodal transport options, which could reduce the road burden, remain underutilized. The Chattogram Sea Port, as Bangladesh's primary maritime gateway, significantly influences Chattogram city's economic landscape, urban development, and infrastructure. Key impacts are:

10.3.1 Positive Impact

■ Trade and Revenue Generation:

- o The port handles 92% of Bangladesh's international trade, positioning Chattogram city as a vital trade hub.
- o Annually, the port generates around 35% of the country's revenue¹, contributing significantly to local and national economies.
- o From 2018 to 2022, the total cargo handled at the port increased from 96 million tons to 119 million tons, reflecting growing trade activity in Chattogram.

¹ Chattogram Port Authority. (n.d.). CPA Annual Reports.
https://cpa.gov.bd/site/view/annual_reports/Annual-Report



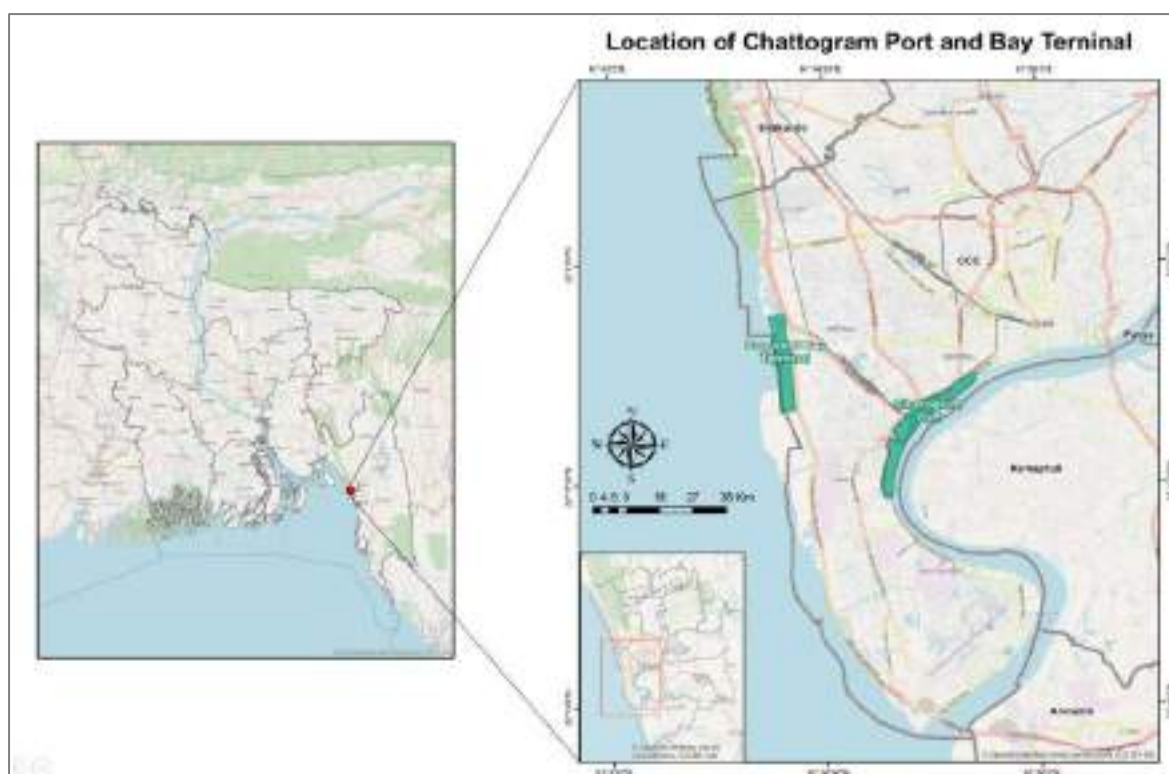


Figure 10-2: Location of Chattogram Sea Port in Respect of Bangladesh.

Table 10-1: Freight Handling Statistics from 2018 to 2022.

ITEM	2022	2021	2020	2019	2018
IMPORT (MT)	111,835,061	108,669,163	96,499,666	95,597,992	89,186,873
EXPORT (MT)	7,830,621	7,949,995	6,710,058	7,119,744	7,124,351
TOTAL (MT)	119,665,682	116,619,158	103,209,724	103,077,736	96,311,224
CONTAINER (TEUs)	3,142,504	3,214,548	2,839,977	3,088,187	2,903,996
VESSELS	4,361	4,209	3,728	3,807	3,474



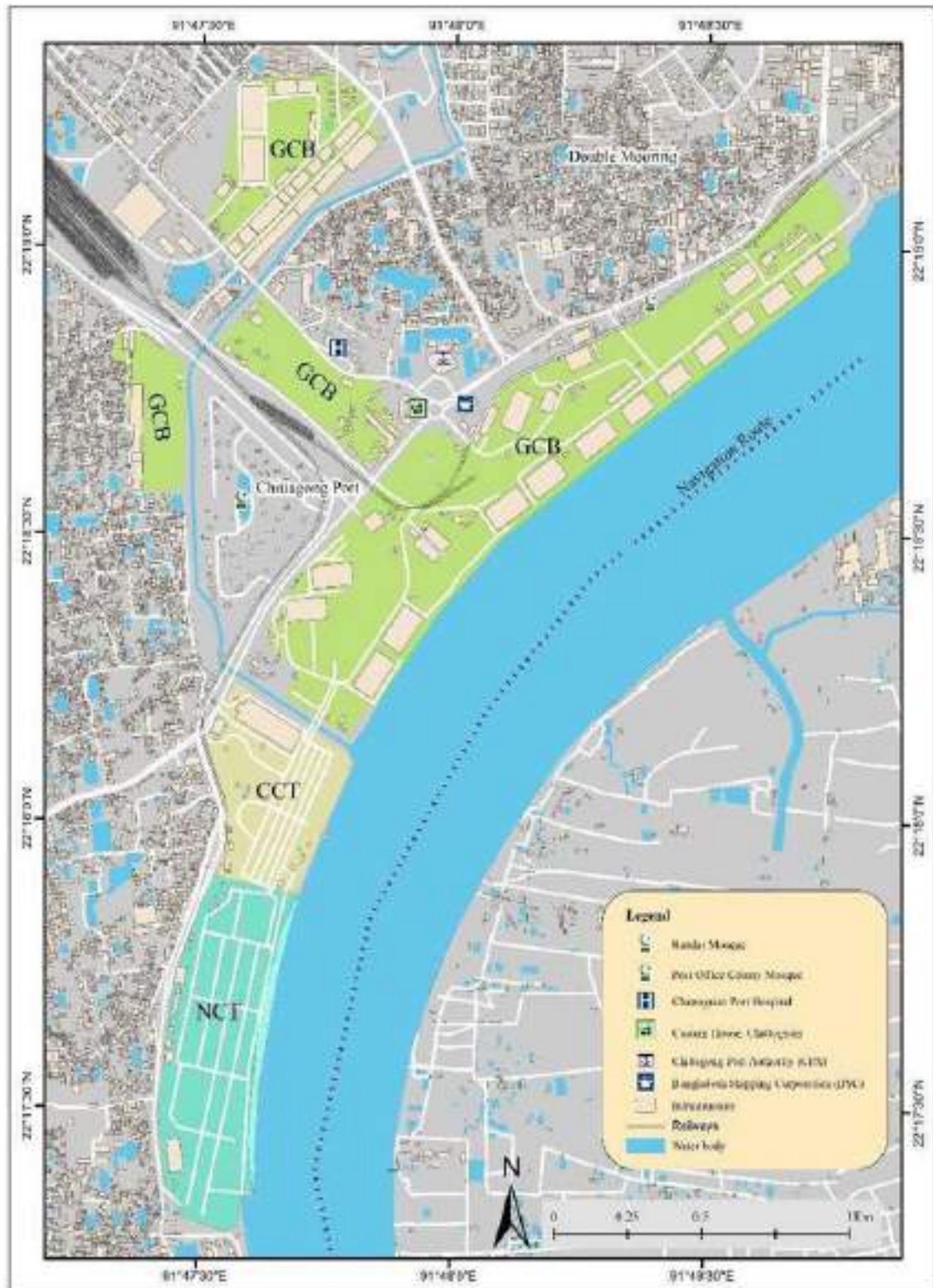


Figure 10-3: Three Major Parts of Chattogram Port.



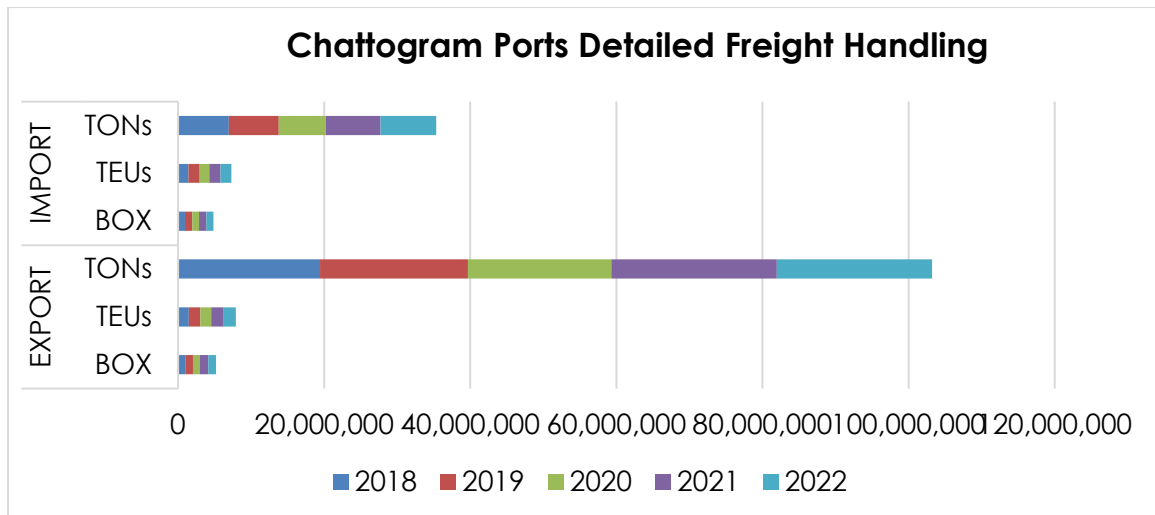


Figure 10-4: Chattogram Ports' Detailed Freight Handling in the Last Five Years.

■ **Employment:**

- o The port and its ancillary activities generate jobs for over 100,000 people in sectors such as logistics, warehousing, transportation, and administration.
- o With the construction of the Bay Terminal, an additional 10,000 direct employment opportunities are anticipated, fostering local economic growth.

■ **Support for Industries:**

- o The port serves as the primary logistics point for raw materials, such as cement clinker (3.5 million tons in 2022) and coal (3.7 million tons in 2022), crucial for Chattogram's cement, steel, and energy industries.
- o The Karnaphuli River's proximity to the Bay of Bengal plays a significant role in enhancing its connectivity to international waters. The river's strategic location, offering direct access to global shipping lanes and facilitating international trade

■ **Regional Connectivity and Export Boost:**

- o Chattogram's strategic location supports trade corridors like BBIN (Bangladesh-Bhutan-India-

Nepal) and BCIM (Bangladesh-China-India-Myanmar), enhancing cross-border trade.

- o In 2022, the port exported 4.1 million tons of garments and handled 3.14 million TEUs (Twenty-Foot Equivalent Units), showcasing its critical role in supporting export industries concentrated in and around the city. Chattogram's role as a central hub for trade and commerce. The integration of port infrastructure with the urban transport network supports business operations within the city.

10.3.2 Challenges

■ **Traffic Congestion:**

- o Approximately 7,000 vehicles enter the port daily, with 86% of cargo transported by road, leading to severe traffic bottlenecks in the city.
- o Major access roads like Port Access Road and the Dhaka-Chattogram Highway experience congestion, particularly at port entry and exit points, affecting urban mobility.



- o Road freight congestion adds to air and noise pollution in urban areas near the port.
- **Inadequate Infrastructure:**
 - o The Dhaka-Chattogram railway system, including its locomotives and related infrastructure, has limited capacity. As a result, only 10% of container traffic is moved by rail, making it challenging to shift more cargo from roads to trains.
 - o Waterways, currently underutilized at 4% of cargo transport, lack the necessary facilities for expansion, further straining urban road networks.
- **Housing and Community Pressures:**
 - o The growth in port activities and related industries has created a need for planned residential and community spaces for workers. However, the current infrastructure is insufficient.
 - o The development of Bay Terminal and other facilities will require mixed-use housing blocks and amenities to accommodate the anticipated workforce increase. This growth will likely strain the port's current infrastructure and necessitate further expansion, which will impact surrounding urban areas.

▪ **Environmental Impact:**

- o Industrial and shipping activities exert pressure on the Karnaphuli River, which is essential for port operations. Regular dredging is needed to maintain navigability, which has environmental implications.
- o The lack of a centralized truck terminal leads to roadside parking, contributing to land-use inefficiencies and pollution in urban areas.

10.3.3 Impact of Chattogram Port on Roads in the CMMP Area

Evolution of the Traffic Movements Through the Port

Before 1995, the southern part of Chattogram, now known as the port area, was relatively underdeveloped and sparsely populated. Job opportunities in the region were minimal, leading to limited movement of people and vehicles to this part of the city. Consequently, the road network primarily served local transportation needs and small-scale trade. Traffic flow within the city was smooth, and the existing infrastructure was sufficient to accommodate the low volume of vehicular movement.

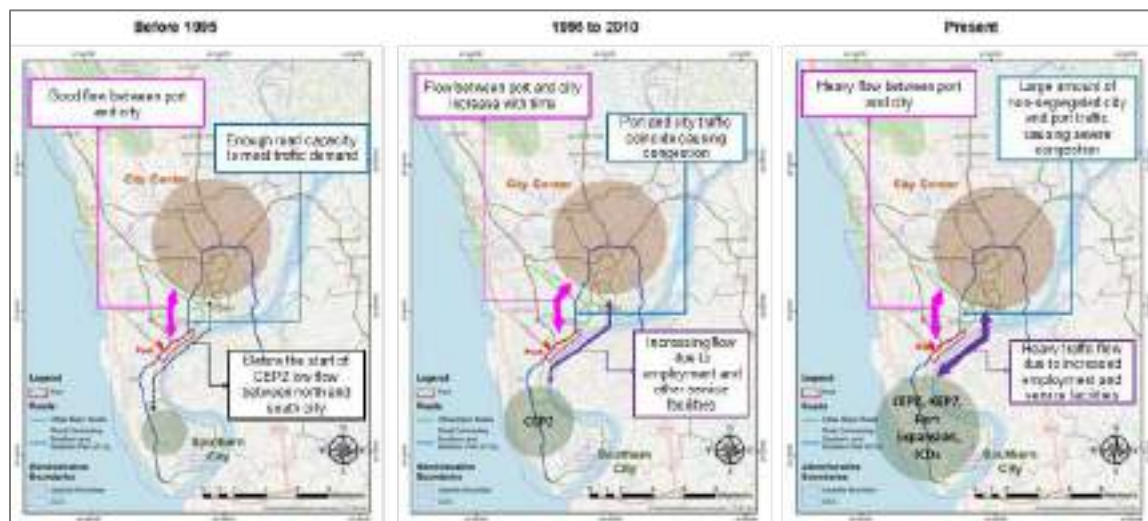


Figure 10-5: Port and City Traffic Scenarios.



The Chattogram Port at that time handled a comparatively lower cargo volume, resulting in minimal port-related vehicular traffic on the roads connecting the port to the city and industrial zones.

However, the establishment of the Chattogram Export Processing Zone (CEPZ) in 1995 marked a transformative shift for the southern region. It significantly boosted job opportunities, attracting a large influx of workers and businesses to the area. The subsequent establishment of the Korean Export Processing Zone (KEPZ) in 1999 further accelerated this trend, creating over 31,000 jobs and leading to the development of residential colonies near these zones. This rapid urbanization and industrial growth dramatically increased the movement of people and vehicles in the region.

Despite this surge in activity, the road infrastructure connecting the port and industrial zones to the city did not evolve to accommodate the growing demand. The lack of additional road networks and the failure to segregate port traffic from city traffic compounded the problem. Both types of traffic were forced to share the same limited routes, leading to severe congestion and disruptions in mobility.

The existing road infrastructure proved inadequate to manage the dual burden of city and port-related traffic.

Port Gates Scenario

Gate 1, 3, and 4 have around 100m space for queuing while entering the port area. However, this is not enough because the queue often gets longer and block lanes of the Mooring Road and M A Aziz Road. The situation is worse for Gate-2 and CCT 2 as these gates are just on the main road and do not have any space for queuing.

Adjacent Roads Scenario

Trucks and trailers come and go from different parts of Bangladesh. The port authority controls the movement of these cargo vehicles by providing a time frame for entering the port from a specific port gate. As the truck terminal facilities are currently limited, many truck drivers have to park their trucks beside or on the road. This creates serious congestion on M A Aziz Road and Mooring Road stretches from Barik Building to Free Port as shown in Figure 10-6 Traffic circulation on the Port Connecting Road also hampers significantly. Parked trucks and trailers also affect the traffic circulation and safety on Port Link Road.



Figure 10-6: Affected Road Sections for the Port Traffic.



Other Traffic Related Issues

- The NCT gate intersection has a very complex layout configuration consisting of 12 movements, including 2 opposing U-turns. This intersection has no traffic control or management measures and faces severe problems in peak hours. These causes acute capacity constraints and, therefore hinders overall port operations. Moreover, movement from the flyover ramp to the CCT gate forms an acute angle, which is difficult for long vehicles to negotiate. This sharp angle poses a significant challenge for vehicles, especially large trucks, as they attempt to navigate the turn. According to the port officials, there has already been a recorded incident where a truck overturned while trying to make this turn. The accident highlights the need for urgent attention to improve safety at this intersection. This solution should be carefully sought, and it should include redesign, turn bans, road marking, signage, and traffic signals. A proper traffic engineering assessment is required to provide the solution as this intersection has many critical issues.
- Currently, only the left-in and left-out vehicles are operated on M A Aziz road to OFY, and traffic cannot turn right to and from the OFY. This is mainly due to traffic management issues. Therefore, vehicles have to take a U-turn from the EPZ intersection, which is troublesome for heavy vehicles and impossible for long ones. Providing U-loops could be a solution for this problem, as suggested earlier from the traffic experts. However, construction of the Chattogram Elevated Expressway certainly discards this

solution to be implemented. However, installing a traffic signal can be a solution to this issue.

10.3.4 Future expansion (spatial and activity) plan of CPA Bay Terminal

The upcoming Bay Terminal will transform port operations by enabling 24/7 access, eliminating tidal dependency, and accommodating larger ships (up to 260m in length, 12m draught). With four terminals (each 1.25 km long) and a truck terminal for 5,000 vehicles, the facility will vastly enhance cargo handling capacity.

Foreign investments of \$11.5 billion are expected by next 5 years, with major contributions from PSA Singapore (Terminal 1), DP World (Terminal 2), and Abu Dhabi Port Group (\$1 billion for multipurpose Terminal 3). Terminal 4 will focus on gas and oil, bolstering energy security. The Bay Terminal's completion will accommodate larger ships, easing current draught and length restrictions and fostering energy security by handling gas and oil shipments.

The project is set to create 10,000 jobs, necessitating well-planned housing and community facilities like mixed-use buildings, schools, and recreational spaces to support the workforce.

Laldia Bulk Terminal

In the CPA Master Plan a new bulk terminal at Laldia Char (between Khal 14 and Khal 15 on the right bank of the Karnaphuli River) is proposed. This terminal will be executed under Public Private Partnership. The proposed terminal shall have a 1000 m long jetty for bulk cargo handling.

Freight Projection

- **Container Cargo Demand:**



- o Future demand, projected using the "International Intermodal Container Shipping Model," estimates a surge to 10.3 million TEUs by 2041. This growth will necessitate the utilization of alternative ports like Matarbari and Payra due to capacity constraints at Chattogram Port.
- o The simulation model estimates share between ports of Chattogram, Matarbari and Payra based on three scenarios.
 - **Base Case:** Payra Port developed with a channel depth of -10m, and inland waterway transportation cost remains at the present level.
 - **Case A:** Payra Port developed with a channel depth of -14m, with maintenance dredging cost recovered through a channel entrance fee.
 - **Case B:** Inland waterway transportation cost reduced by 40%.
 - **Case C:** Realization of bonded cross-border transportation between Bangladesh, Bhutan, and Northeast India.

Table 10-2: Container Cargo Forecast Based on Scenarios.

Port	2026 Forecast (Base Case)	2041 Forecast	2026 Forecast (Case A)	2026 Forecast (Case B)	2026 Forecast (Case C)
Chattogram Port	3.4 million TEUs	6.9 million TEUs	N/A	N/A	N/A
Matarbari Port	600 thousand TEUs	2.6 million TEUs	690 thousand TEUs	1.1 million TEUs	630 thousand TEUs
Payra Port	480 thousand TEUs	550 thousand TEUs	N/A	N/A	N/A

*TUEs = Twenty-foot Equivalent Unit.

▪ Bulk Cargo Demand²:

- o Bulk cargo demand is expected to increase significantly, driven by commodities such as coal, LNG, cement clinker, and steel products.
- o Coal imports are projected to rise substantially to supply coal-fired power plants, with Matarbari Port playing a crucial role.
- o LNG imports are forecasted to reach 32 million tons by 2041, reflecting growing energy needs.³
- o Fertilizer imports at Chattogram and Mongla Ports have remained consistent, with no significant increase expected due to the limited availability of agricultural land.
- o Cement clinker imports are anticipated to reach 65 million tons by 2041, with the half of it handled at Matarbari Port. Emphasizing the importance of infrastructure development.

² Working Paper on Chattogram Port: Existing Condition and Future Aspects

³ Power System Master Plan (PSMP) 2016



- o Steel products, scrap iron, and vehicle imports are also expected to rise significantly, reflecting broader economic growth. Import of completed vehicles by RO/RO ship is estimated at between about 90,000 and 224,000 units in 2016, with a

projected increase to 90,000 to 298,000 units in 2041.

The existing situation and future forecast of volume for bulk cargo demand is represented in the table below:

Table 10-3: Current and Future Projected Demand of Freight According to Type.

Product	Current Demand	Estimated Demand of 2026	Estimated Demand of 2041
Coal	110 thousand tons	9 million tons	14 million tons
LNG		3.8 million tons	32 million tons
Cement Clinker	19 million tons		32 million tons
Fertilizer, Food Grain	1.6 million tons	4.9 million tons	6.2 million tons
Steel Products and Scrap Iron, Import of Vehicles		9.9 million tons	17.8 million tons

The estimated future freight of 2040 according to ADB Port Master Plan is shown below:

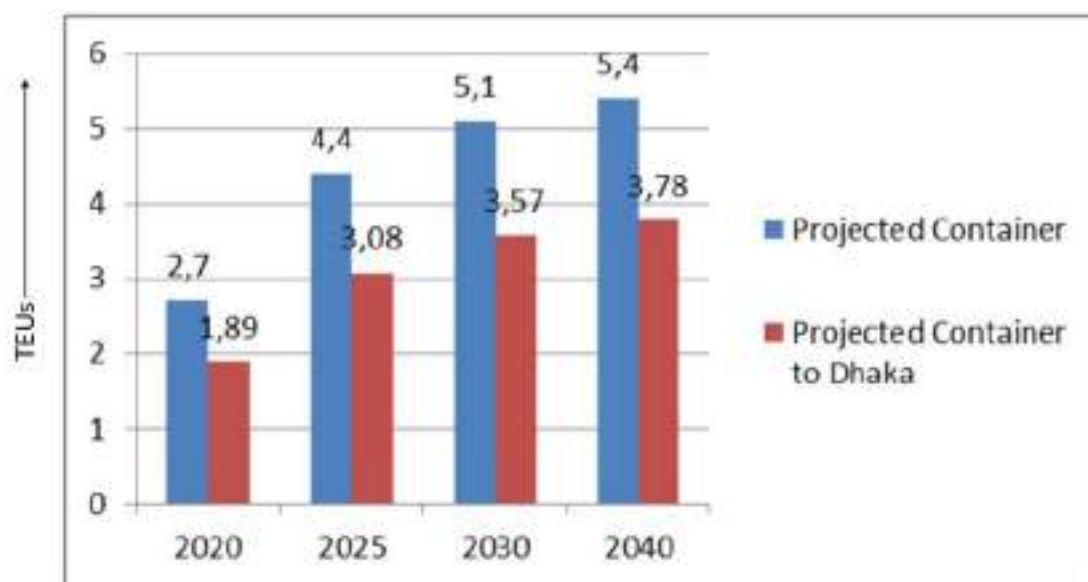


Figure 10-7: Projection of Future Container by Chattogram Port.



10.3.5 Recommendations

Infrastructure Development

■ Road Network Upgrades

- o Dhaka-Chattogram National Highway (248.3 km) serves as the lifeline of commerce in Bangladesh. Current plans include developing an 8-lane divided carriageway with access control, reducing travel time by 2–3 hours.
- o Trucks face restrictions due to axle load limits of 7.5 tons, far lower than global standards of 25–37.5 tons per axle, increasing logistics costs.
- o Install weight bridges on Roads and Highways Department (RHD) roads to prevent overloading and reduce maintenance costs.

■ Railway

- o Double-track the Dhaka-Chattogram rail corridor (321 km) to improve container movement, reducing transit time.
- o Increase container transport by rail from the current 90,000 TEUs per year.
- o Utilize abandoned railway lines in Katghar and Patenga to enhance connectivity between ICDs and the port.
- o Introduce double-stacked container train services for efficient freight handling.

■ Inland Waterway

- o The CPA and BIWTA have jointly built a 44-acre Inland Container Depot (ICD) at Pangaon on the Buriganga River in Narayanganj, with a holding capacity of 8,000 TEUs. Once operational, it will shift 60%-70% of container traffic

to waterways, reducing congestion on the Dhaka-Chattogram corridor.

- o Develop sustainable navigability for Mongla Port and other waterways by implementing continuous dredging programs.
- o Facilitate barge transport for inland container movement, offering a low-cost, eco-friendly solution.

■ Bay Terminal Development

- o Ensure supporting infrastructure for the Bay Terminal, including schools, hospitals, and parks for the estimated 200,000 (from both direct and indirect employment) employees.
- o Connect the terminal with efficient transport networks, including rail links like Port-Sitakunda and Port-Nazirhat, port – Dohazari.

Regulatory Measures

■ Customs Efficiency

- o Accelerate customs processes by implementing a wide-area network (WAN) connecting customs, ports, shippers, and banks.
- o Limit customs inspections to high-risk cargo and streamline duty payment through e-banking.
- o Focus on inspecting only high-risk cargo to expedite clearance.
- o Simplify customs procedures for trans-shipment between



gateway ports and dry ports (ICD/CFS).

- o Enhance customs staffing and training to handle growing demands efficiently.

■ **Container Handling Optimization**

- o Relocate container stripping activities from port terminals to external areas, minimizing intensive vehicle traffic in the port's RTG zones.
- o Accelerate the stripping of containers outside the port at private ICDs (currently practiced in 19 locations) to reduce costs, lead times, and road traffic inside the port.
- o Expand customs-recognized depots in Chattogram to decentralize import processing.

■ **Integrated Multimodal Policies**

- o Enact the **Integrated Multimodal Transport Policy (IMMTP)** to link road, rail, and waterways seamlessly. This will support container movement without frequent unloading and reloading, saving time and costs.
 - o Establish one multimodal agency to manage and coordinate infrastructure and operations seamlessly.
- Establish more Inland Container Depots (ICDs) in strategic locations to facilitate multimodal transport operations, allowing door-to-door services without the need for stuffing and de-stuffing of containers.

Traffic Related Measures

The following recommendations will be helpful to ensure smooth port management and also improve the overall scenario of this port-city Chattogram. The location of these

recommendations is illustrated in Figure 10-8.

- Several truck terminals should be built near CPA gates and ICDs. The capacity of truck terminals can vary between 200 and 1000. A temporary truck terminal for 5000 trucks is currently implemented by CPA.
- The new port Bay Terminal will create job for 200,000 people. Therefore, facilities to be created for them including hospital, residence, school college, park etc.
- A new freight road is needed from Bay Terminal to Dhaka-Chattogram highway
- Widening the existing Port Link Road and CPAR gate connecting road from 2 lane to 6 lane. This Road should connect the Bay Terminal and the new freight road from the bay terminal.
- New freight only link between Saltgola and Port Link Road which will divert port traffic and reduce the pressure on M A Aziz Road and Port Connecting Road
- Widening Strand Road (4-lane) and creating Truck parking area at both sides of Strand Road
- A Flyover from Karnaphuly Marine Drive Road to Barek Building to connect the port and the city center efficiently with the eastern part of the city
- Widening the existing connecting road (Ali Monshi Road) of port with M A Aziz road
- New Connection between Airport Road and Feeder Road through Karnaphuli EPZ
- Traffic Signal at the entrance of overflow yard on M A Aziz Road
- Traffic Signals on M A Aziz Road and Mooring Road at port gates (Gate 2, 3, 4 and CCT-2)
- Intersection re-design at NCT Gate 2 and a U-turn 500 m down the road to the south.



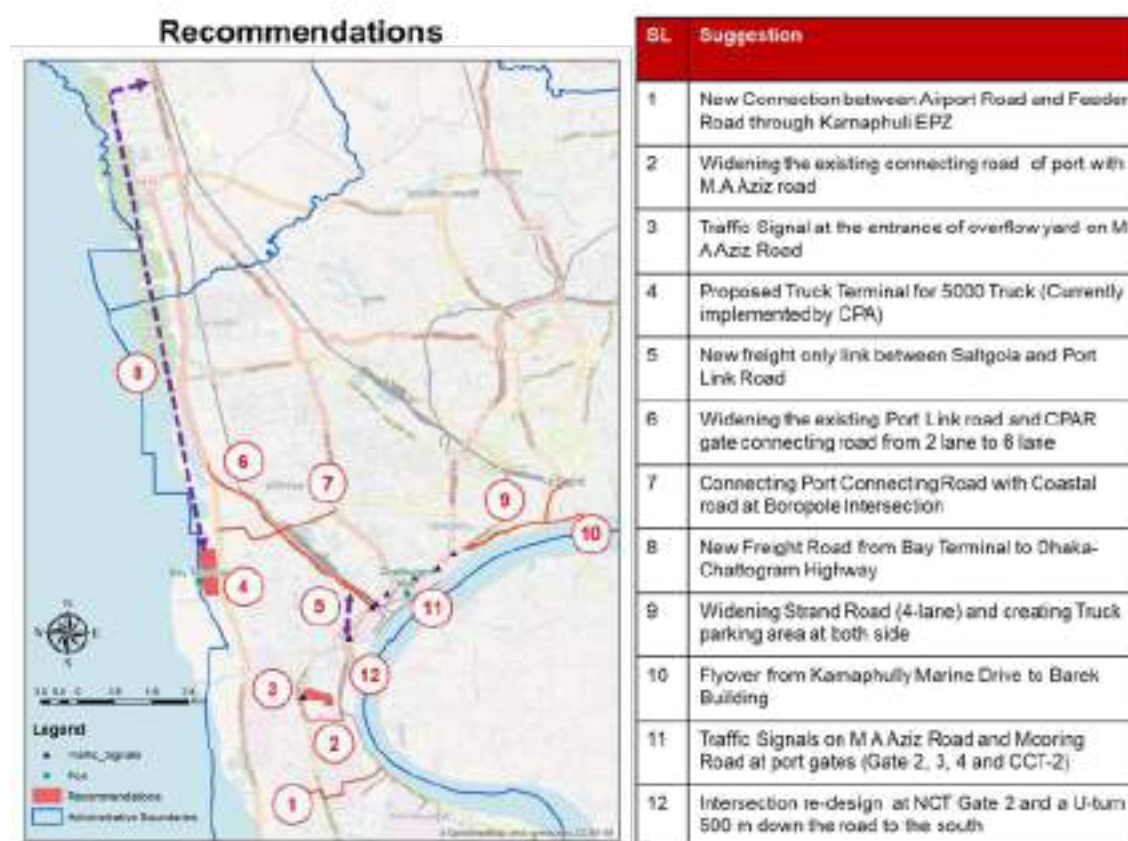


Figure 10-8: Recommendations for the Improvement of Port Traffic.

10.4 Strategic Directions

The economic future of Chattogram depends on strengthening its comparative advantages while addressing vulnerabilities of concentration, ecological fragility, and institutional weaknesses. The strategic directions outlined below provide a pathway toward a sustainable and inclusive economic transformation, grounded in the city's unique port-centric position, diverse regional assets, and growing demographic potential.

10.4.1 Strengthening Port-Centric Growth and Logistics

The port is the keystone of Chattogram's economy, handling more than 90 percent of the nation's

international trade. Its proximity continues to shape industrial clusters and service hubs throughout the district. However, the system is under significant strain from congestion, outdated infrastructure, and limited hinterland connectivity. The strategic priority is to modernize port facilities, including the Bay Terminal, and strengthen logistical systems such as dedicated freight corridors, inland container depots, and multimodal transport. At the same time, environmental considerations—sediment management, estuarine health, and resilience against sea-level rise—must be integrated into port planning. A port that is both efficient and climate-resilient will anchor Chattogram's role as Bangladesh's gateway to global trade.



10.4.2 Diversifying Manufacturing and Export Base

Chattogram's manufacturing base has long been dominated by the readymade garments sector, reflecting national trends. While this sector remains important, an overdependence on garments leaves the economy exposed to global shocks and narrow value chains. A strategic priority is to foster high-value, diversified manufacturing that builds on port access for importing inputs and exporting finished goods. Potential sectors include shipbuilding, steel, cement, chemicals, and ICT hardware, as well as emerging areas such as pharmaceuticals and light engineering. By promoting cluster development, supporting backward and forward linkages, and facilitating technology adoption, Chattogram can secure a manufacturing base that is both resilient and globally competitive.

10.4.3 Agricultural Value Chains and Traditional Economies

Although agriculture's share of employment in Chattogram is far below the national average, it remains an essential livelihood source in many upazilas and contributes to food security for the region. Strengthening agricultural value chains through processing, cold storage, logistics, and branding can integrate rural producers with urban and export markets. Traditional economies such as salt production and dry fish processing, though in distress, retain cultural and economic significance. Branding these products through Geographical Indications and modernizing their production systems can preserve heritage while increasing rural incomes. A balanced strategy that values both modern agribusiness and traditional practices will ensure rural areas share in the district's prosperity.

10.4.4 Strategic Economic Zones and Industrial Diffusion

Industrial concentration around the city core has improved efficiency but has also generated congestion, air and water pollution, and land-use conflicts. The strategic response is to diffuse industry toward secondary growth poles. Planned economic zones in Anwara, Sitakunda, and Karnaphuli provide opportunities to redistribute industrial activity while retaining proximity to the port. Such zones must be carefully located to avoid ecologically sensitive areas and residential zones, while also ensuring robust connectivity. By developing a polycentric industrial structure, Chattogram can sustain competitiveness while reducing pressure on the urban core.

10.4.5 Innovation, Entrepreneurship, and Informal Sector

Innovation will be the key to long-term competitiveness. Beyond formal manufacturing and services, the informal economy is a vital laboratory of grassroots problem-solving. Scarcity and precariousness often foster creativity in ways that large firms cannot replicate. Supporting this ecosystem through microfinance, incubation programs, digital literacy, and recognition of informal workers can transform marginal activities into engines of resilience. At the same time, targeted investment in smart city initiatives, logistics technology, and digital entrepreneurship can position Chattogram as a center of technological innovation. A dual approach, valuing both informal ingenuity and formal high-tech entrepreneurship, will create an inclusive and adaptive economic environment.



10.4.6 Education, Skills, and Human Capital

Chattogram's demographic dividend is an opportunity, but only if the workforce is equipped with relevant skills. The education and training system must be aligned with the demands of port logistics, advanced manufacturing, ICT, and services. Strengthening vocational training, expanding university-industry linkages, and promoting adaptive learning are central to this strategy. Knowledge transfer within clusters, apprenticeships, and continuing education can ensure that workers adapt to evolving technologies and markets. Investing in human capital not only sustains growth but also provides upward mobility for the city's large informal workforce.

10.4.7 Supporting SMEs and Local Enterprises

Small and medium enterprises (SMEs) provide livelihoods for thousands of households and often pioneer locally relevant innovations. Yet, they remain constrained by lack of finance, skills, and visibility in policy frameworks. A strategic emphasis on SMEs-through access to affordable credit, targeted training, and business incubation-will diversify the economic base and spread opportunities more widely across communities. In particular, SMEs in agro-processing, logistics, ICT, and local crafts can complement large-scale industries while creating jobs that are geographically more dispersed.

10.4.8 Regional and Global Partnerships

Chattogram's economy is not confined to district boundaries; it is embedded in regional and global networks. Strengthening ties with neighboring districts and cities will facilitate rural-urban integration, food

security, and balanced regional growth. Beyond the national context, Chattogram's position in the Bay of Bengal makes it a natural hub for regional corridors such as BIMSTEC and for maritime trade with Southeast Asia. Partnerships with other port cities-such as Singapore, Rotterdam, and Shanghai-can provide models for innovation, sustainability, and governance. Expanding these regional and global linkages will ensure that Chattogram continues to thrive in an interconnected world.

10.4.9 Governance, Property Rights, and Political Economy

No strategy can succeed without addressing the political economy of land and property rights. Unclear tenure, speculative practices, and weak enforcement undermine efforts to guide industrial diffusion and protect ecological assets. Reform is needed to make property rights transparent and secure, while regulatory tools such as density zoning and floor area ratios should be deployed strategically to channel investment away from fragile ecosystems. Downzoning should be avoided to avoid inadvertent breach of property rights. Stronger institutions at both metropolitan and regional scales must coordinate across sectors and jurisdictions. Governance reform is therefore not just a technical matter but the foundation for balancing growth, equity, and ecological sustainability.

10.4.10 Ecological Sustainability and Hazard Mitigation

Chattogram's economy is inseparable from its ecological and geological setting. Hills, wetlands, rivers, and the coast provide essential ecosystem services that support production, livability, and resilience. Yet, these systems are under intense pressure from unplanned urbanization, hill



cutting, wetland encroachment, and industrial waste. A forward-looking economic strategy must embed ecological sustainability, treating natural systems as infrastructure to be conserved and restored. Risk-sensitive land-use planning, climate-resilient port and industrial design, and investment in green and blue infrastructure are essential. By aligning economic growth with ecological integrity, Chattogram can become both more competitive and more sustainable in the face of climate change.

These strategic directions-spanning port modernization, diversification, value chains, innovation, human capital, SMEs, partnerships, governance, and ecological sustainability-together form an integrated framework for Chattogram's future. They move beyond reactive planning to a proactive agenda that secures competitiveness while ensuring that growth remains inclusive and ecologically sound. The task ahead is not simply to expand the economic base, but to configure it in a way that sustains both prosperity and livability for generations to come.

10.5 Policy Recommendations

The strategic directions for Chattogram's economic development must be translated into concrete policy measures that can guide government action, private investment, and community initiatives. These recommendations emphasize the alignment of economic growth with ecological resilience, institutional reform, and social inclusion.

Policy ECO-1: Modernize and Green the Port and Logistics System

Chattogram Port is the anchor of the regional economy, and modernization of its management is a more urgent

imperative than its capacity enhancement. Investment in the Bay Terminal, inland container depots, and multimodal freight corridors must be prioritized to reduce congestion and improve efficiency. At the same time, "green port" principles should be adopted, including the use of cleaner fuels for vessels, digital logistics systems, and infrastructure designed to withstand climate-related risks such as sea-level rise and cyclones. Development of Bay terminal, Matarbari Deep-sea port, etc., will create an impact on the transport demand in the corridor, which also needs to be addressed in the spatial planning for Chattogram Metro Area.

Policy ECO-2: Promote Industrial Diversification with Spatial Diffusion

Policy should actively guide industrial growth away from the congested city core toward designated economic zones in Anwara, Sitakunda, and Karnaphuli. Incentives such as infrastructure support, tax benefits, and streamlined approvals should be provided in these zones, but tied to compliance with environmental safeguards. Diversification must include not only traditional heavy industries but also light engineering, electronics, pharmaceuticals, and other high-value sectors that can reduce dependence on garments and shipbreaking.

Policy ECO-3: Strengthen Agricultural Value Chains and Agro-Industry

Policies should support rural-urban integration by facilitating storage, cold chains, and processing industries that link agricultural producers in outlying upazilas to urban and export markets. Support for traditional economies, such as salt production, fish drying, and horticultural products, through Geographical Indications, branding, and improved technologies can



create niche markets and safeguard cultural assets.

Policy ECO-4: Support Innovation Ecosystems, Including the Informal Sector

Policies must recognize innovation not only in high-tech industries but also in the informal sector, where constraints often give rise to creative solutions. Support mechanisms such as microfinance, incubators, maker spaces, and training programs should be extended to informal entrepreneurs. Simultaneously, ICT parks, smart city initiatives, and digital infrastructure can stimulate formal innovation, creating synergies between grassroots and high-end technological change.

Policy ECO-5: Invest in Skills and Human Capital Development

Education and training must be realigned with Chattogram's economic profile. Policies should expand vocational training in logistics, manufacturing, and ICT, while strengthening partnerships between universities and industries. Lifelong learning initiatives should help workers adapt to technological change. Special focus should be placed on women and youth, ensuring that the demographic dividend is fully realized.

Policy ECO-6: Empower SMEs and Local Enterprises

Targeted support for small and medium enterprises can broaden the economic base. Policy measures should include access to low-cost credit, entrepreneurship training, and incubation facilities. Particular emphasis should be placed on SMEs in agro-processing, logistics services, and ICT, where growth potential is strong but barriers to entry remain high.

Policy ECO-7: Reform Land Governance and Secure Property Rights

Land remains the most contested and distorted resource in Chattogram. Policy reform must prioritize tenure security, transparent cadastral systems, and enforcement of ecological zoning. Strong action is required against speculative conversion of wetlands and hill cutting. Land-use planning must be integrated with economic planning so that growth can proceed without ecological destruction or social exclusion.

Policy ECO-8: Integrate Ecological Resilience into Economic Policy

Economic growth must be designed to enhance, not degrade, ecological systems. Policy should embed ecological considerations into industrial siting, infrastructure design, and urban planning. Hills should be stabilized, wetlands preserved as flood buffers, and coastal areas protected with climate-resilient infrastructure. Incentives for green technologies, renewable energy, and low-carbon industry should be expanded, aligning Chattogram's competitiveness with global sustainability trends.

Policy ECO-9: Foster Regional and International Partnerships

Chattogram should be positioned as a regional hub within the Bay of Bengal. Policy measures must strengthen cross-district and cross-border corridors, build logistics and trade partnerships under BIMSTEC, and pursue city-to-city collaborations with international port cities. These partnerships can facilitate knowledge transfer, technology adoption, and investment attraction.



In combination, these recommendations offer a framework for rebalancing Chattogram's economy: one that maintains its role as a national growth engine while reducing risks associated with industrial concentration, ecological stress, and institutional fragmentation. The overarching aim is to create a city-region where prosperity, resilience, and livability reinforce one another rather than compete.

10.6 Summary of Recommended Strategies and Projects

The economic future of Chattogram requires coherent action across multiple fronts: strengthening the port, diversifying industry, empowering agriculture, informal economy and SMEs, supporting innovation, reforming governance, and safeguarding ecological resilience. The table below summarizes the recommended strategies and illustrative projects aligned with these priorities.



Table 10-4: Summary of Strategies and Recommended Projects for Chattogram's Economy.

Strategic Direction	Key Actions / Projects	Lead Agencies	Indicative Timeline
Facilitate Industrial Clusters around the port	Conduct a detailed study of the industrial clusters in the proximity of Chattogram Port to identify the major value chains, interlinkages, and demand for physical and spatial facilities to support future intensification of industrial activities in selected areas. Identify the ecological footprint of industrial areas to help direct future growth trajectories for manufacturing growth in Chattogram.	Industrial Infrastructure Development	Medium Term
Integrated Basin Management for Karnafuli River	Integrated assessment of the Karnafuli Basin and identify major sources of risk for the river's sediment load and flow through basin-wide management.	Karnafuli Basin Management Project	Medium Term
Port-Centric Growth & Logistics	Impact mitigation of proposed Bay Terminal; expansion of inland container depots; development of multimodal freight corridors; adoption of "green port" technologies	Chattogram Port Authority, Ministry of Shipping	Short–Medium Term
Diversified Manufacturing & Exports	Establish sector-specific clusters (shipbuilding, electronics, pharmaceuticals); incentivize cleaner production; promote global value chain integration	BEZA, MoI, BGMEA, Private Sector	Medium–Long Term
Agricultural Value Chains & Traditional Economies	Cold storage networks; agro-processing parks in peri-urban upazilas; branding of traditional products (e.g., salt, dried fish) through Geographical Indications	MoA, District Administration, SME Foundation	Short–Medium Term
Strategic Economic Zones & Industrial Diffusion	Expansion of Anwara, Sitakunda, Karnaphuli EZs; integrated land-use planning; ecological zoning for industrial siting	BEZA, RAJUK-equivalent for Chattogram, Local Governments	Medium–Long Term
Innovation & Informal Sector	Support grassroots innovators through microfinance and incubation; establish ICT and logistics innovation hubs; smart city	ICT Division, SME Foundation, Universities	Short–Medium



	pilot programs		Term
Education, Skills & Human Capital	Vocational training centers aligned with port/logistics; university-industry partnerships; lifelong learning and youth programs	MoE, MoLE, Universities, Training Institutes	Medium Term
SMEs & Local Enterprises	Expand access to finance; establish SME incubators; targeted training in agro-processing, ICT, and logistics services	SME Foundation, Banks, Local Chambers	Short–Medium Term
Regional & Global Partnerships	Strengthen BIMSTEC corridor links; sister-city agreements with global port cities; cross-district growth corridor planning	MoFA, MoC, Regional Planning Agencies	Medium–Long Term
Governance & Property Rights	Digitize cadastral records; enforce ecological zoning; reform khas land allocation; transparency in land transactions	MoL, District Administration, Local Governments	Short–Medium Term
Ecological Sustainability & Hazard Mitigation	Wetland restoration projects; hill stabilization programs; climate-resilient coastal infrastructure; green and blue economy pilots	MoEFCC, Local Governments, BEZA, Development Partners	Short–Long Term

This summary matrix emphasizes not only what needs to be done, but also who is responsible and when actions should be prioritized, ensuring the strategies are actionable within the planning horizon of the Structure Plan.



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Chapter Eleven

Tourism & Historical Landmarks



Chapter Eleven: Tourism & Historical Landmarks

11.1 Background

The Chattogram Metropolitan Area is a multifaceted destination that offers a diverse range of attractions for tourists. From its historical landmarks and cultural experiences to its stunning natural landscapes and culinary delights, Chattogram presents a unique tapestry of experiences. As the city continues to develop, its tourism infrastructure shows promise as an emerging hotspot for travelers seeking authentic experiences in Bangladesh. Whether exploring the bustling markets, savoring local cuisine, or venturing into the serene hills, visitors to Chattogram are sure to find something that resonates with them, making their journey memorable. Historically significance sites and heritage site are scattered all over the CMMP and are potential for tourist attraction. A comprehensive list of such sites and their improvement guidelines are given in the working paper¹.

11.2 Tourism Potential in Chattogram

Chattogram, Bangladesh's second-largest city, holds immense potential as a key player in the country's tourism growth. Known for its strategic location between the Bay of Bengal and rolling hill tracts, it offers a mix of natural beauty, cultural heritage, and economic significance. Major attractions include Patenga Sea Beach, Foy's Lake, and the historical Anderkilla Shahi Jama-e-Mosque, along with culinary tourism that

showcases the region's famed seafood cuisine.

Chattogram attracts many business tourists, especially for port-related trade and shipping activities. These visitors often explore the city's natural beauty, beaches, hills, and cultural heritage during their stay. The blend of commercial importance and tourism offerings makes Chattogram a unique destination for both business and leisure travelers.

Chattogram serves not only as a vibrant tourist destination on its own but also as a strategic gateway to some of Bangladesh's most iconic travel spots. It is the primary transit hub for visitors heading to Cox's Bazar- the country's premier beach destination- as well as the scenic hill districts of Bandarban and the greater Chattogram Hill Tracts. Due to its well-connected transport network and urban amenities, many travelers choose to stay in Chattogram during transit. While here, they explore its natural beauty, beaches, hills, cultural sites, and unique cuisine, making it an attractive stopover for both domestic and international tourists.

Despite these opportunities, the Chattogram Metropolitan Area (CMA) faces challenges such as infrastructure deficits, environmental degradation, and underdeveloped marketing strategies. Addressing these issues is critical for tapping into the city's potential and positioning it as a competitive tourist destination within South Asia. By overcoming these barriers, Chattogram could significantly enhance its contribution to the national economy, fostering both local employment and international recognition.

¹ Working paper on "Identification and Preservation of Potential Archeological Heritage Sites"



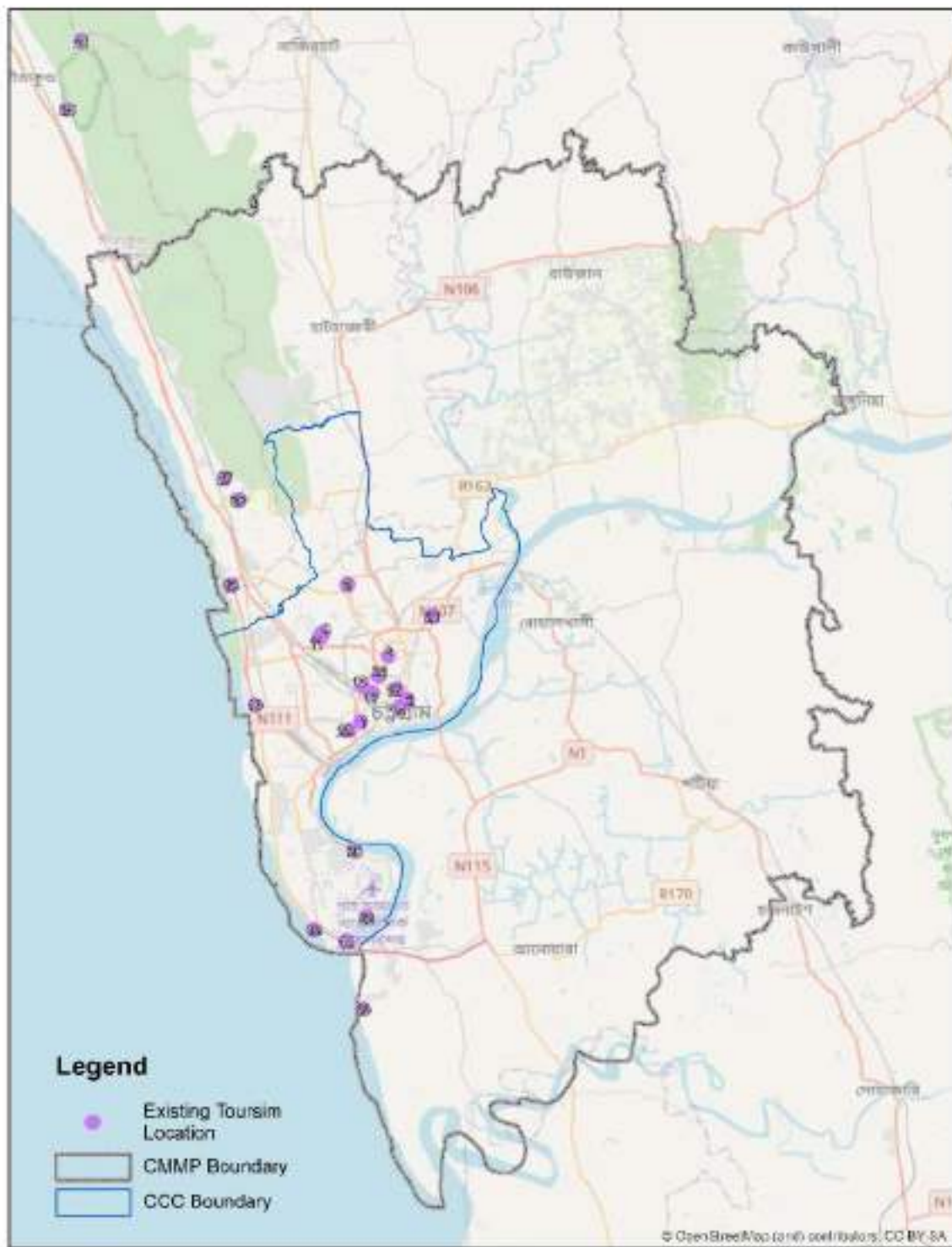


Figure 11-1: Location Map of Existing Tourist Attraction Sites.

11.3 Heritage Sites in Chattogram

Chattogram is home to a rich collection of heritage sites that not only reflect its diverse historical legacy but also serve as major tourist attractions. The city's unique blend of Mughal, colonial, and indigenous influences is evident in landmarks such as the Anderkilla Shahi Jame Mosque, built during the Mughal period, and the Chandanpura Mosque, known for its vibrant architecture. The Ethnological Museum offers insight into the cultural traditions of Bangladesh's ethnic communities, while the Zia Memorial Museum, located in the historic Circuit House, preserves important political history. In the port area, the century-old Customs House and European Cemetery highlight Chattogram's role in maritime trade during the British era. Beyond the city core, the World War II Cemetery in Pahartali attracts both local and foreign visitors for its serene and solemn environment. Together, these heritage sites form an integral part of Chattogram's identity, offering educational, cultural, and tourism value to the region. A comprehensive inventory of important heritage sites are listed in the working paper on "Identification and Preservation of Potential Archeological Heritage Sites".

The Chattogram Metropolitan Area contains numerous archaeological and historical sites that hold cultural, educational, environmental, and architectural value. These sites strengthen identity, support tourism and economic benefits, and help preserve traditions and knowledge for future generations. Their locations, as presented in the appendix, illustrate the spatial distribution of heritage assets across the metropolitan area.

The preservation of these sites contributes to cultural continuity, a sense of belonging, environmental importance, and lessons for the future

The Chattogram Metropolitan Area (CMA) contains a diverse concentration of archaeological and historical assets representing Sultani, Mughal, colonial, and religious heritage. These assets are distributed across hilltops, urban cores, traditional settlements, and peripheral rural areas. The spatial pattern of sites reflects historical urban formation along riverbanks, elevated hillocks, and early transportation corridors.

Major heritage clusters include the Anderkilla, Jamal Khan and Chawk Bazar zone, where Mughal and colonial structures such as Anderkilla Shahi Jame Mosque, Kadam Mubarak Mosque, and Chandanpura Mosque remain prominent. A parallel cluster of colonial era civic buildings-Chattogram Court Building, Central Railway Building (CRB), Old Circuit House, Battali Railway Station, and Chattogram General Hospital demonstrates the administrative layering of British rule and its influence on city morphology.

Peripheral clusters at Hathazari, Sitakunda and Anwara contain late medieval mosques, temples, monasteries and Zamindar Bari compounds. These include Fakir Mosque, Nusrat Shah's Mosque and Dighi, Alaol Mosque, and several Hindu temples and Buddhist mandirs that retain significant archaeological remains. Hill-based shrines such as Bayezid Bostami Mazar, Chashma-i-Shaikh Farid, and Shah Qatal Tomb highlight the cultural tradition of religious settlements on elevated terrain.



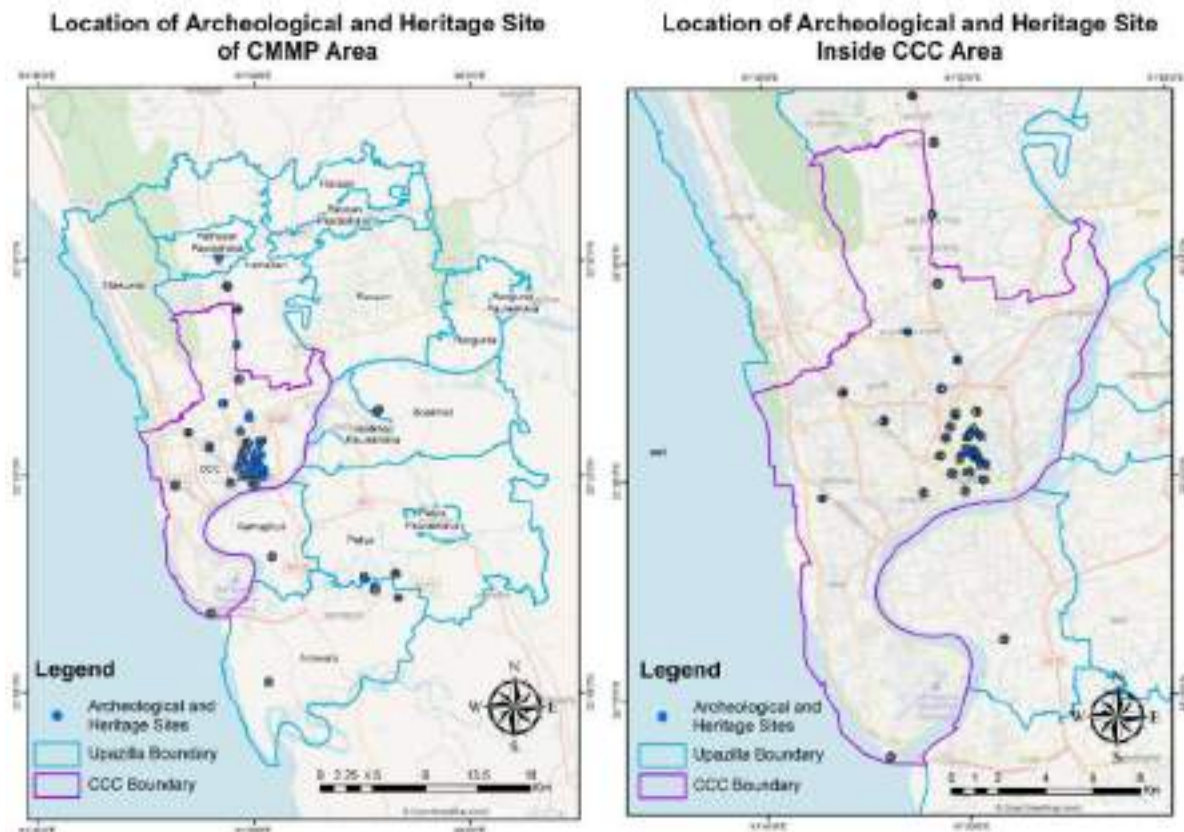


Figure 11-2: Locations of Archeological sites in CMMP area

This distribution creates a multi-nodal heritage structure that intersects with contemporary urban expansion. The concentration of heritage sites around historical hill crests, old bazar roads, and colonial civic precincts requires integration into the structural framework of land use, mobility, and urban regeneration planning. A list of the archaeological sites is provided in the Annex-table B-1.

11.4 Key Issues

11.4.1 Weak Institutional Framework and Coordination

The lack of an effective institutional framework for tourism management in Chattogram Metropolitan Area (CMA) is a major obstacle. The Bangladesh Tourism Board (BTB) and Bangladesh Parjatan Corporation (BPC), the two key agencies responsible for tourism development, have significant limitations in terms of their ability to

initiate at the local level. These organizations are centralized in Dhaka and, as a result, do not always respond swiftly to regional needs. There is a lack of communication between various government agencies, local governments, and private sector stakeholders. Additionally, the current institutional structure does not allow for adequate representation of local communities or private operators, which results in missed opportunities for collaborative efforts in tourism development. Local stakeholders such as tour operators, hotel owners, and community organizations often lack the necessary support and resources to contribute effectively. This gap in institutional coordination is especially problematic when it comes to integrating tourism planning with broader urban development and ensuring that tourism contributes positively to both

the economy and the local community.

11.4.2 Inadequate Marketing and Branding

CMA faces significant challenges in marketing and promoting its unique tourism assets. The region's potential as a cultural and natural tourism destination remains underutilized due to a lack of effective branding and marketing strategies. Unlike other popular tourist destinations in Bangladesh, such as Cox's Bazar, Chattogram has not been able to carve out a distinct identity in the national or international tourism market. The city's historical and cultural landmarks, such as Foy's Lake, Patenga Beach, and the Bangabandhu Sheikh Mujibur Rahman Tunnel, are not widely recognized or promoted. Additionally, there is no cohesive marketing plan that ties together the region's diverse attractions into a unified tourism experience. The absence of a coordinated marketing strategy means that Chattogram's tourism products are often overlooked by potential visitors who are unfamiliar with the area's offerings. While government initiatives such as the *Tourism Master Plan 2023* exist, their implementation is often hampered by a lack of resources, focus, and clear direction. The result is that CMA fails to compete with better-promoted destinations within Bangladesh and beyond, missing out on both domestic and international tourists.

11.4.3 Poor Road Connectivity and Accessibility

The country's visa processing system remains archaic with a lack of transparency and accountability rampant in most of its procedures.

There are a number of reports which cite malpractices including rent seeking behavior in simple visa processes. This is also evidenced by the preponderance of middlemen and brokers who thrive in the current set up. Another issue of concern involves complicated immigration procedures at the international airport. At present it is a very complex process, with myriad official formalities, which act as a severe deterrence for any leisure traveler willing to visit Bangladesh. The passenger handling capacity of its international airport also needs upgradation so as to make the immigration process smoother and less cumbersome.

Bangladesh's geographical location makes it an important transit/transportation hub with potential akin to Hong Kong and Singapore. However, gaps and bottlenecks mentioned above, impede its ability to attract significant number of international visitors. Moreover, the procedures at the land border crossings into Bangladesh are even more complicated and act as a severe deterrence for cross border travel. Reports from these land ports suggest that they open for limited number of hours during the day and visa procedures are even more cumbersome and prohibitive. This is a significant drawback, especially in attracting short haul tourists from neighboring countries like India.

On the other hand, domestic air connectivity and transport infrastructure in the country is relatively well established, with significant private sector involvement in operations. Rail and river based connectivity however, has a long way to go before it can match international standards.



11.4.4 Poor Maintenance and Structural Deterioration

Many historic buildings- such as Anderkilla Shahi Mosque, colonial-era administrative buildings, and old residential quarters face decay due to lack of regular maintenance, unauthorized alterations, and aging infrastructure.

11.4.5 Unregulated Construction Near Heritage Sites

Unregulated development near heritage and archaeological sites in CMA poses a threat to the preservation of these culturally significant landmarks. The paper specifically mentions concerns about construction activities around sites like

the Anderkilla Shahi Jama-e-Mosque and Foy's Lake, where commercial and residential buildings encroach upon the historical and aesthetic value of the area. These developments not only obstruct views but also disrupt the accessibility of these sites, making it harder for tourists to fully appreciate their cultural significance. Moreover, the growing commercialization of these areas often leads to an increase in pollution, overcrowding, and a reduction in the quality of the visitor experience. The absence of strict regulations governing construction in proximity to heritage sites results in a haphazard urbanization process that undermines the preservation of historical and archaeological resources.



Figure 11-3: Unregulated Construction and Encroachment of Askar Dighi.

11.4.6 Insufficient Safety and Security Measures

Safety and security concerns remain a significant challenge for tourism in CMA. The paper discusses the absence of adequate safety measures at major tourist attractions, such as a lack of tourist police presence, emergency response systems, and general safety protocols. In addition, CMA faces sporadic political unrest and other

safety concerns that can deter tourists, both domestic and international. Tourists may feel vulnerable when visiting sites without visible security personnel or clear safety instructions. The lack of proper emergency services, such as first aid stations and emergency evacuation procedures, further exacerbates this issue. Without effective safety and security measures, tourists are unlikely to feel confident in exploring CMA, which limits the area's tourism



potential. The perception of risk can also deter potential investors from developing the tourism sector further.

11.4.7 Loss of Cultural Landscape

Traditional urban fabric around historic sites is rapidly replaced by

modern buildings, billboards, and unmanaged utilities, reducing cultural authenticity and scenic value.



Figure 11-4: Lack of lighting at Naval Sea Beach.

11.4.8 Limited Development and Maintenance of Tourist Sites

Many of the tourist sites in CMA are not developed to their full potential. The paper notes that sites such as Patenga Sea Beach, Batali Hill, and the Ethnological Museum are underdeveloped, with limited visitor facilities and activities. While these locations have great potential for attracting tourists, they lack basic amenities such as clean restrooms, proper signage, seating areas, and shelter. Furthermore, the overall site maintenance is insufficient, with trash accumulation, worn-out pathways, and poorly maintained facilities that negatively affect the visitor

experience. Parki Beach is also a popular spot for both locals and tourists looking to relax, enjoy the sun, and partake in various water activities. This site could be one of the most potential sites in CMA to attract marine lovers in upcoming days. Although there is a large intake of visitors, the site lacks any formal tourism facilities or activities to cater to the visitors. This lack of investment in site development and maintenance leads to a decline in the quality of the tourism experience and may deter repeat visits. Without improvements, CMA will fail to compete with better-developed tourist destinations within Bangladesh and the region.





Figure 11-5: Lack of any Formal Tourism Attraction in Parki Beach.



11.4.9 Shortage of Skilled Tourism Workforce

A shortage of skilled human resources in the tourism sector is a key challenge. As noted in the paper, there is a lack of trained professionals, including tour guides, hospitality staff, and site managers. This gap in expertise directly affects the quality of services provided to tourists, resulting in dissatisfaction and missed opportunities for repeat visits. Moreover, the absence of specialized training programs for local workers limits their potential to contribute to the tourism industry effectively. The lack of skilled manpower is particularly evident in the areas of customer service, tour guiding, and hospitality management, where standards are often inconsistent. The failure to invest in human resource development limits the overall capacity of the tourism sector to meet the expectations of modern-day tourists.

11.4.10 Accommodations for Tourists

The availability and quality of accommodations in Chattogram do not match the region's tourism potential. While locations like Cox's Bazar have seen rapid growth in hotel infrastructure, Chattogram lags behind in providing sufficient lodging options near key attractions. The existing accommodations often fail to meet international standards, offering limited amenities and inconsistent service quality. The Bangladesh Tourism Board has yet to implement targeted strategies to address these gaps, resulting in overcrowding at premium accommodations and neglect of lesser-known but promising areas. This imbalance reduces the likelihood of repeat visits and impacts the overall tourist experience. The only available

formal accommodation for tourists are found in Foy's Lake.



Figure 11-6: Foy's Lake Resort

11.4.11 Challenges in Preserving Archeological Heritage Sites in CMA for Tourists

Preserving Chattogram's archaeological sites faces multiple challenges including loss of historical evidence due to urbanization, limited funding, balancing preservation with public access, and cultural or ethical considerations. Addressing these challenges is essential to protect the city's heritage for future generations.

The Threat of Urbanization

Rapid urban growth and development displace historical sites, increase pollution and environmental stress, and raise property values through gentrification. These factors threaten the authenticity and integrity of heritage sites, requiring careful planning to safeguard them amid the pressures of city expansion.

Funding and Resources

Historical site preservation demands significant financial investment for maintenance, restoration, and acquisition. Limited funding, competition for resources, and reliance

on private donations or partnerships can hinder conservation efforts, emphasizing the need to secure sustainable financial support for heritage protection.

Balancing Preservation and Accessibility

Maintaining historical sites while providing public access requires regulating visitor numbers, minimizing wear and tear, and carefully deciding between conservation and restoration approaches. Proper management ensures cultural and historical values are protected while allowing visitors to appreciate heritage responsibly.

Cultural and Ethical Challenges

Preservation involves respecting cultural and religious significance, navigating ownership and repatriation disputes, and ensuring historical accuracy in site interpretation. Sensitivity to these issues is crucial to maintain community trust and protect the integrity of archaeological heritage for cultural tourism to contribute to regional development, while reinforcing the importance of safeguarding historical assets.

Environmental and Architectural Importance

Preservation protects architectural marvels and craftsmanship of earlier civilizations, inspiring modern design. Historical sites often coexist harmoniously with natural landscapes, and maintaining them safeguards both cultural heritage and the surrounding environment, emphasizing the link between architecture and ecological preservation.

Sense of Identity and Belonging

Historical sites strengthen community identity and belonging by serving as focal points for cultural events, festivals, and gatherings. Preserving these sites

fosters pride, unity, and continuity of traditions, reinforcing the connection between people and their shared heritage.

11.5 Strategies for Tourism Development in Chattogram

Tourism Zoning and Cluster Development

Chattogram should be divided into tourism zones. Each zone should have tailored infrastructure, branding, and visitor services. Cluster development will promote focused investment, better visitor management, and a coordinated experience across related attractions.

River and Hill Tourism Promotion

The Karnaphuli River and nearby hills offer excellent eco-tourism opportunities. Introducing guided boat tours, riverside parks, and hill trekking trails can attract nature lovers. Proper infrastructure, safety measures, and marketing will help transform Chattogram into a leading destination for river and hill-based recreation.

Business and Transit Tourism Enhancement

Chattogram draws many port-related and trade visitors. Tailored packages that combine business facilities with leisure options like sightseeing or short tours can enhance their experience. Additionally, transit tourists heading to Cox's Bazar or the Hill Tracts should be encouraged to explore the city through improved tour information.

Heritage and Cultural Tourism

Chattogram has rich heritage assets like Chandanpura Mosque, the WWII Cemetery, and Court Building Hill. These should be conserved and promoted through walking tours, storytelling, and

signage. Cultural events and exhibitions can further celebrate local traditions and attract visitors interested in history, architecture, and ethnic diversity.

Infrastructure and Accessibility Improvement

Tourism-friendly infrastructure, such as clean public toilets, clear signage, seating areas, and street lighting, is vital. Enhancing last-mile connectivity to key attractions and improving transport links from the airport, rail station, and port will make the city more accessible and enjoyable for tourists.

Branding and Promotion

A strong tourism brand- like “Discover Chattogram”- should highlight the city's mix of port activity, nature, culture, and food. Digital marketing, social media campaigns, and partnerships with tour operators and influencers can attract both domestic and international tourists, including youth and experience seekers.

Safety, Cleanliness, and Services

Tourist safety, cleanliness, and public amenities are essential. Regular maintenance of sites, visible tourist police, emergency response readiness, and clean environments will ensure a positive visitor experience. Tourist information centers with multilingual staff can also offer support and guidance, especially to foreign and first-time travelers.

11.6 Recommendation for Preserving Archeological Heritage of CMA

Strengthening Legal Frameworks

Enhance legal protection by updating legislation, preparing a national policy for heritage preservation, and designating legally protected zones.

These measures ensure archaeological sites are safeguarded from encroachment, illegal excavation, and other threats while promoting coordinated governance across relevant authorities.

Enhanced Documentation and Research

Conduct comprehensive surveys and develop a centralized digital repository for archaeological sites and artifacts. This ensures proper documentation, facilitates research, supports informed decision-making, and enables broader access to data for conservationists, researchers, and the public.

Community Engagement and Education

Implement public awareness campaigns and involve local communities in preservation efforts through workshops, volunteer programs, and heritage festivals. Educating and engaging communities strengthens stewardship, fosters cultural pride, and promotes collective responsibility for protecting archaeological heritage.

Sustainable Development Practices

Integrate heritage considerations into urban planning, ensuring construction projects include archaeological impact assessments. This approach balances development with preservation, safeguarding historical sites while supporting sustainable infrastructure and minimizing negative effects on cultural heritage.

Funding and Resource Allocation

Secure national and international funding, and promote public-private partnerships to support preservation initiatives. Adequate financial resources are essential to maintain, restore, and protect archaeological sites, ensuring

long-term sustainability and the continuation of heritage conservation efforts.

Conservation and Restoration Techniques

Utilize modern technologies such as 3D scanning, GIS mapping, and remote sensing, and establish standardized conservation guidelines. These methods ensure accurate monitoring, effective management, and the application of best practices in restoring and safeguarding archaeological heritage.

Monitoring and Maintenance

Implement regular monitoring and environmental control measures, including erosion and flood management, to prevent deterioration. Continuous oversight ensures that archaeological sites remain in good condition, allowing timely interventions and reducing long-term conservation risks.

Capacity Building

Provide training programs for archaeologists, conservators, and community members, and foster academic partnerships with universities and research institutions. Building technical expertise strengthens heritage management, enhances conservation skills, and ensures sustainable preservation practices.

Tourism Management

Develop responsible tourism strategies, provide visitor facilities, and manage site access to minimize impact. Proper tourism management enhances visitor experiences while protecting archaeological sites, balancing educational opportunities with preservation requirements.

International Collaboration

Engage with global heritage organizations like UNESCO and ICOMOS, and participate in international initiatives to access technical expertise, share best practices, and promote heritage conservation. International collaboration strengthens local preservation efforts and raises global awareness.

Collaboration between Different Concerned Institutions and Organizations

Foster strong coordination among government agencies, local authorities, NGOs, and professional institutions involved in heritage, planning, and infrastructure. A dedicated coordination cell ensures integrated efforts for the protection, management, and promotion of Chattogram's archaeological heritage.

11.7 Recommended Policy for Tourism Sector Development and Historical Landmark Protection in Chattogram

POLICY TOUR-1: Tourism Promotion and Marketing Policy

Launch and sustain a targeted marketing campaign for "Discover Chattogram" or "Visit Chattogram," including digital platforms, international tourism fairs, and collaborations with influencers and tour companies. Focus on niche tourism such as port-viewing, hill hiking, and heritage walks.

POLICY TOUR-2: Tourist Safety and Service Standard Policy

Establish safety protocols, visitor service standards, and a certification system for tour operators and accommodation

providers. Increase the presence of the *Tourist Police* force at key sites, terminals, and hotels.

POLICY TOUR-3: Sustainable Tourism and Environmental Protection Policy

Implement eco-tourism guidelines and environmental impact assessment requirements for tourism-related development. Enforce limits on waste, pollution, and over-tourism in sensitive areas like hills and rivers, while promoting green transport and renewable energy use in tourism zones.

POLICY TOUR-4: Public-Private Partnership (PPP) Policy for Tourism

Encourage private investment in hospitality, tour services, and site management through PPP models. Offer incentives such as tax breaks, long-term leases, and branding opportunities for private entities investing in sustainable tourism infrastructure and services.

POLICY TOUR-5: Heritage Interpretation and Navigation Policy

Create and promote integrated heritage trails through physical and digital tour maps, clear signage, and guided tour programs to enhance visitor engagement.

Policy HER-1: Strengthen Legal Protection and Listing of Heritage Sites

Ensure all historically significant buildings, religious structures, cultural sites, and colonial-era landmarks are officially identified, documented, and legally protected. Expand the heritage inventory and strictly restrict demolition, unauthorized renovation, or land-use changes within designated heritage zones.

POLICY HER-2: Guideline for Development Adjacent to Heritage Sites

Development near designated heritage sites must use construction methods that prevent damage to the historical structures, including the use of protective netting and vibration control. New constructions must also be designed and sited to avoid blocking public views of the heritage site, ensuring it remains a visible and prominent landmark.

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Chapter Twelve

Ecology and Conservation of Nature



Chapter Twelve: Ecology and Conservation of Nature

Conservation of nature is crucial for Chattogram, a region characterized by its rich ecological diversity, including hills, rivers, wetlands, and forests. These natural features play a vital role in maintaining environmental balance, mitigating climate change impacts, and supporting the livelihoods of millions. Hills and forests act as natural carbon sinks and regulate temperature, while rivers and wetlands support biodiversity, recharge groundwater, and reduce flood risks. However, rapid urbanization, unplanned development, and industrial expansion have led to significant environmental degradation in Chattogram. Encroachment on hills, open space, and water bodies has disrupted ecosystems, increased vulnerability to natural disasters, and caused biodiversity loss.

Key issues include deforestation, unregulated hill cutting, water pollution, and the loss of natural habitats. Wetlands and rivers are often filled or polluted by industrial waste, while urban sprawl replaces green spaces with concrete infrastructure, worsening urban heat and flooding. The lack of effective enforcement of environmental regulations exacerbates these challenges. Conserving nature in Chattogram is vital for ensuring ecological balance, disaster resilience, and sustainable development. It requires stringent policies, public awareness, and the integration of green infrastructure into urban planning to preserve natural resources and enhance the city's livability and resilience.

12.1 Ecological Settings in Chattogram

The ecological setting of Chattogram is shaped by its unique combination of hills, rivers, canals, wetlands, and coastal ecosystems. The hill ranges around Nasirabad, Foy's Lake, Batali Hill, CRB, Khulshi, and Bayezid ranges provide vital green cover, regulate temperature, and protect the city. The Karnafuli and Halda rivers, together with an intricate canal network and low-lying wetlands, support aquatic life, recharge groundwater, and act as natural drainage systems. However, rapid and unplanned urban expansion has severely disturbed this ecological balance. Hill cutting, deforestation, filling of wetlands, encroachment on canals and riverbanks, and indiscriminate waste disposal have degraded natural habitats and increased the risk of landslides, waterlogging, and biodiversity loss. Industrial effluents and solid waste pollute the aquatic ecosystem, threatening fisheries and public health. Protecting Chattogram's ecology requires strict control over hill and wetland encroachment, restoration of canal and river corridors, reforestation of degraded slopes, and the establishment of ecological buffer zones. Integrating green and blue networks into land-use planning, enforcing environmental regulations, and engaging communities in nature conservation are essential for restoring ecological integrity and ensuring a resilient and sustainable metropolitan environment.

12.2 Hills in Chattogram

The hills of Chattogram, an essential part of Bangladesh's geographical and cultural landscape, rise majestically, forming a stunning



backdrop to the bustling city and its surroundings. Characterized by their lush greenery and biodiversity, these hills are home to various flora and fauna, making them vital ecological zones that support both wildlife and local communities. The hills in Chattogram region are not only significant for their natural beauty but also play a crucial role in water management, acting as watersheds that influence the local climate and hydrology. They provide a vital source of water for nearby ponds and rivers, which are indispensable for irrigation and drinking water. However, rapid urbanization and industrialization pose serious threats to these landscapes, leading to deforestation, soil erosion, and habitat loss. The preservation of the hills is thus critical, requiring a concerted effort from local authorities, environmental organizations, and community stakeholders to ensure that this natural heritage is safeguarded for future generations. By promoting sustainable practices, engaging in reforestation initiatives, and raising awareness about the importance of these hills, Chattogram can strive to maintain its ecological balance while fostering economic development.

In the Detailed Area Plan (DAP) 2008 for Chattogram Metropolitan Area, ecologically sensitive area were marked for 'no-development'. However, our survey reveals development footprints on those area. As an example, development has taken place around Foy's Lake which has been markers as environmental sensitive area.



Figure 12-1: Encroachment in Reserved Area.

Over the past 10-20 years, several hills in Chattogram have significantly disappeared due to rapid urbanization, illegal hill cutting, and unregulated construction activities. Within the city limits of Chattogram, numerous hills have been significantly affected by hill-cutting activities over the past decades. Notable areas include Khulshi, Akbar Shah, Bayezid Bostami, Panchlaish, Sholoshahar, Lalkhan Bazar, and Polytechnic areas. These regions have experienced extensive hill destruction, primarily due to real estate developments and infrastructure projects.

Similarly, Bayazid Hill has seen significant degradation as a result of Encroachment and development projects.

Hill cutting for residential and commercial use is more prominent in the Jalalbad Area and, Chawkbazar Percival Hill and Deb Pahar Area in recent time. These hills, which were once vital for maintaining the ecological balance and aesthetic value of the city, have suffered irreversible damage due to a lack of effective regulation and enforcement of preservation policies. The ongoing threats to these hills highlight the

urgent need for stronger preservation measures in Chattogram.

12.3 Strategic Guidelines for Preservation of Ecology and Hilly Area

Preserving the hills of Chattogram requires a comprehensive and multi-faceted approach to address their rapid disappearance and ensure their ecological and cultural value is maintained.

12.3.1 Legal and Institutional Framework

- **Strengthen Hill Conservation Laws:** Enforce existing environmental laws such as the Bangladesh Environmental Conservation Act (1995) and formulate specific regulations for hill conservation in Chattogram.
- **Establish a Hill Management Authority:** Create a dedicated body to oversee hill preservation, including monitoring, enforcement, and policy-making.
- **Land Use Zoning:** Designate hill areas as environmentally sensitive zones with strict land use regulations prohibiting deforestation and illegal construction.

12.3.2 Controlling Unauthorized Development

- **Restrict Construction:** Ban unauthorized construction activities on and around hills. Allow only eco-friendly and low-impact developments with strict approvals.
- **Mandatory EIA:** Implement a requiring environmental impact assessments (EIAs) for any type of development in hills.
- **Monitoring and Penalties:** Regularly monitor hill areas using satellite

imagery and field inspections, imposing penalties for violations.

12.3.3. Reforestation and Habitat Restoration

- **Replantation Programs:** Promote reforestation projects with native species to stabilize slopes and restore ecosystems.
- **Community Engagement:** Involve local communities in tree planting and conservation activities, providing incentives such as subsidies or employment opportunities.
- **Wildlife Habitat Protection:** Ensure that hill ecosystems are preserved as habitats for native species by minimizing human disturbances.

12.3.4 Erosion and Landslide Management

- **Stabilize Slopes:** Use terracing, retaining walls, and bioengineering techniques to reduce soil erosion and landslides.
- **Drainage Systems:** Develop proper drainage networks to prevent waterlogging and minimize the impact of rainfall on slopes.
- **Prohibit Excessive Slope Cutting:** Enforce restrictions on hill cutting for urbanization and construction projects.

12.3.5 Community Awareness and Education

- **Awareness Campaigns:** Launch public awareness programs about the ecological and cultural significance of the hills and the consequences of their destruction.
- **School Curricula:** Incorporate hill conservation topics in educational institutions to instill environmental values in younger generations.
- **Community Participation:** Involve local stakeholders, indigenous



communities, and residents in conservation efforts to ensure long-term success.

12.3.6 Sustainable Tourism and Development

- **Eco-tourism Initiatives:** Promote eco-tourism in hill areas with minimal environmental impact, providing economic benefits while conserving natural resources.
- **Green Infrastructure:** Develop infrastructure in harmony with the natural environment, using green roofs, permeable pavements, and renewable energy sources.
- **Capacity Building:** Train local authorities and developers in sustainable practices for hill development and conservation.

Preserving the hills of Chattogram requires a multi-faceted approach involving legal enforcement, community participation, ecological restoration, and sustainable development practices. By adopting these guidelines, Chattogram can strike a balance between urban growth and environmental sustainability, ensuring the hills remain a vital part of the region's landscape for future generations.

12.4 Policy Guidelines for Development Control on Hills of Chattogram

Hills are to preserve. Depending on biodiversity, soil, slope, vegetation cover, hills are classified and regulatory measures are prescribed accordingly.

Reserving the northern hills and Foy's Lake area in Chattogram is crucial for preserving the city's natural heritage and ensuring sustainable urban development. The northern hills, with their rich biodiversity and ecological

importance, play a vital role in maintaining the region's environmental balance by preventing soil erosion, enhancing water retention, and promoting air quality. These hills also serve as natural green spaces, which are essential for the mental and physical well-being of residents. Similarly, Foy's Lake is not only a scenic and recreational asset for the city but also an important part of Chattogram's ecological system. Protecting these areas from unchecked urban sprawl and commercial development will safeguard the natural resources that are critical to the city's long-term sustainability. Additionally, by preserving these zones, the city can attract eco-tourism, improve quality of life for residents, and maintain Chattogram's unique natural landscape, ensuring that future generations benefit from the beauty and resources these areas provide.

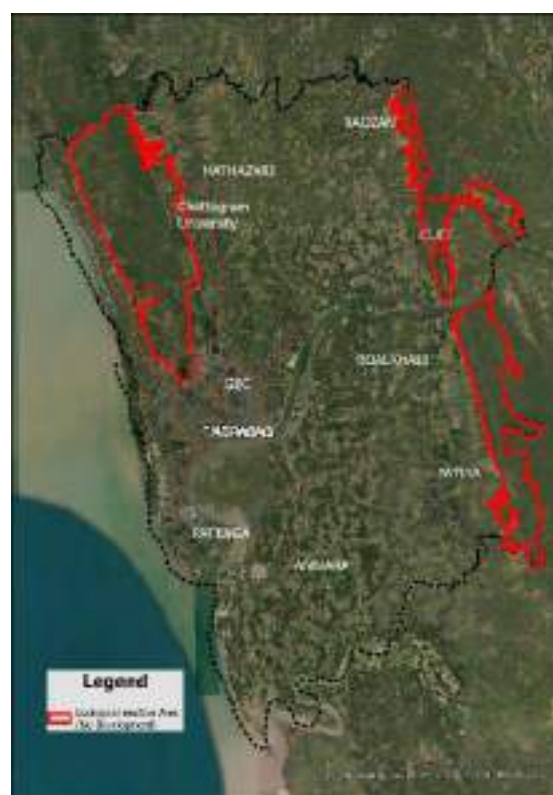


Figure 12-2: Ecologically Sensitive Hilly Area (North West).

Here's are the policy guidelines for development control to preserve the hills of Chattogram while allowing sustainable construction practices:

POLICY CONSV-1: Types of Construction Allowed

- **CONSV 1.1: Low-Impact, Eco-Friendly Buildings:** Only buildings that have minimal environmental impact should be permitted. Examples include single or double-story structures with eco-friendly designs.
- **CONSV 1.2: Green and Sustainable Construction:** Buildings utilizing green building materials, renewable energy sources, and sustainable designs should be prioritized.
- **CONSV 1.3: Restricted Land Use:** Construction should be limited to essential facilities like small-scale eco-tourism resorts, research centers, or public facilities (e.g., viewing decks or rest houses).
- **CONSV 1.4: Landslide-Resistant Design:** Promote lightweight structures, flexible materials, and earthquake-resistant construction.

DESIGNING ON A HILLSIDE



Figure 12-3: Construction Strategy on Hillside.

POLICY CONSV-2: Location Criteria

The development control mechanism for hills in Chattogram is designed to regulate construction and land use while preserving the region's fragile hill ecosystem. The primary criterion for control is slope, as steeper slopes pose higher risks of landslides, erosion, and structural instability. Other key factors include height restrictions to prevent excessive hill cutting, proximity to natural canals to safeguard drainage patterns, and environmental considerations to maintain ecological balance. By integrating these criteria, the mechanism aims to ensure sustainable development, mitigate disaster risks, and protect the natural landscape of Chattogram's hills.

To regulate the development in hilly areas, the hilly areas are classified into two zones based on its height, morphology, potential role to the ecology, slope and stability of land. They are ecologically sensitive hills and hills to conserve (Figure 12-4).





Figure 12-4: Zoning Strategy on Hillside.

In the Ecologically Sensitive area, no development is recommended. However, in hilly areas where urbanization has been engulfed already, based on slope and stability, three types of zoning have been recommended.

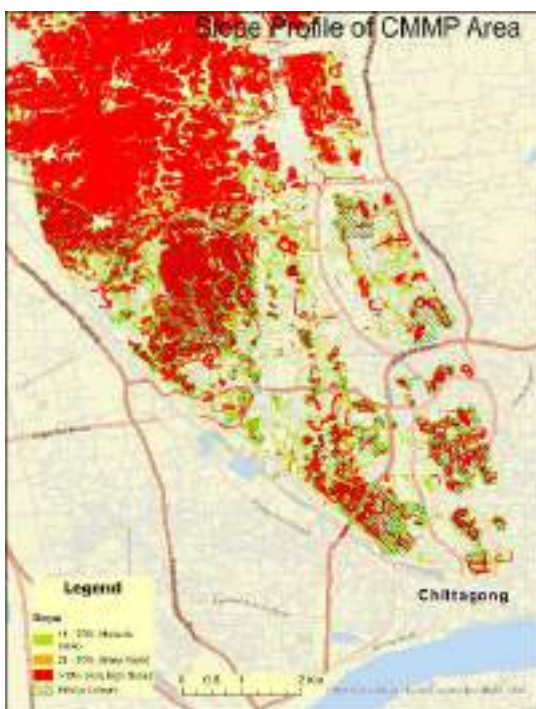


Figure 12-5: Slope Profile.

- **CONSV 2.1:** No development of any type should be permitted in areas with a slope greater than 30%.
- **CONSV 2.2:** In areas with 20-30% steep slopes, no activities involving heavy machinery should be permitted. Additional controls for these zones include:
 - o **Maximum building height:** 12 meters.
 - o **Setback requirement:** Buildings must have double the setback on all sides compared to structures on plain ground.
 - o **Soil stability:** Soil must be treated if necessary to ensure stability.
 - o **Permitted land use:** Low-traffic-generating developments such as eco-resorts may be allowed.
- **CONSV 2.3:** It is essential to have an EIA for any development on a steep slope.
- **CONSV 2.4:** For areas with 10-20% moderate slopes, residential and commercial structures may be permitted. However, they must meet the following criteria:
 - o **Maximum building height:** 15 meters.
 - o **Setback requirement:** Buildings must have 1.5 times the standard setback on all sides.
 - o **Soil stability:** Soil treatment may be required if necessary.
 - o **EIA:** approved EIA from the Department of Environment.
- **CONSV 2.5:** In case of area <10% Slope, it can be considered as constructional zone.

In addition to these zonal guidelines and building construction controls, there are other factors to consider:

- **CONSV 2.6:** Hilltops (flat or gently undulating areas) should function primarily as protection, recharge,

and landscape zones, not intensive built-up areas.

Hilltops are structurally fragile. They control runoff, erosion, and slope stability. They act as ecological and visual assets. It can have hilltop parks, Viewpoints / scenic overlooks, Nature trails (non-motorized), Environmental education parks. Maximum FAR is <0.4.

- **CONSV 2.7:** No construction should be allowed within 10 meter buffer distance from the hills' foot to protect their natural stability and aesthetic value.
- **CONSV 2.8:** A minimum of 4.57 meter (15 feet) setback distance from natural drainage channels and streams must be maintained to avoid disrupting natural water flow.

POLICY CONSV-3: Structural Design Criteria

- **CONSV-3.1:** Structures must have appropriate foundations to ensure stability and prevent soil erosion.
- **CONSV-3.2:** Restrict building height to a maximum of 10 meters (2-3 stories) to minimize visual and environmental impact. However, no building or structure should exceed the natural top of the hills.
- **CONSV-3.3:** Retaining walls should be constructed where necessary to prevent slope failure. Use terracing techniques to stabilize the terrain.

POLICY CONSV-4: Environmental Considerations

- **CONSV-4.1:** Existing trees on the construction site must not be cut down unless approved by relevant authorities. For every tree

removed, three deep rooted trees should be replanted in the area.

- **CONSV-4.2:** New developments should incorporate rainwater harvesting systems to manage runoff and recharge groundwater.
- **CONSV-4.3:** Adequate drainage systems must be built to prevent waterlogging and minimize the impact of heavy rainfall on slopes.
- **CONSV-4.4:** Make EIA mandatory before any construction project having more than 500 sq meter floor area (sum of all floors).

POLICY CONSV 5: Construction Practices

- **CONSV 5.1:** Limit the use of heavy machinery to reduce damage to slopes and minimize vibrations that can weaken the soil structure.
- **CONSV 5.2:** All construction debris and waste must be removed from the site and disposed of in designated areas to prevent pollution and blockage of natural drainage systems.
- **CONSV 5.3:** Construction should be planned during dry seasons to minimize soil erosion and landslide risks caused by heavy rainfall.

POLICY CONSV 6: Regulatory and Approval Process

- **CONSV 6.1:** Mandatory EIA reports must be submitted and approved before construction can begin.
- **CONSV 6.2:** No development will be permitted within the ecologically sensitive hilly area. For hills (slope <30%) within city limit, conditional permits for construction can be allowed (Section CONSV 2).
- **CONSV 6.3:** A robust permitting system should be in place to evaluate and approve construction plans based on



compliance with hill conservation guidelines.

- **CONSV 6.4:** Regular inspections by CDA must be conducted during and after construction to ensure adherence to guidelines.

POLICY CONSV 7: Community and Stakeholder Engagement

- **CONSV 7.1:** Educate local communities and stakeholders on the importance of hill conservation and sustainable construction practices.
- **CONSV 7.2:** Engage local residents, developers, and conservation experts during the approval process to ensure balanced development.

12.5 Water Body in Chattogram

The ecological significance of water bodies in urban areas cannot be overstated, particularly concerning aquatic life. These water bodies provide essential habitats for a wide range of species, including fish, amphibians, birds, and insects. They support biodiversity by offering breeding grounds, food sources, and shelter for various organisms. The presence of healthy aquatic ecosystems within urban areas also contributes significantly to the overall well-being of city residents by supporting biodiversity, improving environmental and aesthetic quality, and creating opportunities for recreational activities such as boating, fishing, bird-watching, and riverside leisure activities. The integration of water bodies into urban planning not

only improves environmental quality but also fosters a connection between urban dwellers and nature.

Water bodies in Bangladesh, particularly in cities like Chattogram, hold immense importance in enhancing urban resilience and sustainability. Chattogram, with its unique topography and proximity to the Bay of Bengal, is a city where water bodies such as rivers, canals, and ponds play a critical role in environmental management. These water bodies are vital in managing the urban heat island (UHI) effect, which is increasingly relevant in a rapidly urbanizing and densely populated area like Chattogram. The natural cooling effect provided by these water bodies helps in moderating temperatures, making the city more livable, especially during the hot and humid summer months. The presence of rivers like the Karnaphuli and various canals ensures that there are natural cooling mechanisms that help combat the rising temperatures in the urban environment.





Figure 12-6: Water Body (Deba).

12.6 Strategic Guidelines for Conserving Water Bodies

To preserve urban water bodies in Chattogram city, a comprehensive policy guideline can be developed that addresses key challenges and promotes sustainable management. Here is a suggested framework:

12.5.1 Integrated Urban Water Management (IUWM) Framework

- Develop a GIS-based inventory of all water bodies in Chattogram, including rivers, canals, ponds, and wetlands. This database should include information on their current state, water quality, and ecological significance. This database should be developed with DoE cooperation. The database should clearly indicate which water bodies to preserve.

12.5.2 Regulatory and Legal Protection

- Implement zoning regulations that prevent Encroachment, illegal landfills, and construction in and around natural water flow like canals. Designate buffer zones around water bodies to prevent pollution and Encroachment.

- Update existing laws (Bangladesh Water Act 2013) and introduce new legislation focused on protecting and conserving urban water bodies. Penalties for violations should be strictly enforced.

12.5.3 Pollution Control and Waste Management

- Ensure that industries in Chattogram comply with strict effluent discharge standards to prevent industrial pollution of rivers and canals. Regular monitoring and inspection should be mandated.
- Encourage the adoption of green infrastructure solutions, such as constructed wetlands, permeable pavements, and green roofs, to naturally filter pollutants and manage stormwater before it reaches water bodies.

12.5.4 Community Engagement and Awareness

- Empower local communities to monitor the health of nearby water bodies and report any issues like pollution, Encroachment, or illegal activities. Establish a public hotline (to DoE) for reporting such incidents.
- Launch educational campaigns to raise awareness about the importance of preserving water





bodies. Include school programs, workshops, and media campaigns to instill a sense of responsibility among residents.

12.5.5 Restoration and Rehabilitation

- Initiate projects to restore degraded rivers, canals, and ponds by removing silt, improving water flow, and reintroducing native vegetation. Priority should be given to historically significant water bodies like the Karnaphuli River and key Canals that carries stormwater and upstream water to river.
- Protect and restore urban wetlands, which play a crucial role in biodiversity conservation, flood control, and water filtration. Wetlands should be integrated into urban planning as natural flood buffers and recreational areas.

12.5.6 Sustainable Urban Planning and Development

- Integrate Water Bodies into Urban Design: Incorporate water bodies as central elements in urban planning, turning them into public spaces that enhance the city's aesthetic and environmental quality. Develop waterfront parks, walking paths, and recreational facilities around key water bodies. Deba has been located at a central location that can be developed to attract people for recreational purposes.
- Promote Rainwater Harvesting: Encourage rainwater harvesting in urban areas to reduce the burden on water bodies during the monsoon season and to recharge groundwater levels. This can be achieved through incentives and mandates in building codes. Like restricting paving of buildings surroundings and juxtaposition.

12.5.7 Monitoring, Evaluation, and Adaptive Management

- Regular Water Quality Monitoring: Establish continuous water quality monitoring systems for key water bodies, using modern technology like sensors and drones. Data should be publicly accessible and used for adaptive management. Owner of the pond can bring sample to DoE for testing.
- Periodic Policy Review and Adaptation: Conduct regular reviews of the water body preservation policy, making adjustments based on new challenges, technological advancements, and environmental changes.

12.7 Policy Guidelines for Development Control to Preserve Water Body

Here's a guideline for development control to preserve the water body of Chattogram, ensuring that development does not reduce the blue footprint of the area, causing a threat to the environment and human life:

POLICY CONSV 8: No Encroachment of Natural water bodies

Encroachment on natural water bodies- including rivers, canals, haors, beels, and baors- is strictly prohibited. This restriction equally applies to large traditional water bodies locally known as dighis. All such water bodies shall be legally protected and preserved to maintain ecological balance, natural drainage, and community water resource

POLICY CONSV 9: Preserve All key Water Bodies

All public or private water bodies documented in the BS Mouza map, land records (Khatian), and the 2008 Detailed Area Plan (DAP) survey shall

be preserved in their original form, with no reduction in size or water coverage (refer to Appendix-A).

Additionally, ponds not recorded in the BS land survey but identified through field investigations during the preparation of this Master Plan are presumed to have been created for domestic use or aquaculture. Among these, prominent and ecologically significant ponds, as listed in the Appendix, shall be conserved and incorporated into the city's blue-green infrastructure network.

POLICY CONSV 10: Protection of Halda River as an Ecologically Critical River

The Halda River shall be protected as an ecologically critical river system of national importance. All forms of pollution, encroachment, river narrowing, sand extraction, and flow obstruction within the river and its immediate corridor shall be strictly prohibited. The natural hydrology, river morphology, and fish breeding habitats of the Halda River shall be preserved through regulated land use control, environmental flow maintenance, and continuous monitoring.

Policy CONSV 11: Halda River Buffer and Catchment Management

A designated conservation buffer of 500 meter shall be established along both banks of the Halda River to restrict development and ensure water quality protection. Land use and development activities within the river buffer shall be regulated to control runoff, erosion, hill cutting, and untreated discharge. The Halda River corridor shall be integrated into the Structure Plan as a protected green-blue network with priority for ecological conservation and sustainable management.

POLICY CONSV 11: Enforce Penalty and Introduce Rewards

Unauthorized landfilling of water bodies shall be subject to strict legal penalties as per relevant environmental and land use regulations. Concurrently, appropriate incentive mechanisms- such as Transfer of Development Rights (TDR), tax reductions, or other fiscal benefits- shall be introduced to encourage and reward landowners who preserve, maintain, or restore existing water bodies on their property.

CONSV 12: Acquisition of Large Bodies to Preserve it

The Chattogram Development Authority (CDA) and Chattogram City Corporation (CCC) may identify and acquire strategically important water bodies exceeding 0.5 acres in size for conservation purposes, based on detailed technical and environmental assessments. Acquired water bodies shall be preserved in their natural form, with provisions to develop surrounding areas into public conservation spaces incorporating walkways, seating areas, and recreational zones, without compromising the ecological integrity and water retention capacity of the site. Public-private partnerships can also be leveraged to integrate water bodies into sustainable urban development.

Implementing this policy guideline will require a coordinated effort from all stakeholders, including government agencies, local communities, the private sector, and civil society. The long-term preservation of Chattogram's water bodies will enhance the city's resilience to climate change, improve environmental quality, and ensure a sustainable urban future.



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Chapter Thirteen

Plan Implementation and Institutes



Chapter Thirteen: Plan Implementation and Institutes

Execution of a spatial plan is the most cumbersome and challenging part of the entire planning process. On the other hand, it is also the most neglected and ignored issue in Bangladesh's planning exercises. When a spatial plan remains unexecuted for long, the entire planning exercise loses its credibility and finally becomes a futile exercise. A plan without implementation is like all exercises being zero. The quality of a plan cannot be judged until it is implemented and the results are experienced. Past experiences with spatial planning execution in Bangladesh paint a disappointing picture. The most crucial matter in this regard is that, before embarking on a new planning initiative, the concerned authorities hardly conduct any stock-taking of the preceding plan. Given that the 1995 structure plan is now significantly outdated and the metropolitan area has undergone rapid change, But it took quite a while to take the next action. Though it was suggested that the plan be reviewed and updated every 5 years after it was prepared, in the meantime no evaluation was carried out to assess the implementation of the plan proposals or to identify the causes of non-implementation. Results of such a study could provide insight into issues that could be addressed in the current plan.

Though several infrastructure projects have been implemented according to the previous Structure Plan (1995) and Detailed Area Plan (2008), there are a host of reasons for the non-implementation of the CDA's previous plans, which may be grouped into five broad categories. These are:

- Lack of effective drive and initiatives on the Part of the CDA,
- Failure work out of effective coordination among public sector agencies
- Shift of interest to other projects with the change in leadership which drains fund
- Lack of Initiative to Project Formulation
- Capacity Constraint of CDA.
- Lack of Financial Resources.

13.1 Strategy for Successful Implementation of the Structure Plan

It appears from past reviews that development authorities in Bangladesh need to implement reforms in their structure, processes, manpower, skills, and thought processes.

The reforms are necessary because they address the complex challenges associated with urban development in Chattogram, but their capacity is insufficient. Urban planning involves integrating multiple sectors like infrastructure, housing, transportation, and environmental management, and without strong governance and leadership, these sectors may operate in isolation, leading to inefficiencies and conflicts. The rapid growth of Chattogram further intensifies these challenges, as the city's infrastructure and services must expand quickly to keep pace with the population increase. Without adequate institutional capacity, sufficient resources, and proper leadership, CDA may struggle to manage this growth effectively. Reforms such as expanding human resources, adopting modern technologies, and streamlining administrative processes





are critical to improve planning and execution.

13.2 Institutional Reform

Although the Planning Wing of Chattogram Development Authority (CDA) is legally mandated to prepare master plans and guide urban development control, in practice its capacity and functional scope remain limited. The wing/unit is constrained by shortages of skilled human resources, inadequate technical tools, and weak inter-departmental authority, resulting in a largely advisory role in day-to-day development control. Consequently, key planning decisions are often fragmented or driven by project-based or regulatory considerations rather than by the Structure Plan's intent. Strengthening the Planning Wing/Unit is therefore essential to ensure plan-led development, effective land use management, and coordinated urban development in Chattogram.

The previous master plans proposed few options that can be further exercised (Figure 13-1) to ensure the planned development.

Although Chattogram Development Authority (CDA) primarily focuses on building approval and development control, its existing organizational structure does not adequately address road and transport planning. Given the rapid urban expansion of Chattogram, decisions on land development are increasingly influencing traffic demand, road capacity, and safety conditions. In the absence of a dedicated road and transport planning wing, road needs, geometric design, access management, and multimodal considerations are often addressed in a fragmented manner. Establishing a specialized road and transport planning section within CDA would enable integrated assessment of development proposals, ensure conformity with road hierarchy and design standards, and support coordinated, safe, and efficient urban mobility across the city.

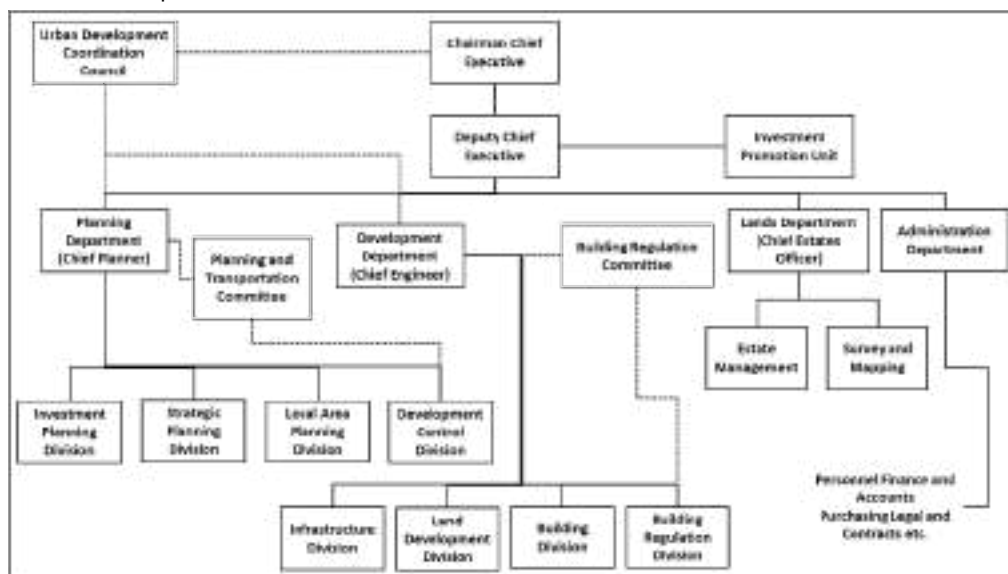


Figure 13-1: Proposed Structure of CDA/CPDA by CMMP 1995

13.3 Capacity Enhancement of CDA

To effectively implement the master plan for Chattogram, significant capacity enhancement is needed within the Chattogram Development Authority (CDA) across various areas. These enhancements are crucial to ensure that CDA has the necessary skills, resources, and systems in place to manage complex urban planning, infrastructure development, and sustainable growth. Below are the key types of capacity enhancement needed for CDA:

- ✓ Increase the number of technical personnel in plan preparation, updating, and maintaining plans
- ✓ Training and capacity building of the CDA planning unit
- ✓ Adoption of modern planning tools
- ✓ Fundraising and Public-Private Partnerships (PPP)

13.4 Review of Master Plan at Regular Interval

Regular review of the master plan is essential for several key reasons. First, urban dynamics and development needs evolve over time. Demographic changes, economic shifts, technological advancements, environmental concerns, and national development strategy can all affect the city's growth trajectory. A master plan that may have been relevant when initially developed may become outdated if it doesn't adapt to these changes. Regular reviews allow the Chattogram Development Authority (CDA) to ensure that the plan remains aligned with the city's current and future needs, adjusting for factors like population growth, shifts in economic

activity, natural disasters or new environmental challenges.

Second, the review process helps identify and address potential bottlenecks, challenges, or inefficiencies that may arise during the implementation phase. Some aspects of the master plan might be difficult to execute as envisioned due to unforeseen issues, such as financial constraints, land acquisition problems, or conflicts between different stakeholders. By periodically reviewing the plan, CDA planning team can identify these challenges early and make necessary adjustments to avoid delays or failures in specific projects.

Another reason for regular reviews is to ensure that the master plan continues to reflect the priorities of the community and other stakeholders. As the city grows and changes, public expectations and needs may shift. Regular reviews provide an opportunity for public consultation, ensuring that the master plan remains relevant and responsive to citizens' concerns, such as housing needs, public amenities, or transportation infrastructure.

Additionally, reviewing the master plan periodically helps improve accountability and transparency. It provides an opportunity to evaluate the progress of various projects, assess how effectively resources are being utilized, and make data-driven decisions about future investments. This process helps maintain public trust and ensures that the master plan is being implemented as intended, with proper financial oversight.

In summary, a regular review of the master plan is needed to keep it adaptable, responsive to changing circumstances, and aligned with the long-term vision for Chattogram. It





allows CDA to adjust the plan as needed, resolve challenges early, reflect community priorities, and ensure efficient use of resources, ultimately contributing to the successful and sustainable development of the city.

Since master plans are prepared for 20 years, a 5-yearly review could be prudent to practice. CDA planning unit can review the achievements of the last 5 years, set targets for the next 5 years, and finalize a strategy to attain them.

13.5 Formation of Development Coordination Committee

Coordination among various stakeholders, including government agencies, private developers, and community groups, is also vital for successful urban development. A lack of coordination can lead to project delays, misaligned priorities, and resource wastage. Even different government organizations do not know each other's plan because they go in parallel. So, development coordination committee can be an effective initiative. Such a committee, as a city governance organ, can be formed at zonal level and meet quarterly to review upcoming and ongoing development projects and foresee any impact on the metropolitan.

Development Coordination Committee can be of two tiers. City Development Coordination Committee (CDCC) for the Chattogram City Corporation area and Upazila Development Coordination Committee (UDCC) for all Upazilas within CMMP Area.

For the Chattogram City Corporation area, CDCC will be led by the CCC

Mayor and constituted of appropriate members from City Corporations, Local Government Engineering Department (LGED), Department of Environment (DoE), Roads & Highways Department (RHD), Bangladesh Railway (BR), National Housing Authority, Chattogram WASA, PDB, Karnaphuli Gas Distribution Company, Chattogram Metropolitan Police, Chattogram Port Authority etc. In addition, representation from relevant professional bodies including the Bangladesh Institute of Planners, the Institute of Architects Bangladesh, and the Institute of Engineers Bangladesh. CDA Chairman shall serve as the Member Secretary and the focal point for ensuring compliance with the Master Plan in all development activities.

For the vast areas outside the Chattogram City Corporation jurisdiction, UDCC will be led by divisional commissioner while having the representative from Pourashava and other government organs (as mentioned before) and elected representatives. The Chief Town Planner of CDA shall serve as the Member Secretary and the focal point for ensuring compliance with the Master Plan in all development activities.

The primary role of these CDCC and UDCC would be to oversee and guide the city's urban planning and development initiatives with a focus on sustainability and ecological preservation. The committee would serve as a central body for coordinating large-scale development projects, ensuring that they align with environmental regulations, social needs, and long-term urban growth goals. It would enforce policies integrating green spaces, reducing pollution, and

promoting eco-friendly infrastructure while balancing the city's economic, residential, and commercial needs. These development coordination committee would also work closely with local communities, businesses, and urban planners to foster collaborative decision-making, ensuring that all stakeholders contribute to building a resilient, inclusive, and environmentally conscious urban landscape. Their role would extend to regularly reviewing mega-project development proposals, conducting environmental impact assessments, and advising on best practices to minimize harm to Chattogram's natural resources. Ultimately, the committee's goal would be to facilitate sustainable urban development in an informed way that supports the city's growth while preserving its ecological health for future generations.

These Development Coordination Committees will not review regular development proposals but will focus on mega projects with an investment exceeding BDT 500 Crore, a building floor area greater than 10,000 square meters, or those occupying more than 1 acre of land. This may encompass the development of significant infrastructure projects affecting transportation, large-scale residential or commercial developments, the creation of expansive industrial hubs, the establishment of power plants, and urban revitalization initiatives, among others. However, land development (land subdivision) and residential plotting projects shall not be reviewed by any development coordination committee, as these are governed by separate and well-established guidelines and plan approval processes. The committee will not make any recommendations

that conflict with the National Building Code or the Chattogram Metropolitan Master Plan, both of which are adopted for development control and approval.

13.6 Decentralization of Services

It is evident from the CDA's development activities that the City Corporation area is their primary focus, where most of their projects are concentrated and where buildings seek development approval. However, a large portion of the area, beyond the 15% of their



Figure 13-2: Proposed CDA Zones.

designated command area, remains neglected, uncontrolled, and often overlooked for development. This has strained relations between the CDA and residents of the broader Chattogram Metropolitan area. People living outside the core city





area typically do not seek CDA development approval. Meanwhile, Pourashavas within the Chattogram Metropolitan Master Plan (CMMP) area are not fully aligned with CDA regulations. Consequently, buildings constructed outside the city area often bypass CDA oversight, leading to inconsistencies in urban planning and development control.

In some cases, Pourashava grants permission, but in many cases, development takes place without proper permission. These need to improve. The development authority not only inspects whether buildings comply with regulations, but it also provides public infrastructure and supports sustainable development as the area grows. CDA must initiate infrastructure projects for the other small urban centers, as people in the command area benefit from CDA initiatives and help build relationships.

For this, "Zonal Office" could be a good solution. To enhance service delivery and strengthen CDA's engagement with the community, the establishment of several 'zonal offices' across the metropolitan area should be considered. These offices would decentralize operations, making it easier for residents and businesses to access planning approvals, development permits, and other essential services without needing to visit the central office. By bringing services closer to the people, CDA can ensure faster processing times, improved monitoring of development activities, and more effective enforcement of planning regulations. Additionally, zonal offices can serve as hubs for community engagement, enabling

better communication between the CDA and local stakeholders and ultimately fostering a more inclusive and transparent urban development process. This initiative will not only improve efficiency but also strengthen CDA's role in promoting sustainable, well-managed urban growth across Chattogram.

Table 13-1: Proposed CDA Zones.

Proposed CDA Zone	Area Covered
Zone 1	CCC Area excluding, 1. Area north of Oxygen-Kuwaish Road and Bayezid Link Road 2. Area west of Port Connecting Road Upto Boropol Mor, Area west of Haliashohor Road and the Port Railway
Zone 2	Anowara & Karnaphuli Upazilla
Zone 3	Hathazari Upazilla and Part of the CCC area north of Oxygen-Kuwaish Road and Bayezid Link Road
Zone 4	Sitakundo Upazilla, and Part of the CCC area west of Port Connecting Road upto Boropol Mor and area west of Haliashohor Road and the Port Railway
Zone 5	Patiya & Boalkhali Upazilla
Zone 6	Raozan & Rangunia Upazilla

For each zone, a suggested personnel structure could be as follows (Figure: 13-3):

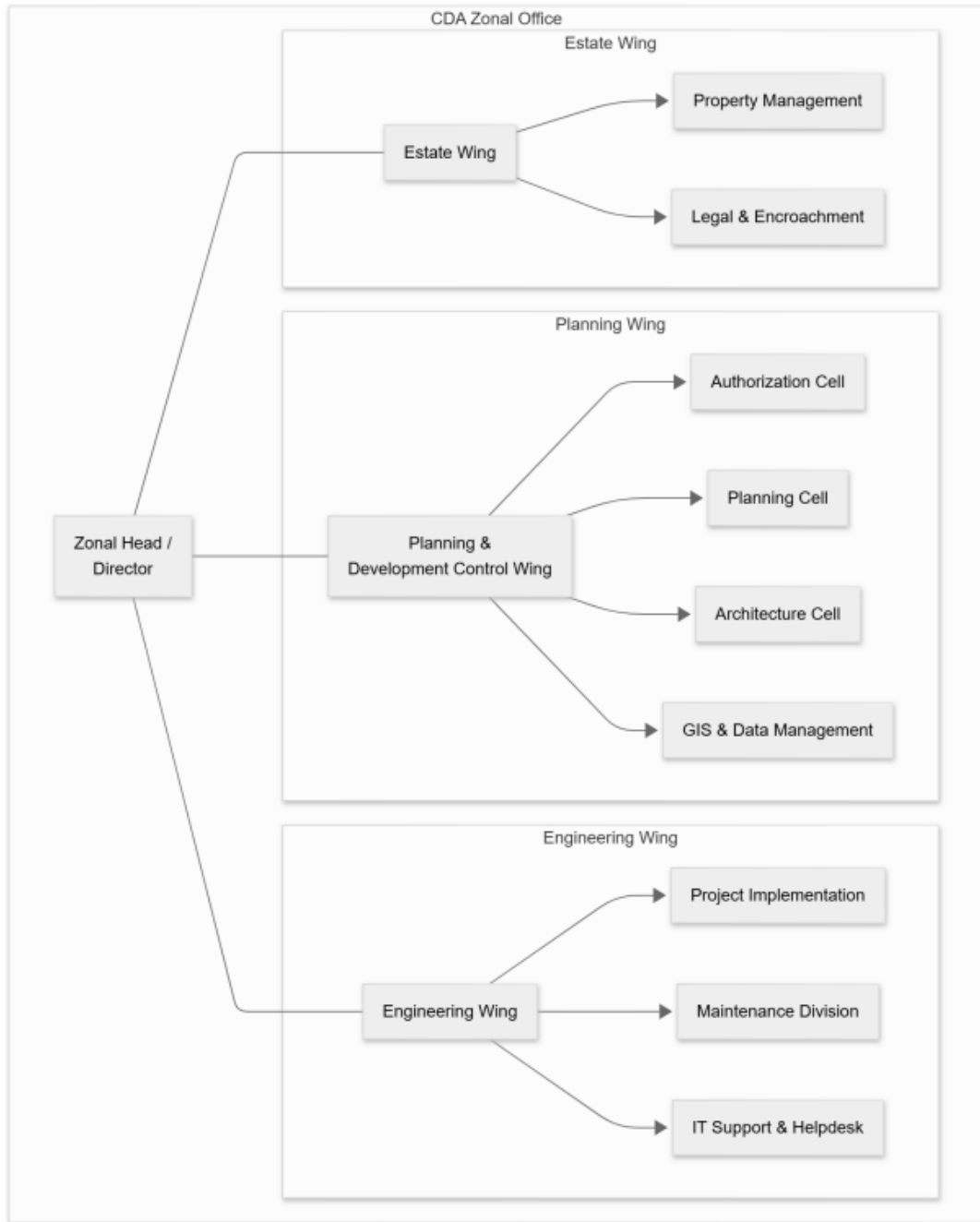


Figure 13-3: Suggested Personnel Structure for Proposed CDA Zones

13.7 Development Approval Process

The development approval (DA) process is a formal system in which urban development control and management authorities grant permission (entitlement) to build or change land use, ensuring that

projects meet zoning, environmental, and safety regulations. It ensures new developments align with local plans, manage impacts, and follow legal standards before construction begins.



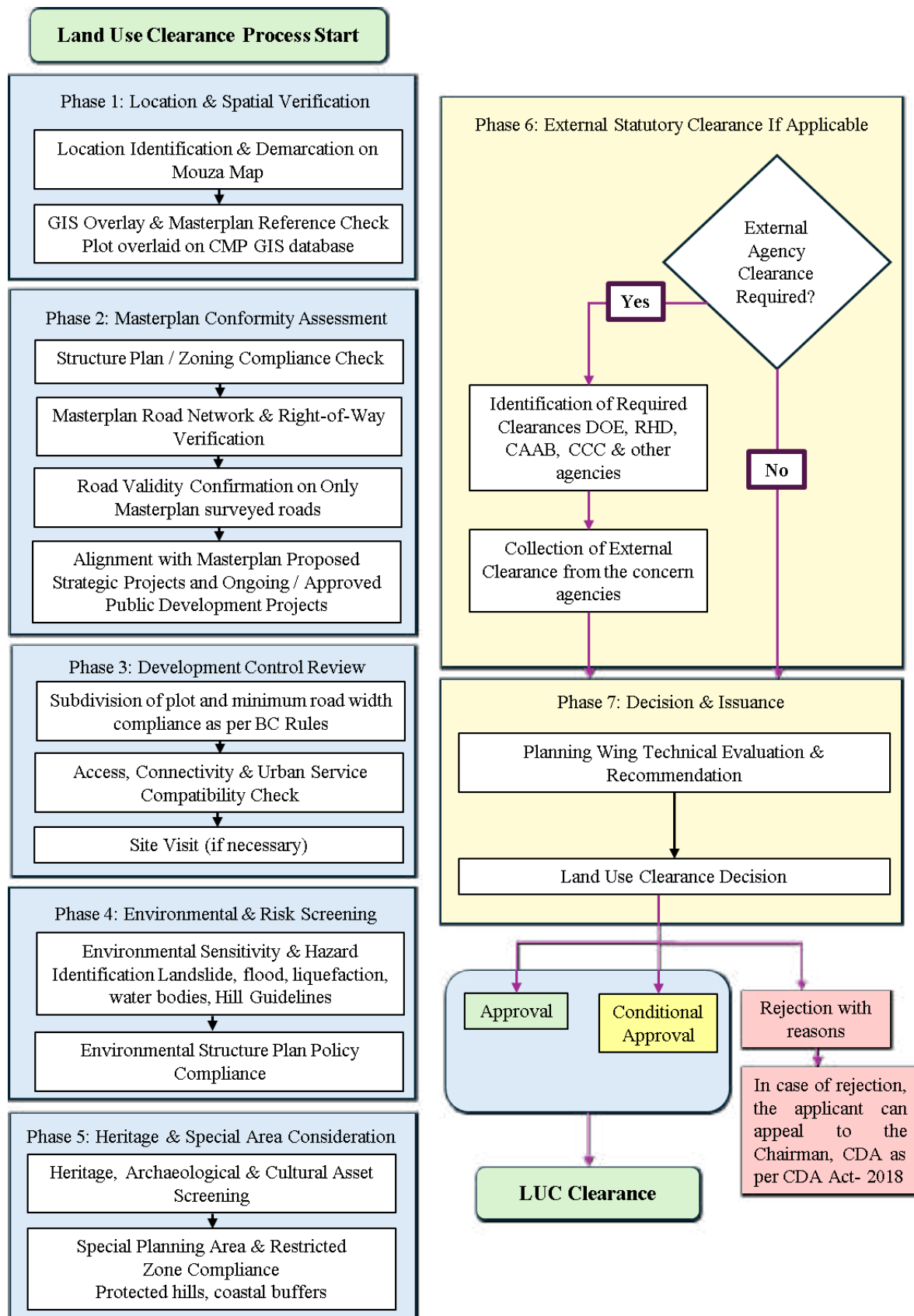


Figure 13-4: Proposed landuse clearance work flow proposed development permission.

Land use control and building construction plan approval constitute a critical regulatory process for guiding planned urban development. To address existing fragmentation and procedural inefficiencies, a structured workflow has been proposed (as illustrated in figure 13-4), clearly delineating the roles of the Planning Wing Unit Under this framework, land use clearance based on the Structure Plan and planning policies is undertaken at an early stage, followed by parallel technical scrutiny of FAR, MGC, setbacks, and infrastructure requirements. The proposed workflow ensures coordinated decision-making, reduces duplication and discretionary interpretation, and enables a plan-led, transparent, and time-bound approval process.

13.8 Integrating Pourashava into Urban Governance Decisions

Integrating Pourashava into urban governance decision-making is essential for creating a more inclusive, efficient, and responsive urban planning system. By decentralizing authority, enhancing local capacity, fostering collaboration, and ensuring public participation, Pourashavas can take an active role in shaping the future of urban areas. With stronger coordination, better resource management, and the empowerment of local leaders, Pourashavas will be better equipped to meet the needs of their communities and contribute to sustainable urban development.

Pourashavas (municipalities) and the Chattogram Development Authority can work together to ensure

coordinated and sustainable urban development across Chattogram.

While CDA focuses on metropolitan-scale planning, zoning, and major infrastructure projects, Pourashavas can handle local governance, municipal services, and day-to-day urban management. In terms of development control, Pourashava can oversee compliance and issue occupancy certificates. By aligning their roles, they can enhance service delivery, streamline regulatory processes, and promote well-planned urban expansion.

However, to participate in such a collaborative approach, Pourashavas needs to enhance capacity by employing appropriate planners, engineers, and architects who can adopt the master plan in their role in development control and implementation.

Key areas of possible collaboration include:

i. Development Control & Land Use Planning – Pourashavas can enforce

CDA's master plan and zoning regulations at the local level, ensuring that development is both legal and sustainable.

ii. Infrastructure & Public Services – Joint efforts can be made to provide roads, drainage, park and play ground, community facilities systems that align with CDA's broader metropolitan plans.

iii. Building Regulation & Approval – Pourashavas can assist in monitoring building compliance, ensuring that construction follows CDA's guidelines while offering faster local-level approvals.





iv. Community Engagement & Public Awareness – Municipalities, being closer to the people, can facilitate public participation in planning and create awareness about sustainable urban growth.

v. Disaster Resilience & Environmental Protection – Pourashavas can work with CDA on flood control, green space conservation, Canal and water bodies restoration, and adopting climate resilience strategies to create a livable and resilient urban environment.

By fostering a collaborative governance model, Pourashavas and CDA can reduce bureaucratic delays, improve service delivery, and ensure that development benefits both urban centers and surrounding areas, leading to a well-managed, sustainable, and inclusive Chattogram Metropolitan Region.

13.9 Proposed Transitional Approach for Introducing Zone based Development Management in CDA

Although the formal establishment of six zonal offices in Chattogram will require ministerial approval, staffing, and resource allocation, CDA can begin the transition through an internal administrative restructuring. As an interim measure, CDA may divide the metropolitan area into six planning and development management zones (as described earlier) and assign each zone to a designated Assistant Town Planner or planning team. These teams will be responsible for development control, land-use monitoring, field inspections, and community coordination within

their allocated zones, under the supervision of senior planners (Deputy Chief Town Planner/Chief Town Planner). This internal distribution of responsibilities will help planners develop zone-specific knowledge, improve familiarity with local issues, and streamline future decentralization.

By operating in a zonal framework from within the existing organizational structure, CDA can gradually strengthen capacity, prepare standard operating procedures, and build localized expertise well before the formal zonal offices are approved. Once ministerial authorization is granted, these preparatory steps will allow a smooth transition to fully functional zonal offices, reducing administrative disruptions and ensuring efficient, responsive, and locally attuned development management across the metropolitan area.

13.10 Key Recommended Policies and Strategies for Implementation of the Structure Plan

Policy INS-1: Strengthening CDA as the Lead Metropolitan Planning Institution

- Reinforce CDA's statutory role as the apex authority for metropolitan planning, zoning, and development control.
- Prioritize the Planning Unit within CDA by allocating adequate technical man-power, budget, and decision-making authority.

- Introduce internal restructuring to separate strategic planning, development control, and project implementation functions for improved efficiency.

Policy INS-2: Institutional Coordination through Formal Governance Mechanisms

- Establish the Urban Development Coordination Committee (UDCC) as a permanent metropolitan governance platform for inter-agency coordination.
- Mandate UDCC review for all mega development projects to ensure alignment with the Structure Plan, environmental safeguards, and infrastructure capacity.
- Institutionalize information-sharing and joint planning among CDA, CCC, Pourashavas, WASA, RHD, CPA, and DoE.

Policy INS-3: Decentralization of Development Management

- Gradually introduce zone-based development management through the creation of CDA Zonal Offices.
- In the interim, operationalize zonal planning by assigning Deputy/Assistant Town Planners and technical teams to specific zones.
- Empower zonal teams to handle development control, monitoring, and stakeholder coordination to improve responsiveness and compliance.

Policy INS-4: Capacity Enhancement and Professional Development

- Increase recruitment of qualified planners, engineers, GIS specialists, and environmental professionals within CDA.

- Introduce continuous training programs on modern planning tools, GIS-based monitoring, and regulatory enforcement.
- Encourage partnerships with academic institutions, professional bodies, and development partners to provide technical support and conduct research.

Policy INS-5: Regular Review and Adaptive Planning

- Institutionalize a mandatory five-year review cycle for the Structure Plan.
- Link plan review outcomes with budget allocation, project prioritization, and policy adjustment.
- Ensure public consultation and stakeholder engagement during each review cycle to maintain transparency and relevance.

Policy INS-6: Integration of Pourashavas into Metropolitan Governance

- Clearly define functional roles between CDA and Pourashavas for development control, service delivery, and monitoring.
- Build technical capacity of Pourashavas to enforce zoning regulations and building controls consistent with the Master Plan.
- Promote joint infrastructure planning and environmental management initiatives at the metropolitan-local interface.

Policy INS-7: Creation of Road and Transport Planning Wing in CDA

Create a specialized section within CDA staffed with transport planners and road/highway engineers, aligned with the existing development control framework.



Make transport and traffic impact assessment a mandatory part of land development and major building approval processes.

Review and enforce road hierarchy, right-of-way protection, junction spacing, and geometric design standards in all new developments.

Ensure provision for public transport, pedestrians, cyclists, and emergency access within road and site design.

Strengthen coordination with City Corporation, Roads and Highways Department, and traffic police for coherent road and transport planning.

Policy INS-8: Ensuring Financial and Implementation Readiness

- Develop a phased investment and project prioritization framework aligned with Structure Plan proposals.
- Promote Public-Private Partnerships (PPP) for infrastructure and service delivery.
- Explore diversified funding sources, including development charges,

betterment levies, and donor-supported programs.

Policy INS-9: Transparency, Accountability, and Monitoring

- Introduce performance indicators to track progress on the plan.
- Establish a GIS-based monitoring system for land use change, development compliance, and infrastructure delivery.
- Publish periodic implementation reports to enhance accountability and public confidence.

Effective implementation of the Chattogram Metropolitan Structure Plan requires strong institutions, coordinated governance, decentralized service delivery, and continuous capacity enhancement. These policies aim to transform the Structure Plan from a statutory document into a dynamic, implementable framework that guides sustainable metropolitan development.



Annexure A

List of CMMP Mouza

Thana: Bandar

Mouza	Area (sq km)
Badalpura	2.52
Baklia	6.88
Bandar	2.63
Chadgaon	0.59
Char Baklia	1.67
Char Khidirpur	1.28
Char Khizirpur	2.71
Char Laksya	4.96
Char Mohra	0.63
Char Patharghata	1.98
Char Rangamatia	0.79
Dakshin Haliashahar	10.06
Dakshin Paruapara	1.19
Dakshin Patenga	14.43
Dangar Char	6.81
Dwip Kalamorol	1.79
Firingee Bazar	0.48
Gobadia	1.04
Gosaildenga	1.77

Mouza	Area (sq km)
Ichhanagar	3.77
Juldha	2.79
Kolagaon	4.01
Madarbari	0.98
Madhya Haliashahar	9.97
Majher Char	2.16
Monohorkhali	0.11
Nolsha	0.13
Paschim Gomdandi	2.42
Paschim Tulatuli	1.44
Phultali	1.53
Purba Patenga	6.45
Rangadia	2.69
Saha Mirpur	5.88
Sahamirpur	1.14
Sikolbaha	1.63
Suzakatgor	0.32
Uttar Paruapara	1.49
Uttar Patenga	10.63



Thana: Panchlaish

Mouza	Area (sq km)
Baklia	5.76
Chandgaon	8.63
Char Rangamatia	1.65
Jalalabad	5.99
Khulsi	1.61
Kulgaon	2.48
Mohra	6.21
Muradpur	1.25

Mouza	Area (sq km)
Panchlaish	5.52
Paschim Sholashahar	4.33
Purba Nasirabad	3.48
Purba Pahartali	0.92
Purba Sholashahar	1.31
Shuluk Bohor	0.67
Sulukbahar	0.17

Thana: Double Mooring

Mouza	Area (sq km)
Agrabad	3.71
Ashkarabad	0.16
Askarabad	0.24
Dakshin Kattali	4.69
Dakshin Pahartoli	4.79
Gosaildenga	0.65
Goshaildanga	0.49
Lot 9 Pahartali	0.95
Madarbari	0.62
Mogbazar	0.16

Mouza	Area (sq km)
Mughaltuli	0.22
Nolsha	0.04
Paschim Nasirabad	0.72
Pathantuli	0.56
Rampur	1.39
Soroipara	1.32
Uttar Halishahar	6.46
Uttar Kattali	5.12
Uttar Pahartali	5.58

Thana: Kotwali

Mouza	Area (sq km)
Alamsahakatgor	0.45
Andarkilla	0.86
Battali	0.87
Chandanpura	0.30
Dakshin Pahartali Khulsi	0.17
Enat Bazar	0.26
Firingee Bazar	0.03
Guribazar	0.15
Imamganj	0.27
Joy Pahar	0.04
Joypahar	0.26

Thana: Hathazari

Mouza	Area (sq km)
Alipur	1.33
Andharghona	1.09
Bathua	1.96
Burishchar	3.87
Charia	11.36
Chhankhola	1.06
Chhibatali	4.38
Chikan Dandi	4.85
Chikondandi	1.26
Dakshin Madrasha	2.95
Dakshin Pahartali	11.89
Dewan Nagar	3.94

Mouza	Area (sq km)
Kachim Bazar	0.31
Karnat	0.14
Lalkhan Bazar	1.69
Monohorkhali	0.09
Nijshahar	0.72
Patharghata	0.42
Rohmotganj	0.44
Roomghata	0.22
Sujakatgor	0.46
Uttar Pahartali Khulshi	0.29

Mouza	Area (sq km)
Fatika	9.43
Garduara	5.24
Guman Mardan	11.95
Hasimnagar	0.68
Jobra	2.02
Jungle Charia	3.29
Jungle Dakshin Pahartali	13.81
Jungle Mithachhara	1.16
Jungle Paschim Patty	7.31
Jungle Shilchhari	3.45
Jungle Uttar Pahartali	6.75
Khandakiya	2.97

Mouza	Area (sq km)
Kuais	2.22
Madhya Madrasha	6.84
Madya Pahartali	4.98
Maijpatti	3.25
Mekhal	8.72
Mirzapur	6.30
Mithachhara	3.62
Mithanala	1.25
Muzafarpur	0.88

Mouza	Area (sq km)
Nangalmora	1.86
Nehalpur	2.03
Paschim Patti	4.02
Rahimpur	0.91
Rohullapur	1.11
Shikarpur	2.75
Shilchhari	1.11
Uttar Madrasa	12.61
Uttar Pahartali	2.84

Thana: Sitakunda

Mouza	Area (sq km)
Bhatiary	1.60
Boro Kumira	1.31
Dakshin Chilimpur	1.97
Dakshin Jungle Sonai Chari	10.70
Dakshin Sonai Cchari	4.43
Dakshin Sonai Chari	0.47
Jahanabad	4.27
Jungle Latifpur	1.78
Jungle Selimpur	6.14
Jungle Vatiari	8.12
Keshabpur	1.34
Khadimpara	0.69
Lot 21 Choto Kumira	4.37
Lot 66 Sonai Cchari	7.65

Mouza	Area (sq km)
Lot 68 Keshabpur	4.43
Lot 8 Kumira	2.35
Lotifpur	3.27
Madhaya Sonai Chari	2.90
Madhya Sonai Cchari	2.04
Mochajidya	5.01
Sheetalpur	0.83
Sitalpur	2.43
Tulatuli	0.68
Uttar Chilimpur	0.98
Uttar Jungle Sonai Cchari	13.65
Uttar Selimpur	3.52
Uttar Sonai Cchari	7.94
Vatiari	4.41

Thana: Anwara

Mouza	Area (sq km)
Airmangal	0.94
Anowara	4.40
Bairag	3.81
Barasat	2.11
Barkhain	5.51
Bathua Para	0.71
Battali	6.27
Belchura	1.55
Bhingrol	0.76
Bilpur	2.38
Boalgaon	0.30
Boalia	1.85
Burumchhara	14.87
Chalitatali	0.77
Chapatali	1.15
Char Pukuria	1.01
Chatari	2.91
Chenamati	0.43
Chunna Para	1.52
Dakshin Paruapara	1.50
Deotala	0.79
Dhanpura	0.54
Dudkumara	1.56
Dumuria	1.20
Gahira	7.68
Gobadia	0.41
Guapanchak	3.09

Mouza	Area (sq km)
Gujra	2.23
Gundwip	0.58
Haildhar	1.46
Hajigaon	1.50
Hetikhain	0.89
Ichhakhali	3.02
Jhiuri	2.85
Juidandi	7.18
Kaikhain	1.97
Kainpura	3.10
Keagar	1.69
Khaskhama	1.80
Khilpara	1.06
Khordda Gahira	0.88
Khuruskhul	1.49
Kunirbil	0.29
Mahata	1.07
Malghar	1.32
Mamurkhain	0.34
Naidandi	0.23
Naldia	0.36
Olghar	0.85
Oskhain	1.30
Paraikora	2.13
Paschim Baraia	1.83
Paschim Chal	2.34
Paschim Kanyara	0.43

Mouza	Area (sq km)
Patnikota	1.39
Pirkhain	1.12
Purba Baraia	1.00
Purba Kanyara	1.38
Purba Tulatali	0.69
Roypur	2.82
Rudura	0.66
Said Kuchaia	0.67
Saitpetua	0.46
Sarenga	4.85

Mouza	Area (sq km)
Silaigara	2.21
Sillia	1.07
Singhara	1.71
Solkata	2.72
Tailadwip	2.02
Talsara	0.84
Tatua	0.64
Tisri	0.63
Uttar Paruapara	1.25

Thana: Patiya

Mouza	Area (sq km)
Akupdandi	0.74
Alampur	1.15
Allai	1.32
Asia	4.49
Assata	0.63
Azimpur	1.54
Bagdandi	1.59
Baghkhali	0.49
Bahuli	1.41
Bakkhain	1.36
Banigram	2.15
Banipur	0.39
Baraikora	2.40
Baria	1.92
Bathua	2.73

Mouza	Area (sq km)
Belkhain	1.26
Bhandargaon	1.74
Bin Nihra	0.93
Bogahora	1.01
Boro Uthan	4.36
Boroliya	2.09
Budhupura	0.56
Catra	1.55
Chafra	2.51
Chafri	0.37
Chanhara	3.21
Char Farid	1.27
Char Lakshya	4.19
Chhattar Petua	1.05
Dakshin Bhursi	1.74

Mouza	Area (sq km)
Dakshin Samura	0.70
Darok	0.37
Daulatpur	5.22
Denga Para	1.25
Dhaurdenga	1.63
Dholghat	1.71
Gobinderkhil	2.27
Goirola	1.63
Goronkhain	0.77
Guyatoli	0.56
Habilas Dwip	2.52
Haidgaon	9.78
Halim Kha Char	1.45
Harin Khain	1.71
Hatiaghona	0.49
Hilchia	1.36
Hulain	2.62
Ishwar Khain	1.08
Jiri	3.75
Joarakhan Khanabad	1.18
Jungle Khain	0.98
Jungle Sheetalcchari	7.59
Kaigram	2.75
Kaliais	1.89
Karankhain	1.13
Kasiais	2.51
Kechiapara	0.69
Kelishohor	6.39
Khanmohana	1.20

Mouza	Area (sq km)
Kharna	4.61
Khoajnagar	1.26
Kochuai	3.11
Kolagaon	0.75
Komcotor	1.12
Korol	1.48
Kortala	1.58
Kotha	1.54
Kurangiri	1.59
Kusumpura	1.52
Lakhera	0.71
Laoerkhali	0.58
Lorihora	0.43
Lot 075 Sreemai	13.81
Lot 97 Sattar Petua	3.00
Maliyara	2.84
Meherati	1.23
Melghor	1.49
Mohira	1.32
Mohirahi Khain	1.18
Mohiraperpera	1.08
Moitola	1.11
Monsa	1.97
Motpara	1.44
Mukunight	1.26
Muzaffarabad	2.66
Naikhain	2.14
Nanderkhil	0.52
Nolanda	0.41



Mouza	Area (sq km)
Okhra	0.29
Pacgachiya Boroduyara	1.09
Paikpara	0.45
Pairul	0.77
Panchuria	3.06
Parigram	1.10
Patiya	2.52
Perala	0.83
Perpera	0.40
Pingola	1.37
Rasidabad	1.75
Ratanpur	1.94
Saidair	0.73
Sapmara	1.66
Sattetaia	0.57
Shosang	0.52

Mouza	Area (sq km)
Sikolbaha	6.15
Sobhandandi	1.17
Sreemai	4.60
Suchokrodandi	1.70
Tekota	1.04
Thana Mahira	1.38
Tiarkul	0.62
Ujirpur	0.49
Unainpur	0.33
Uttar Bhurshi	1.03
Uttar Deang	1.29
Uttar Jungle Sreemai	4.01
Uttar Samura	0.92
Vatikhain	2.19
Wkanyara	0.83

Thana: Raozan

Mouza	Area (sq km)
Andarmanik	5.11
Bagoan	4.43
Binajuri	5.57
Chamider Khoyang	0.99
Chikdair	5.86
Chotropara	0.97
Dabua	10.70
Dakshin Sotta	2.55
Dalainagar	2.72

Mouza	Area (sq km)
Dalilabad	0.41
Dewanpur	4.00
Dewwapara	1.27
Fatenagar	2.76
Gahira	9.12
Goschi	4.36
Harpara	1.32
Hingla	6.01
Idilpur	1.08

Mouza	Area (sq km)
Jamuyain	0.85
Jungle Raozan	8.61
Katalighona	2.59
Keutia	1.55
Keyakdair	1.05
Khoiyakhali	1.47
Kochukhain	1.34
Kodolpur	13.96
Kolom Poti	2.04
Lalongora	2.78
Melua	2.47
Moish Korom	0.91
Nadimpur	1.18
Noapara	10.96
Noazishpur	2.68
Pahartali	5.30

Thana: Rangunia

Mouza	Area (sq km)
Andorghona	0.89
Baniakhola	0.98
Betagi	7.58
Chengkhali	2.17
Dhemirchhora	0.95
Dingallonga	1.78
Gungunia Betagi	0.83
Jungle Ghat	1.16
Jungle Ghat Check	2.26

Mouza	Area (sq km)
Panchkhain	2.33
Paschim Guzara	10.35
Paschim Kodolpur	1.30
Paschim Raozan	7.57
Patiyapara	1.26
Purba Gujara	10.46
Purba Raozan	7.36
Sahanagar	0.51
Sakardda	0.92
Saplonga	0.39
Sultanpur	7.84
Suronga	0.45
Unashottur Para	4.63
Urkir Char	3.11
Uttar Gujara	11.72

Mouza	Area (sq km)
Jungle Pomra	5.50
Jungle Surut Singh's Dhala	1.98
Kaukhali	1.30
Lot 99 Hazari	0.49
Noagaon	3.03
Pomra	12.77
Pukia Lola	0.45
Surut Singh's Dhala	5.07
Tin Chadia	1.17

Thana: Boalkhali

Mouza	Area (sq km)
Ahla	6.11
Akalia	0.45
Akupdandi	3.36
Amchia	4.04
Barai Para	0.78
Bengura	1.59
Bidgram	1.66
Bogacora	1.37
Char Betagi	0.57
Char Imamullah	0.52
Charandwip	5.34
Charkhijirpur	2.37
Chorkhidirpur	1.46
Dhorla	2.59
GhoshKhil	0.62
Horerbagh	0.42
Jaisthapura	4.39

Mouza	Area (sq km)
Jungle Amchia	4.98
Jungle Koroldenga	3.20
Kharandwip	3.44
Khitapchar	1.95
Kodhurkhil	9.40
Konjuri	4.08
Koroldanga	6.71
Lot 67A Koroldenga	6.63
Lot 67B Jaisthapura	6.65
Paschim Gomdandi	5.55
Popadia	3.78
Purba Gomdandi	6.96
Saidpur	1.10
Sakpura	7.81
Saroatali	2.33
Sreepur	2.44

Total CMMP Area: 1255 sq km

Annexure B

Project List

Table B-1: Sectoral Action Plan for Urbanization and Growth

Issue	Strategy & Target	Project	Period	Authority
Unplanned Growth	Provide proper access to open up and induce development in both urban and rural areas • Prepare alignment and construct according to Traffic and Transportation Masterplan • Widen approximately 300km or road	Road Development Project	2030-2041	CDA
		Road Widening Project	2030	CDA
	Ensure the implementation of landuse zoning proposed in the masterplan • Increase zoning compliance to 100%	Zoning Compliance	Continuous	CDA
	Encourage the development of underutilized land within the existing area • Explore new ways of developing underutilized land while ensuring social justice for the existing residence • Develop 80% of identified underutilized land	Urban Renewal	2040	CDA & CCC
	Ensure the implementation of the Area Plan inside the City • 100% Completion of Agrabad Action Area Plan • 100% Implementation of Bakalia Action Area Plan	Action Area Plan	2040	CDA

Issue	Strategy & Target	Project	Period	Authority
Disparity in Development	Encourage the planned development of areas surrounding EPZs ensuring appropriate urban amenities • Convert at least 60% of squatter development • Develop at least 4 low-income residential projects for workers	Urban Renewal	2040	CDA & CCC
		Low Income Housing Development	2030	CDA, BEPZA, Industry Owners
	Provide the much-needed focus towards growth centers outside Chattogram to encourage Polycentric Development • Develop and encourage implementation of Action Area Plans for Upazilla Growth Centers	Upazilla Action Area Plan	2040	CDA, LGIs
Slow Progress of Initiatives	Ensure means of increasing the pace of existing government land development projects • Complete and handover 100% of government land development project	Government Land Development Project	2030	CDA and Other authorities

Issue	Strategy & Target	Project	Period	Authority
	Encourage the private sector in increasing the number of new private land development projects • Initiate private land development projects in at least 3 potential areas • Ensure proper site selection and social justice in undertaking such projects	Private Land Development Project	2030	CDA and Private Developer Companies
Inadequate Monitoring	Increase Capacity of CDA for proper monitoring in building code compliance and guiding urban growth • Establish CDA Zonal Office and Increase number of technical manpower to keep eye on development and monitor plan implementation • Train the planners to track the plan implementation and identify any ill effort for deviation in plan	Institutional Arrangement	2030	CDA
	Restructure the LUC process to better deal with landuse violation	Restructure of Landuse Clearance Process	2030	CDA
Enforcement	Strengthen enforcement of laws related to non-compliance of building codes and regulations	Law Enforcement	2030	CDA and CMP



Issue	Strategy & Target	Project	Period	Authority
	Create awareness among the residents of CMMP area about the legal and environmental consequences of unregulated development • Create public awareness about the legal consequences of unregulated development • Conduct planning seminars in educational institutes on the necessity of planned development	Public Awareness	2030	CDA
Future Urban Growth	Ensure planned development and adequate urban amenities on the south side of the Karnaphuli • Provide adequate road access to meet development needs • Ensure 100% of utility access	One City, Two Towns	2040	CDA, WASA, CCC, PDB, LGIs
	Ensure the implementation of the Anwara Action Area Plan • 100% of the plan implemented	Action Area Plan Implementation	2050	CDA
	Realize the concept of One City, Two Towns through proper connection between the city and potential urban area in the southern bank of Karnaphuli • Develop 5000 acre of planned urban area in the southern bank • Increase cross-river connections	One City, Two Towns	2050	CDA, CCC, LGED, C-WASA

Issue	Strategy & Target	Project	Period	Authority
	Ensure planned development and adequate urban amenities on the land east of the costal road • Provide adequate road access to meet development needs • Ensure 100% of utility access • Ensure 100% of zoning compliance	New Urban Development	2050	CDA, CCC, LGED, CWASA
	Integrate flood-resilient urban design, including elevated structures and flood buffer zones in low-lying areas	Resilient Urban Development Initiative	2025–2040	CDA, CWASA, LGED
	Ensure 15–20% of the area in new townships is allocation of public open spaces, including parks, lakes, and playgrounds in townships • Ensure 15–20% of the area is allocated	Urban Green Space Expansion Program	2025–2040	CDA, CCC
	Develop job-housing balance by planning economic zones alongside residential areas in new towns.	Integrated Economic-Residential Zoning Plan	2025–2045	CDA, BEZA
	Establish local service governance units/zonal offices in all new township areas.	Local Urban Governance Strengthening	2025–2035	CDA, LGD
	Implement 3-phase investment roadmap for new townships (short, mid, long-term) with PPP model. • Complete first phase by 2035 and second phase by 2045	Phased Urban Investment Framework	2025–2045	CDA, PPP Authority

Table B-2: Transport Sectoral Implementation Program: Construction of New Links

Sl. No.	Project Description	Priority	Phase	Agency
NL 1	Construct a 100 ft wide Boropol to Coastal Road Connector (2.4 Km)	High	Mid	CDA
NL 2	Construct a 120 ft wide Kalurghat to Kulgoan Connector Road (6.9 Km)	High	Mid	CDA
NL 3	Construct a 120 ft wide NS-1 Road Corridor (2.69 Km)	High	Mid	CDA
NL 4	Construct a 160 ft wide North–South 2 Corridor (2.48 Km)	High	Mid	CDA
NL 5	Construct a 160 ft wide NS-2 Road Extension (2.17 Km)	High	Mid	CDA
NL 6	Construct a 170 ft wide Barai Para Khal-cum-Road (2.19 Km)	High	Mid	LGED
NL 7	Construct a 60 ft wide Dhaka Trunk Road to Agrabad Access Road Connector (1.80 Km)	High	Mid	CDA
NL 8	Construct a 60 ft wide NS-1 to Techno Cider Int'l School Road Connector – 1 (0.92 Km)	High	Mid	CDA
NL 9	Construct a 60 ft wide NS-1 to Techno Cider Int'l School Road Connector – 2 (1 Km)	High	Mid	CDA
NL 10	Construct a 60 ft wide NS-1 to Techno Cider Int'l School Road Connector – 3 (1.23 Km)	High	Mid	CDA
NL 11	Construct a 60 ft wide Quaish–Kalurghat Road (Extension of Oxygen–Quaish Road, 3.38 Km)	High	Mid	CDA
NL 12	Construct an 80 ft wide Bakalia Internal Road – 1 (0.59 Km)	High	Mid	CDA
NL 13	Construct a 100 ft wide Bay Terminal–Bhatiary Freight Road (May extend upto Bashbaria, 21.7 Km)	Mid	Mid	CPA / RHD
NL 14	Construct a 120 ft wide Airport Road to Char Lakkhya Connector (3.18 Km)	Mid	Mid	CDA
NL 15	Construct a 120 ft wide Char Lakkhya–N-115 Connector (3.93 Km)	Mid	Mid	RHD
NL 16	Construct a 120 ft wide Port Link Road–Char Lakkhya Connector (4.52 Km)	Mid	Mid	CPA
NL 17	Construct a 60 ft wide Bakalia Access Road Extension (1.15 Km)	Mid	Mid	CDA
NL 18	Construct a 60 ft wide Hathazari East–West Connector Road (8.75 Km)	Mid	Mid	RHD

Sl. No.	Project Description	Priority	Phase	Agency
NL 19	Construct a 60 ft wide KEPZ–Char Lakkhya Road Connector (1.7 Km)	Mid	Mid	CDA
NL 20	Construct a 60 ft wide Rahattarpul to Chaktai Connector (4.27 Km)	Mid	Mid	CDA
NL 21	Construct a 70 ft wide Ambagan to Dhaka Trunk Road Connector (0.8 Km)	High	Mid	CDA
NL 22	Construct a 80 ft embankment cum road from Dangarchar to Noyahut (6.5 Km)	Mid	Mid	CDA
NL 23	Construct an 80 ft wide Hathazari Road North–South Parallel 1 (11.93 Km)	Mid	Mid	RHD, CDA
NL 24	Construct an 80 ft wide North–South Connector parallel to Shah Amanat Bridge Approach Road – 1 (5.41 Km)	Mid	Mid	CDA
NL 25	Construct a 160 ft wide Oxygen-Quaish Road to Janalihat (1.6 Km)	Low	Mid	CDA
NL 26	Construct a 60 ft wide Bayezid Link Road to Kaptai Road Connector (5.37 Km)	Low	Mid	CDA
NL 27	Construct a 60 ft wide Hathazari Road North–South Parallel 2 (14.17 Km)	Low	Mid	RHD
NL 28	Construct a 60 ft wide Oxygen-Mirer hut at/above grade (Following Railline, 14 Km)	Low	Mid	RHD
NL 29	Construct a 60 ft wide Z-1804 to Char Lakkhya Connector (3.71 Km)	Low	Mid	RHD
Total Length of New Roads: 140.6 Km				
<i>*For new links the lengths are approximate as detailed alignments may vary</i>				



Table B-3: Transport Sectoral Implementation Program: Road Improvement

No.	Project Description	Priority	Phase	Agency
RI 1	Improve the 24.24-Km N-1 Road from Shah Amanat Bridge to Kharana with a proposed widening to 120ft.	High	Mid	RHD
RI 2	Improve the 1.68-Km Mariner's Drive Road with a proposed widening to 100ft.	High	Mid	CDA
RI 3	Improve the 0.79-Km Mariner's Drive to Strand Road Connector with a proposed widening to 100ft.	High	Mid	CDA
RI 4	Improve the 1.80-Km Strand Road with a proposed widening to 100ft.	High	Mid	CDA
RI 5	Improve the 20.32-Km N-1 Road from Kumira to Bayezid Link Road with a proposed widening to 120ft.	High	Mid	RHD, CDA
RI 6	Improve the 10.30-Km Arkan Road with a proposed widening to 120ft.	High	Mid	CDA
RI 7	Improve the 4.61-Km Port Link Road with a proposed widening to 100ft.	High	Mid	CPA
RI 8	Improve the 4.47-Km N-1 Road from AK Khan to GEC with a proposed widening to 80ft.	High	Mid	RHD
RI 9	Improve the 1.39-Km Halishahar Road with a proposed widening to 100ft.	High	Mid	CDA
RI 10	Improve the 5.49-Km KEPZ Internal Road with a proposed widening to 60ft.	High	Mid	CDA
RI 11	Improve the 0.43-Km Agrabad Access Road from Hazirapara Goli to Agrabad Circle with a proposed widening to 100ft.	High	Mid	CDA
RI 12	Improve the 0.54-Km Bakalia Stadium Road with a proposed widening to 80ft.	High	Mid	CDA
RI 13	Improve the 1.20-Km Pahartali College Road with a proposed widening to 120ft.	High	Mid	CDA
RI 14	Improve the 7.09-Km N-115 Road with a proposed widening to 120ft.	Mid	Mid	RHD
RI 15	Improve the 1.67-Km Bayezid Bostami Road with a proposed widening to 120ft.	Mid	Mid	CDA
RI 16	Improve the 0.20-Km Bayezid Link Road to Bayezid Bostami Road Connector 2 with a proposed widening to 70ft.	Mid	Mid	CDA
RI 17	Improve the 24.69-Km R-163 Road with a proposed widening to 120ft.	Mid	Mid	RHD
RI 18	Improve the 7.96-Km R-170 Road from Anowara to Toilerdwip Bridge with a proposed widening to 120ft.	Mid	Mid	RHD
RI 19	Improve the 30.81-Km N-106 Road with a proposed widening to 120ft.	Mid	Mid	RHD
RI 20	Improve the 5.08-Km Patiya Bypass Road with a proposed widening to 120ft.	Mid	Mid	RHD
RI 21	Improve the 15.70-Km R-170 Road from Anowara to Patiya Bypass with a proposed widening to 60ft.	Mid	Mid	RHD

No.	Project Description	Priority	Phase	Agency
RI 22	Improve the 4.52-Km Moijjartek to Kolagaon Tek Road with a proposed widening to 120ft.	Mid	Mid	CDA
RI 23	Improve the 0.93-Km N-115 Road with a proposed widening to 120ft.	Mid	Mid	RHD
RI 24	Improve the 7.28-Km R-160 Road with a proposed widening to 120ft.	Mid	Mid	RHD
RI 25	Improve the 3.30-Km Ambagan Road with a proposed widening to 100ft.	Mid	Mid	CDA
RI 26	Improve the 3.14-Km Road from Shantir Haat to Budhpara Bazar with a proposed widening to 80ft.	Mid	Mid	CDA
RI 27	Improve the 5.67-Km Z-1070 Road from Budhpara Bazar to Khashkhama with a proposed widening to 80ft.	Mid	Mid	RHD
RI 28	Improve the 8.22-Km CUFL Road with a proposed widening to 60ft.	Mid	Mid	RHD
RI 29	Improve the 2.22-Km Road from Kalapur to Shantir Haat with a proposed widening to 80ft.	Mid	Mid	CDA
RI 30	Improve the 0.30-Km Chaktai Road with a proposed widening to 60ft.	Mid	Mid	CDA
RI 31	Improve the 6.1-Km Chondonaish Road with a proposed widening to 60ft.	Mid	Mid	RHD
RI 32	Improve the 12.41-Km Z-1629 Road with a proposed widening to 60ft.	Low	Mid	RHD
RI 33	Improve the 12.93-Km Z-1088 Road with a proposed widening to 60ft.	Low	Mid	RHD
RI 34	Improve the 2.56-Km Z-1804 Road with a proposed widening to 80ft.	Low	Mid	RHD
RI 35	Improve the 1.36-Km Techno Cider International School Road with a proposed widening to 80ft.	Low	Mid	CDA
RI 36	Improve the 0.16-Km Ruby Gate Road with a proposed widening to 60ft.	Low	Mid	CDA
RI 37	Improve the 0.13-Km Polytechnic Road with a proposed widening to 60ft.	Low	Mid	CDA
RI 38	Improve the 1.98-Km BFIDC Road with a proposed widening to 60ft.	Low	Mid	CDA
Total Length of Roads to be Improved: 244.97 Km				



Table B-4: Transport Sectoral Implementation Program: Public Transport Improvement

No.	Project Description	Priority	Phase	Agency
PT01	Chattogram Urban Transit Company Establishment	High	Short	BRTA, CCC and CMP
PT 02	Establish new bus terminals in Anwara, Patiya, Karnaphuli, Boalkhali, Sitakunda (Salimpur), and Raozan to improve connectivity and decentralize transport operations.	High	Short	BRTA, CCC, CDA
PT 03	Upgrade the existing Hathazari terminal by expanding	High	Short	CCC
PT 04	Chattogram City and Intercity Bus Terminal Construction	High	Short	CCC
PT 05	Kalurghat, Nuton Bridge, New Market, Patenga, and Kulgaon to improve public transport efficiency and accessibility.	High	Short	BRTA and CMP
PT 06	Chattogram Intelligent Law Enforcement System Implementation	High	Short	BRTC
PT 07	School, Tourist, and Group Transport Bus Procurement			BRTA,
PT 08	Chattogram Public Transport Route Rationalization and Optimization	High	Short	BRTA, CCC and CMP

Table B-5: Transport Sectoral Implementation Program: Pedestrian Facility Improvement

No.	Project Description	Priority	Phase	Agency
P01	Constructing 140 kilometers of new and improved footpaths: CDA Avenue from WASA (4km); New Market, Station Road, and Jubilee Road (2km); in central areas 48.8(km); along roads outside the central area 10(km)	High	Short	CCC
P02	Develop designated and safe crossing zones	High	Short	CCC
P03	Install signal system with pedestrian phase at intersections	High	Short	CCC

Table B-6: Transport Sectoral Implementation Program: Traffic Management

No.	Project Description	Priority	Phase	Agency
TM01	Installation of traffic signals from Kaptai Raster Matha to Patenga	High	Short	CCC, CMP BRTA
TM02	Installation of traffic signals on the major intersections of Chattogram City	High	Mid	CCC, CMP BRTA
TM03	Installation of ITS devices for traffic violation control in Chattogram Metropolitan Area	High	Mid	CCC, CMP BRTA
TM04	Installation of traffic sign and road marking for efficient traffic Management	High	Short	CCC

Table B-7: Transport Sectoral Implementation Program: Railway Infrastructure Development

No.	Project Description	Priority	Phase	Agency
RAL 01	Construction of railway over-bridges at key railway crossings on AK Khan, Khulshi and Bibirhat	High	Short	CCC
RAL 02	Construction of railway over-bridges at railway crossings on Pahartoli thana, Jhaotola and Oxygen	High	Short	CCC
RAL 03	Construction 8.19km double line from Sholashahar Railway Station to Janali Hat	High	Short	BR
RAL 04	Construction 36.6km double line from Sholashahar Railway Station to Hathazari	High	Short	BR
RAL 05	Improve stations for city service train service	High	Short	BR
RAL 06	Construct new stations for city service train service	High	Short	BR
RAL 07	Purchase locomotives and coaches to roll-out Chattogram city service trains			BR
RAL 08	Construction of new train tracks to connect Bay Terminal	High	Short	BR
RAL 09	Procure locomotives and wagons to operate to and from the Bay Terminal	High	Short	BR



Table B-8: Transport Sectoral Implementation Program: Waterway Infrastructure Development

No.	Project Description	Priority	Phase	Agency
WT01	Construction of proper terminal facilities at Ghat-15 and its corresponding ghat.	High	Short	BIWTA, CCC
WT02	Construction of proper terminal facilities at Avoymitra Ghat and Sadarghat.	High	Short	BIWTA, CCC
WT03	Construct safe landing facilities at different ghats along the river Karnaphuli			BIWTA, CCC, Upazila Parishad
WT04	Construction of proper terminal facilities at Banglabazar ghat.	High	Short	BIWTA, CCC
WT05	Construction of proper terminal facilities at Bakalia to operate river cruise and connection to Char Bakalia.	High	Short	BIWTA, CCC
WT06	Feasibility Study to operate waterbus along the river Karnaphuli	High	Short	BIWTA, CCC

Table B-9: Transport Sectoral Implementation Program: Airport Transportation System

No.	Project Description	Priority	Phase	Agency
A01	Shuttle bus service from City to Airport	High	Short	CAAB, BRTA

Table B-10: Transport Sectoral Implementation Program: Study Programs

No.	Project Description	Priority	Phase	Agency
SP 01	Develop a Trip Generation and Distribution Manual for TIA	High	Short	CDA
SP 02	Develop a Parking Manual for TIA	High	Short	CDA
SP 03	Conduct a Study on PT Stop Requirements according to Masterplan Guidelines	High	Short	CDA

Table B-11: Drainage Sectoral Action Plan.

Issues	Strategies (& target)	Project	Implementation Period	Implementation Authority
Obstruction of Drainage Systems	Immediate Cleaning and Removal of Encroaching Structures • <i>Clean and recover 594 km of RRC drains and 125 km of Natural Khals in City area</i>	Removing of debris and waste from natural khal and water course	2030	CCC
		Removing encroaching structures from Khals	2030	CDA and CCC
	Regular Cleaning and Improvement of Solid Waste Management • <i>Liaison with SWM wing to prevent waste dumping in drainage network</i>	Increase in manpower and budget allocation	2030	CCC and CWASA
	Development control • <i>Create a comprehensive guideline for development and related drainage system</i>	Guideline preparation for development control near existing Khals and essential drainage networks	2030	CDA
		Guideline preparation assuring an adequate drainage system in areas to be newly developed	2030	CDA and CWASA
Siltation of Channels and Khals	Reduce the amount of natural surface runoff	Enforce Hill Preservation Policies mentioned in the	2030	CDA, Environment



Issues	Strategies (& target)	Project	Implementation Period	Implementation Authority
	reduce the percentage of illegal hill cutting to 0%	Master Plan and clear out existing illegal structures		
		Afforestation Program	2030	CDA/CCC/DoE
	Dredging and Regular Cleaning - remove silt and dredge 125 km of Khals in City area - prepare an annual cleaning schedule	Khal Dredging Program	2030	CCC
		Regular Cleaning Program	Continuous	CCC
Lack of Tidal Regulators and Flood Control Mechanisms	Build and Improve Drainage Management Infrastructure complete 100% of drainage management infrastructure projects	Construction of Silt Traps	2030	CCC/CDA
		Construction of Flood Storage Ponds	2030	CCC/CDA
		Build Tidal and River Defense Systems	2030	CDA/BWDB
	Improve drainage of low-lying lands through elevating or pumping Ensure affective drainage of 10 sqkm of low-lying land prone to flooding in City area	Elevating low lying flood prone land or set up pumping stations	2030	CDA/CWASA
Inadequate Current Drainage	Construct New Drainage System	New Khal Project	2040	CDA
		New Drainage System Project	2040	CCC and CWASA

Issues	Strategies (& target)	Project	Implementation Period	Implementation Authority
	Construct 3.5 km of new channels in City area.			
	Rehabilitate Existing Khals and Widen Existing Drains improve 100% of the total drainage system	Drain Widening Project (can be incorporated with the new drain project)	2030	CCC
		Khal Rehabilitation Project	2030	CDA
Inadequate Maintenance, Resource Constraints and Lack of Co-ordination	Increase Budget Allocation and Modernize O&M Equipment	Increase in manpower and budget allocation	2030	CCC
	Establish a Centralized Drainage Management Committee and Improve Inter-Agency Coordination	MOU with relevant agencies	2030	CCC, CDA, BWDB
Public Awareness and Waste Disposal Practices	Launch a comprehensive public awareness campaign on proper waste disposal practices Launch union wise public awareness campaign	Public Awareness Campaign	2030	CCC
Absence of a Sewerage System	Establish a comprehensive, centralized sewerage system with dedicated wastewater treatment facilities Develop 505.3 km of sewerage system	Develop sewerage system	2040	CCC



Table B-12: Strategies to Adopt for the Management of Air Pollution.

Issue	Strategy	Projects	Implementation Period	Implementation Authority
Industrial Emissions and Air Quality Challenges in Chattogram	Strengthening Emission Standards and Regulatory Enforcement	Emission Standards Strengthening Project: •Mandate emission control technologies (filters, ESPs) in all Red Category industries like CEPZ and Kalurghat.	2040	DOE, CCC, CDA
	Promote centralized and standardized pollution control solutions for small and medium industries	•Promote shared effluent and emission treatment hubs for small industries, •Ban open burning of industrial by-products and enforce hazardous waste protocols, and •Establish filtration and dust suppression units in pollution-prone facilities.	2035	DOE, Industry
Air Pollution from Mobile Sources	Promote Efficient Engines and Electric Vehicles (EVs)	•Promote cleaner fuels; Enforce Euro 3/4 standards	2040	BRTA, CCC, DOE, CMP
		•Encouraging the use of hybrid or electric vehicles through Tax rebates or reduced registration fees	2030	BRTA, Ministry of Road Transport & Bridges, DoE, CCC
		•Installation of EV charging stations in commercial and public areas	2030	BRTA, CCC
		•Phasing out older diesel/petrol vehicles	2030	BRTA

Issue	Strategy	Projects	Implementation Period	Implementation Authority
		Awareness campaigns and incentives for ride-share EV fleets	2030	CCC, DOE, NGOs/CSOs
Area Source Pollution in Chattogram	Green Corridors for Urban Air Quality Improvement	Green Corridor Development Project: Urban Planning & Infrastructure (Green roofs & vertical gardens for pollution absorption, Smart air quality monitoring systems [IoT-based sensors], Tree plantation & urban forestation projects. R&D Incentives for Green Technologies Project	2033-2041	DOE, Arboriculture/Forest, Industry Associations
	Develop tree belts around CEPZ & industrial zones as pollution buffers	Establish pollution-tolerant green buffer belts around CEPZ and Kalurghat Industrial Area using tree species such as Jhau, Debdaru, and Mehogani.	2033-2041	CCC, CDA
	Enforce urban zoning regulations to manage incompatible land use and reduce local pollution	Relocate high-emission garages from commercial/residential zones to designated industrial areas	2033	CDA, CCC



Issue	Strategy	Projects	Implementation Period	Implementation Authority
Technological Innovation and Research	Promote clean technologies and foster innovation	Clean Technology Adoption and Innovation Project: Collaborate with local and international partners to implement cleaner production technologies like Waste-to-energy technologies, Biogas production from organic waste, Advanced recycling & composting techniques.	2034-2035	DOE, Industry Associations, CDA, CCC
		Energy Sector (Solar-powered air filtration systems, Wind energy for emission-free power generation, Hydrogen fuel cells for clean transportation)		
		Industrial Sector (Carbon capture and storage [CCS], Low-emission manufacturing processes, Biofiltration systems for industrial exhaust.		
		Construction & Building Sector (Photocatalytic coatings for air purification, Sustainable building materials with low emissions, Energy-efficient HVAC systems)		
		Enforce zero emission zones near ship breaking yards with drone monitoring	2030	DOE, Industry Associations, CDA, CCC
		Retrofit 50% of brick kilns with zigzag technology		
Tracking and Tackling Pollution	Practicing emission standards	Install pilot basis emission control systems in factories and roadside.	2036–2037	DOE, BEZA, BRTA, Local Industry Leaders

Issue	Strategy	Projects	Implementation Period	Implementation Authority
	Enhance public access to real-time air quality data	• Install AQI display boards in high-traffic zones (intersections: Alongkar, Baddarhat, Tigerpass, Oxygen Circle)	2033	CCC, CDA

Table B-13: Strategies to Adopt for the Management of Water Pollution.

Issue	Strategy	Project	Implementation Period	Implementation Authority
Surface Runoff	Promote Green Infrastructure and Sustainable Drainage Systems	Install rainwater harvesting systems to reduce runoff and provide alternative water sources.	2035	CCC, NGO, Paurashava
		Development of stormwater management systems and retention ponds to reduce runoff and pollution.	2030	BWDB, CDA
Wastewater Drainage System	Improve Sewage and Wastewater Treatment Systems	Construction of centralized sewage treatment plants (STPs) in urban areas to treat wastewater.	2030	CWASA
		Upgrading and expansion of existing sewer networks to ensure proper treatment and disposal.	2030	CCC
Solid Waste Dumping	Strengthen Solid Waste Management and Recycling	Development of an integrated solid waste treatment plant for composting and recycling.	2030	CCC, Paurashavas
		Installing waste collection nets and floating barriers in major canals prevents plastic and solid waste buildup, improving water quality and drainage.	2030	CCC, BWDB, Paurashavas

Issue	Strategy	Project	Implementation Period	Implementation Authority
River, Khal, and Canal Rehabilitation/Protection	Preserve the natural floodplains and ecosystems of the waterbody	Establishment of buffer zones along waterbodies to prevent encroachment and pollution.	2035	DOE, CDA, Paurashavas
		- Conduct joint eviction drives for illegal structures. Dredge canals to restore natural flow (Chaktai & Rajakhali Khal) - install floating trash traps at inlet points (Chaktai & Rajakhali Khal)	2040	CCC, DC Office, BWDB
Stop Waste Disposal on the bank or into the Waterbodies	Strengthen Medical and Slaughterhouse Waste Management to Prevent River Pollution	- Construct bio-medical & slaughterhouse waste incineration plants in Firingi Bazar & Dewanhat. - Ban direct waste discharge into stormwater drains/canals in Firingi Bazar & Dewanhat. - Install oil/waste reception facilities at port terminals - Enforce IMO-compliant ship waste handling rules	2030	CCC, Department of Health, LGED, CPA, BIWTA

Issue	Strategy	Project	Implementation Period	Implementation Authority
	Enforce polythene bans with source segregation, regular canal cleaning, and strong market-level monitoring.	• Enforce ban on single-use plastics under existing MoEFCC rules • Organize Regular Cleanup Campaigns: Collaborate with local NGOs, educational institutions, and community groups to conduct periodic cleanup drives. • Engage Informal Waste Collectors: Recognize and integrate the efforts of informal waste pickers by providing them with protective gear, fair compensation, and training. Their involvement is crucial, as they play a significant role in waste collection and recycling. • Install Trash Traps in Waterways: Implement passive litter traps in canals and drains to capture floating plastics before they reach larger water bodies. These traps are cost-effective and can be maintained with minimal resources CCC, DoE, NGOs, Market Committees; Educational Institutions, Local Club, and Volunteers	2035	CCC, DoE, NGOs, Market Committees; Educational Institutions, Local Club, and Volunteers

Table B-14: Strategies to Adopt for the Management of Noise Pollution.

Issue	Strategy	Projects	Implementation Period	Implementation Authority
Traffic Noise	Designate noise-sensitive zones (residential and healthcare areas) with	Noise-Sensitive Zone Creation Project: Designate buffer zones	2030	CCC



Issue	Strategy	Projects	Implementation Period	Implementation Authority
	stricter noise limits and buffer zones	around residential and healthcare areas with lower noise thresholds.		
Noise from Construction / Commercial Establishments	Restrict high-noise construction activities to specified hours, especially near residential and sensitive areas	Establish noise-sensitive zones Project: Enforce noise restrictions on construction and designate noise-sensitive zones near residential areas.	2030	CDA.CCC
Industrial Noise	Establish green belts around industrial zones as natural noise buffers	Green Belt Development Project: Create green belts around industrial zones to mitigate noise pollution.	2030	CDA
Social and Cultural Activities	Create a community platform for reporting noise complaints to enable swift action and monitoring.	Noise Complaint Reporting Platform Project: Create a community reporting platform for noise complaints to improve monitoring and action.	2030	CCC, CMP
Long-Term Urban Noise Management	Incorporate noise management in urban plans, with buffer zones around sensitive areas like schools and healthcare facilities.	•Deploy signage, train Develop and install signage for alternative traffic routes to divert high-noise vehicles during peak hours in Hospital (CMCH),School and Marketplace(Reazuddin bazar)	2030	CDA, CMP, CCC, DoE

Table B-15: Strategies to Improve Cyclone Risk Condition.

Issues	Strategies	Project	Implementation Year	Implementation Authority
Frequent and Severe Storm Surges	Construct and reinforce embankments and dykes.	Coastal Defense and Shelter Expansion Project	2035	Bangladesh Water Development Board (BWDB)
	Establish buffer zones with mangrove plantations			
	Relocate exposed communities.		2030	Department of Disaster Management (DDM), LGED
Inadequate Cyclone Shelters	Increase the number and capacity of cyclone shelters.			
	Upgrade existing shelters.			
Limited Early Warning Systems	Expand early warning systems.	Cyclone Early Warning System Enhancement Project	2030	Bangladesh Meteorological Department (BMD), Ministry of Communication
	Utilize diverse communication channels (SMS, loudspeakers, local volunteers)			
High Population Density in Vulnerable Areas	Implement urban planning regulations based on vulnerability zoning.	Urban Resilience and Safe Resettlement Project	2030	CDA
	Develop resettlement programs			
	Improve settlement design and evacuation routes			
Insufficient Coastal Vegetation	Initiate large scale mangrove reforestation programs	Coastal Vegetation Protection and Reforestation Initiative	2035	Department of Disaster Management (DDM)
	Enforce regulations to protect coastal vegetation.			
Uneven Distribution of Mitigation Resources	Conduct resource gap assessments and prioritize investments.	Disaster Response and Health Facility Improvement Project	2030	Department of Disaster Management (DDM)
	Ensure equitable funding allocation.			

Table B-16: Strategies to Improve Macro & Micro Climate Condition.

Issue	Strategy	Project	Period	Implementation Authority
Urban Heat Island	Transforming Urban Landscapes to Reduce Trapped Heat	Urban Greening Initiative	2035	CDA, CCC
		Reflective Infrastructure Program	2050	CDA
	Enhancing Urban Livability through Green Spaces and Waterbodies and Proper Zoning	Functional Open Space Development and Redesign Project	2030	CDA, CCC
		Urban Landuse Guidance Policy	2025	CDA
		Waterbody Rehabilitation Project	2030	CDA
Fluctuation in Rainfall Pattern	Transforming Urban Landscape for Rain Water Absorption	Urban Greening Initiative	2035	CDA, CCC
	Conserve and promote efficient use of water	Rain Water Harvesting Project	2030	CDA
		Water Supply Infrastructure Management	2025	CWASA
		WASHFIT Implementation Strategy	2030	CWASA, UNICEF
Sea Level Rise	Coastal and Urban Water Management	Implement mangrove restoration	2035	CDA, CCC
		Upgrade traditional drainage systems	2030	CDA, CCC
	Community Engagement and Empowerment	Education and awareness campaigns on water conservation and climate resilience	Continuous	Department of Disaster Management
		Collaboration between Chattogram City Corporation and local communities for implementing adaptation strategies	Continuous	DDM & CCC

Table B-17: Priority Climate & Environmental Projects for the Metropolitan Master Plan

Issue	Strategy	Project	Period	Implementation Authority
Environmental Resilience	Climate & Environmental Resilience Enhancement	Chattogram Metropolitan Environmental & Resilience Master Project (CMERMP)	2030	CDA
Blue-Green Network & Climate Adaptation	Strengthening Ecological Buffers, Wetlands & Urban Blue-Green Network	Chattogram Blue-Green Infrastructure & Climate Adaptation Project (CBGI-CAP)	2035	CDA, CCC
Seismic Risk Reduction	Urban Seismic Micro-Zonation & Building Safety Enhancement	Chattogram Integrated Seismic Micro-Zonation & Building Safety Project	2035	CDA, CCC, Fire Service & Civil Defence

Table B-18: Strategies to Improve Seismic Hazard Condition.

Issue	Strategy	Project	Implementation Year	Authority
Population Density and Urban Growth	Enforce zoning regulations for high growth areas.	Urban Growth Management Plan: Zoning regulations, population density mapping, and disaster preparedness.	2030	CDA, CCC
High Building Density Without Setback Spaces	Enforce BNBC compliance and conduct audits.	Building Code Compliance and Urban Redevelopment Program: Audits, BNBC enforcement, retrofitting, and high density area reorganization.	2026	CDA, CCC
	Reorganize high density areas with open spaces.			
	Provide retrofitting programs with financial assistance.			
Narrow Roads and Limited Accessibility	Prioritize road widening projects.	Road and Emergency Access Improvement Project: Road widening, dedicated emergency routes, and smaller emergency vehicle procurement.	2040	CDA, CCC, Fire Service and Civil Defense, RHD
Insufficient Evacuation Spaces and Capacity	Identify and expand evacuation spaces.	Evacuation Capacity Enhancement Program and Prepared Contingency Plan: Identification and expansion of evacuation spaces, facility provision, and community preparedness drills.	2030	CDA, CCC
	Equip evacuation areas with essential facilities.			

Table B-19: Strategies to Improve Liquefaction Hazard Condition.

Issue	Strategy	Project Example	Project Implementation Year	Responsible Authority
High Liquefaction Potential in Key Urban and Industrial Areas	Integrate a detailed risk-based development guideline for soil liquefaction issues	Preparation of detailed site specific liquefaction maps	2025	CDA
		Enforce liquefaction resistant design standards for buildings.		



Table B-20: Strategies to Improve Landslide Condition.

Issues	Strategy	Project	Period	Implementation Authority
Natural Issues	Implement a landuse zonation plan for different susceptibility zones of landslides based on rainfall and earthquake induced events.	Landuse Zonation Plan	2030	CDA
	Integrate monitoring and early warning systems to prevent and mitigate the effects of landslides.	Early Warning and Emergency Response Systems	2030	DDM
	Implement natural and bioengineering techniques to stabilize slopes and reduce soil erosion	Green Belt and Buffer Zones	2040	CDA, Forest Dept
		Slope Stabilization Project	2040	CDA
	Conduct regular slope stability assessments.	Continuous Monitoring System	Annually	CDA
Human Induced Issues	Enforce stricter construction and building regulations in high and moderate susceptibility zones.	Regulatory and Compliance Enforcement	Continuous	CDA
	Use drone monitoring to enforce no hill cutting zones			
People's Perception and Awareness	Increase public awareness about landslide risks.	Community Education and Outreach Programs	Annually	DDM
		Risk Perception Workshops	Annually	DDM
	Involve communities in landslide risk mitigation.	Stakeholder Collaboration and Social Engagement	Annually	DDM

Table B-21: Sectoral Action Plan for Water Supply

Issues	Strategies (& target)	Project	Implementation Period	Implementation Authority
Water Supply Deficit and Overdependence on Alternative Sources	Ensure reliable and adequate water supply to users. • Ensure 100% Coverage inside city area. • Ensure 100% Coverage in municipality area.	Chittagong Water Supply Development Project	2050	CWASA
		Municipality Water Supply Development Project	2050	CWASA, Municipality & CDA
	Preserve waterbodies to naturally recharge ground water • Preserve 100% of water bodies identified by CMMP	Landuse Zoning	Continuous	CDA
		Waterbody Rehabilitation Program	2030	CDA, CCC
Water Quality Concerns	Development and utilization of water treatments plans ensuring safe water supply • Build and ensure functional use of 2 WTPs	Bhandal-Juri water Supply Project	2030	CWASA & CDA
		Purified water supply project from river Meghna under PPP-JTUG process in Mirasrai Economic Zone.	2050	CWASA
	• Improve 1 WTP for to reduce salinity in water supply	Mohra Water Treatment Plant Intake Shifting and Production Capacity Augmentation Project	2050	CWASA



Issues	Strategies (& target)	Project	Implementation Period	Implementation Authority
	Ensuring safe sanitation system to reduce cross contamination • Increase coverage of "Safe Sanitation System" to 100% • Reduce the percentage amount of contaminants in piped water supply in households to national standards	Chittagong City Sewage Development Project	2065	CWASA
		Chittagong Water Supply Development Project	2050	CWASA
Inadequate Access to water Supply System	Ensure adequate access to safe water sources	Chittagong Water Supply Development Project	2050	CWASA

Table B-22: Sectoral Action Plan for Sanitation.

Issues	Strategies (& target)	Project	Implementation Period	Implementation Authority
Absence of Sewer Sanitation System	Develop a sewerage sanitation system with proper treatment and disposal facilities	Chittagong City Sewage System Installation Project	2065	CWASA & CDA
	- Build 405 km of sewerage line in 5 phases - Build 6 STPs inside CCC area and 1 STP for each Municipality	Chittagong Sewerage Development Project	2065	CWASA, Municipal Authority, CDA
	Control development according to the capacity of a new sewerage system Considering capacity of new sewerage system in permitting construction	Regulation of Land Development Projects	Continuous	CDA
Inadequate Off-site Fecal Sludge Management System	Ensure safe and safely managed sanitation system	Capacity Building of Sanitation Workers	2030	CWASA, DPHe
	- Train 6 teams for each catchment area for FSM until sewer connection is functional - Build 6 STPs inside CCC area and 1 STP for each Municipality	Chittagong Sewerage Development Project	2065	CWASA & CDA
	Ensure proper on-site sanitation facilities that are safe and easy to empty and transport if sewer system is not feasible 100% of FSM storage facilities are safely accessible to emptiers	Building Regulation	Continuous	CDA

Table B-23:: Strategies to adopt for the improvement of Solid Waste Management.

Issue	Strategy	Potential Projects	Implementation Period	Implementation Authority
Institutional Challenges in SWM	Activate and upgrade WMC for better coordination	SWM Department Restructuring Project: Establish a dedicated Waste Management Department and define roles for WMC.	2030	CCC & Municipality Authorities
	Decentralize SWM offices for efficient service delivery	Decentralization and Capacity-Building Project: Decentralize waste management offices and implement capacity-building programs for personnel.	2030	CCC & Municipality Authorities
Primary Collection Service	Increase private sector participation.	Private Sector Engagement in Waste Collection Project: Engage private sector in primary waste collection and create a regulatory framework for their involvement.	2030	CCC & Municipality Authorities
	Upgrade infrastructure to allow full-service coverage and Ensure Workers Safety.	Infrastructure Upgrade and Safety Project: Upgrade infrastructure for full-service coverage and ensure workers receive appropriate PPE and safety equipment.	2030	CCC & Municipality Authorities
Secondary Collection Service	Synchronize primary and secondary collection schedules.	Secondary Collection Optimization Project: Synchronize primary and secondary waste collection schedules and improve the management of SCPs.	2030	CCC & Municipality Authorities
	Relocate and improve Secondary Collection Points (SCPs).			

Issue	Strategy	Potential Projects	Implementation Period	Implementation Authority
Secondary Transfer Station (STS)	Handle up to 300 tons of waste per day	Transfer Stations with Ramp Facilities: Set up transfer stations equipped with ramp facilities for transferring waste from small vehicles or containers.	2030	CCC
Waste Collection Vehicle Management & Maintenance	Create a dedicated vehicle management unit.	Dedicated Vehicle Management Unit Project: Establish a dedicated unit for waste collection vehicle management, including skilled mechanics and consistent spare parts supply.	2030	CCC & Municipality Authorities
Street Sweeping	Implement coordinated sweeping and waste collection schedules & increase use of mechanical sweepers.	Street Sweeping Optimization Project: Coordinate Street sweeping and waste collection schedules and increase the use of mechanical sweepers for efficient operation.	2030	CCC & Municipality Authorities
General	Launch promotional activities for waste reduction and source segregation.	Waste Reduction and Segregation Awareness Campaign: Promote waste reduction and source segregation through public outreach, education, and engagement initiatives.	2030	CCC & Municipality Authorities



Table B-24: Strategies and Policies to Improve Open Space Facilities.

Issue	Strategy/Policy & Targets	Potential Projects/Initiatives	Priority	Phase /Term	Agency
Lack of Functional Open Spaces	Ensure all the urban areas (CCC and municipalities) have appropriate amount of local parks • <i>Create 1000 acre of new parks and playgrounds at the local level by 2035</i>	Preparation of an open space action plan for CMMP area.	High	Short	CDA
		Local Park development project for CMMP area	High	Long	CCC
		Water-based Local Park development project for CMMP area			
		Hill-based Local Park development project for CMMP area			
	Ensure the urban residents have a good access to city level park. • <i>Create 500 acres of new city level parks by 2035</i>	Development of Agrabad Deba as a City Park.	High	Mid	CDA, CCC, BR
		Development of Jor-dighi as a City Park	Med	Mid	
		Development of Char Bakalia as a Multi-purpose City Park	Med	Long	CDA, CCC, BR, CPA, PWD, DC office
		Development of Parks along the coast of Bay of Bengal	Med	Long	
		Development of Parks along the bank of Karnaphuli	Med	Long	
		Development of Jor-dighi as a City Park	Med	Long	
		Development of Patenga City Park	Med	Long	
	Ensure all formal educational facilities have access to a playground of appropriate size • <i>Ensure one playground in layout of permissions for educational institutes</i>	Landuse Regulation	N/A	N/A	CDA

Table B-25: Strategies to Improve Utility Facilities and Infrastructure.

Issue	Potential Strategies	Proposed Projects	Implementation Period	Responsible Authority
Electricity Mismanagement	Conduct regular inspections to identify illegal connections. • <i>Reduce illegal connections by 100%.</i> • <i>Improve power supply reliability by 80%.</i>	Launch an "Electricity Safety and Efficiency Program" with awareness campaigns and pilot upgrades.	2030	BPDB
		Create a task force to identify and remove illegal connections.	2030	BPDB, CDA
	Collaborate with BPDB and REB for system upgrades and possible shifting of wires underground • <i>Collaborate in development of new power stations and upgrading infrastructure</i>	Chattogram Power Supply Improvement Program	2050	BPDB, CDA
Gas Supply Challenges	Improve LPG cylinder distribution infrastructure. • <i>Ensure 100% accessibility in LPG delivery through road widening</i> • <i>Reduce household fire risks by 50%.</i>	Road Widening Project	2040	CDA
	Ensure a LPG storage facility in new development and connection through internally connecting it with households • <i>Ensure 100% of high-rise developments have a LPG storage facility</i>	Building Regulation	Continuous	CDA



Issue	Potential Strategies	Proposed Projects	Implementation Period	Responsible Authority
Telecommunications Clutter	Introduce regulations for shared ISP infrastructure in buildings with a centralized cable routing system. Achieve 70% organized cable setups in 5 years.	Unified Cable Infrastructure project	2035	BTRC

Table B-26: Strategies to Improve the Housing Sector in Chattogram City.

Problem Area	Objective	Strategy	Projects/Initiatives	Implementation Period and Priority	Responsible Authority
Limited access to housing for the ultra poor	Housing for all	Provide low income apartment/land for the poor in areas which are accessible and safe	Development of residential area (smaller plot size, access to public transport)	2035 Medium	NHA, CDA
	Enhance accessibility for the poor	Improve access to slum and low income concentration area	Road construction and widening to increase accessibility to slums and low income neighborhood	2030 High	CCC
	Supply land for low income and middle income families	Develop new residential Area for low and middle income	- Development of neighbourhood - invite private sector to develop low cost	2030 High	CDA, CCC

Problem Area	Objective	Strategy	Projects/Initiatives	Implementation Period and Priority	Responsible Authority
			residential area development		
	Ensure housing finance for the poor	Devise non-mortgage financing for the poor	Social capital / Employment based House building Loan	2030 High	HBFC, Commercial Bank
Haphazard and inaccessible area development	To convert the unplanned, inaccessible and haphazard Area to planned neighborhood	Apply innovative techniques like land readjustment for areas with small, irregular, unplanned and inaccessible areas	Adoption of GLD techniques for a certain area	2035 Medium	CDA, NDA, UDD
Lengthy and complex planning permission procedure	To enhance transparency and accessibility for all to the planning process and decision making	Public sector agencies like CDA, CCC and NHA should play role as housing regulator and facilitator instead of housing provider	Improvement of application tracking system	2030 High	CDA



Table B-27: Strategies for the Port related Development.

Issues	Strategies	Projects	Implementing Year	Implementing Authority
Infrastructure Development	Port Development	Bay Terminal and Patenga Terminal Expansion	2030	CPA
	New Connectivity	Dedicated Freight Corridors establishment	2040	CCC, RHD
		Developing peripheral truck terminals	2035	CCC/CPA
		New connection between Airport Road and Feeder Road through Karnaphuli EPZ.	2040	CDA, CPA
		Build dedicated freight road between Saltgola and Port Link Road.	2040	CDA
		Connect Boropole of Port Connecting Road with the Coastal Road.	2040	CDA
		Construct a dedicated freight road from Bay Terminal to Dhaka-Chattogram Highway parallel to the embankment.	2040	CDA, RHD
Urbanization and Traffic	Multimodal Improvement	Enhanced Inland Waterway Use	2040	BIWTA
		Develop modern rail terminals at Dhaka ICD and Chattogram Port.	2050	BR
		Introduce double-stacked container train services.	2040	BR
		Capacity development of Port connecting roads	2035	CDA, CCC



Issues	Strategies	Projects	Implementing Year	Implementing Authority
		Road Widening project of Strand Road, Port link road M A Aziz road,	2040	CDA
	Traffic and Urban Planning	Establishing traffic signals	2035	CCC/CPA
		Intersection Improvements including Nimtala and Saltgola Crossings	2030	CPA, CCC/CDA
		Constructing bypasses and ring roads around Chattogram	2040	CDA, CCC
Environment	Environmental Management	Emission Control Programs	2030	DoE
		Dredging and River Health	2030	BIWTA
Port Performance Enhancement	Digital Transformation	Port Digitalization	2040	CPA



Annexure C

Heritage Sites in the Chattogram Metropolitan Area

Annexure C

Heritage Sites in the Chattogram Metropolitan Area

Table C-1: List of Heritage Sites in the Chattogram Metropolitan Area

SL No.	Name	Location
Chattogram City Corporation		
1	Residence of Pranhari Das	Ward No. 11, South Kattali, Pranhari Das Road
2	Railway Power House	Ward No. 12, Pahartali
3	Pahartali Rail Station and Velua Dighi Bank	Ward No. 12, Pahartali
4	Central Railway Building Complex	Ward No. 22, C.R.B. Hill/Pahar
5	Bizon Kutir (1930)	Ward No. 33, Guribazar, Kabi Nazrul Islam Road
6	Abhay Mitra Lane Vaishnava Temple	Ward No. 33, Abhoy Mitra Lane
7	Abhay Minna Lane Mausoleum Temple	Ward No. 33, Abhoy Mitra Lane
8	Kachari House of Abdul Hoque Dovash	Ward No. 33, Kabi Nazrul Islam Road
9	Residence of Abu Sayeed Dovash	Ward No. 33, Kabi Nazrul Islam Road
10	Abu Sayeed Dovash Mosque	Ward No. 33, Kabi Nazrul Islam Road

SL No.	Name	Location
11	Hazrat Shasufi Nezam Sha Prokash Chan Shah (Rah.) Er Majar Sharif O Masjid	Ward No. 33, Kabi Nazrul Islam Road
12	Firinghi Bazar monastery (Math)	Ward No. 33, Guribazar, Kabi Nazrul Islam Road
13	Firingi Bazar Jame Mosque	Ward No. 33, Guribazar
14	Andarkilla Shahi Jame Masjid	Ward No. 32, Andarkilla
15	Bahardar Bari Shahi Jame Mosque	Ward No. 4 Chandgaon, Chandgaon Khaja Road
16	Kazir Deuri Jame Masjid	Ward No. 21, Kazir Deuri
17	Chattogram Circuit House	Ward No. 21, Circuit House
18	Old security checkpoint	Ward No. 21, Circuit House
19	Sultanul Arefeen Hazrat Bayezid Bostami (R.A) Dargah Sharif	Ward No. 2, Bayezid Bostami
20	Battali Shahi Jame Masjid Pond	Ward No. 1, Battali
21	Air Ali kha Jamidar bari	Ward No. 3, Nayar Hat Bazar
22	Shah Baktiar Jame Masjid	Ward No. 3, Panchlaish

SL No.	Name	Location
23	Shekh Bahar Ullah Jame Mosque	Ward No. 7, Sholokbahar, Sheikh Bahar Ullah Lane
24	Hamidullah Khan Jame Masjid	Ward No. 8, Sholokbahar, Abdul Latif Road
25	Wali Begh Khan Jame Masjid	Ward No. 16, Chawkbazar
26	Chandanpura Masjid	Ward No. 16, Chawkbazar, Chandanpura
27	Hazrat Miskin Shah Mazar	Ward No. 16, Chawkbazar, College Road
28	BNCC Building Chattogram College	Ward No. 16, Chawkbazar, College Road
29	Portuguese Fort - Mohsin College	Ward No. 16, Chawkbazar, College Road
30	Kadam Mobarak Shahi Jame Masjid	Ward No. 32, Andarkilla
31	Hazrat Qatal Shah Mazar	Ward No. 4, Islampur
32	Grave of the Wife of Nawab Wali Beg Khan	Ward No. 16, Chawkbazar, Katalganj
33	Hazrat Pir Badar Awliya (Rah) Mazar Sharif	Ward No. 6, Bakhshir Hat, Andarkilla

SL No.	Name	Location
34	Deori of Merchant Pitambar Shah	Ward No. 35, Andarkilla
35	Hazrat Shah Sufi Amanat Khan (R) Dargah	Ward No. 5, Laldighi
36	Pitambar Shah Shop	Ward No. 35, Andarkilla
37	Kaivalyadham Complex	Ward No. 9, Pahartali, Firozshah Colony
38	European Club Chittagong	Ward No. 13, Pahartali
39	Mazar of Khwaja Abdul Hakim Shah	Ward No. 10, North Kattali
40	Railway Museum	Ward No. 13, Pahartali
41	Nazir Bhandar Mazar Sharif	Ward No. 28, Chattometro
42	Chittagong War Cemetery	Ward No. 23, Chattometro
43	P. K. Sen's Bhaban	Ward No. 23, Chattometro
44	Haripur Shib Mandir	Ward No. 3, Panchlaish
45	Residence of Yudhishtir Har	Ward No. 11, Kattali, Dhopapara
46	Tofazzal Hossain's House	Ward No. 33, Kabi Nazrul Islam Road
47	Nasir Uddin Chowdhury Mosque and Mazar	Ward No. 04, Chandgaon



SL No.	Name	Location
48	Darogar Hat Wali Chowdhury Masjid	Ward No. 30, Chattometro
49	Land Office VP Building	Do (Ward No. 30, Chattometro)
50	Chatteshwari Mandir Complex	Do (Ward No. 30, Chattometro)
51	Nazir Bhandar Mazar Sharif	Ward No. 28, Chattometro
52	Chittagong War Cemetery	Ward No. 23, Chattometro
53	P. K. Sen's Bhaban	Ward No. 23, Chattometro
Hathazari Upazila		
54	Fatehabad Model Multilateral High School	Chikondandi Union
55	Nasir Uddin Nasrat Shah's Dighi	Chikondandi Union
56	Nasir Uddin Nasrat Shah's Masjid	Chikondandi Union
57	Fatehbad Abandoned Kachari	Chikondandi Union
58	Lokkhi saha Jamidar Bari	Fatehbad Union
59	Chowdhuri Hat Pal Zamindar House	Chikondandi Union
60	Aparna Roy Zamindar House	Shikarpur Union

SL No.	Name	Location
51	Shikarpur Abandoned Mandir	Shikarpur Union
62	Nagendra Lal Chowdhury Zamindar Bari	Shikarpur Union
63	Chuhur Khan Masjid and Dighi	Shikarpur Union
64	Monohar Shah Mazar and Adjacent Area	Fatehbad Union
65	Nandir Hat Zamindar Bari (Satya Saha's House)	Fatehbad Union
66	Mokles's Tila (Hillock)	Mirzapur Union
67	Old Airport Abandoned Building 1 & 2	Ward No. 7, Hathazari Municipality
68	Banshal Radha Madhav Temple	Farhadabad Union
69	Fakira Jame Mosque	Ward No. 1, Hathazari Municipality
70	Anar Ali Masjid	North Madarsha
71	Alaol Mosque	Fatepur Union
72	Gar Duara	Garh Duara
73	Guman Mardan Shanti Vihar	Guman Mardan Union
74	Muhri Bari	Mirzapur Union



SL No.	Name	Location
75	Shiva Temple and Jagannath Temple	Hathazari Municipality
76	Halima Manzil	Chhadeknagar Union
77	Sarkar Hat Zamindar House	Mirzapur Union
78	Pundarik Dham Old Temple and Mukunda Thakur Temple	Mekhal Union
79	Hathazari Air field	Ward No. 7, Hathazari Municipality
80	Hathazari Madrasah	Ward No. 5, Hathazari Municipality
Sitakunda Upazila		
81	Kumira Hammadiyya Mosque	Kumira Union
82	Mahalanga Paran Shah Mazar	Baraiyadhala Union
83	Makhan Lal Chowdhury Bari	Baraiyadhala Union
84	Mondalbari Twin Temples (Jora Mandir)	Syedpur Union
85	Jafar Nagar Chowdhury Bari	Syedpur Union
86	Jafar Nagar Vishnu Mandir	Syedpur Union
87	Bhaater Khil Radha Mandir	Muradpur Union



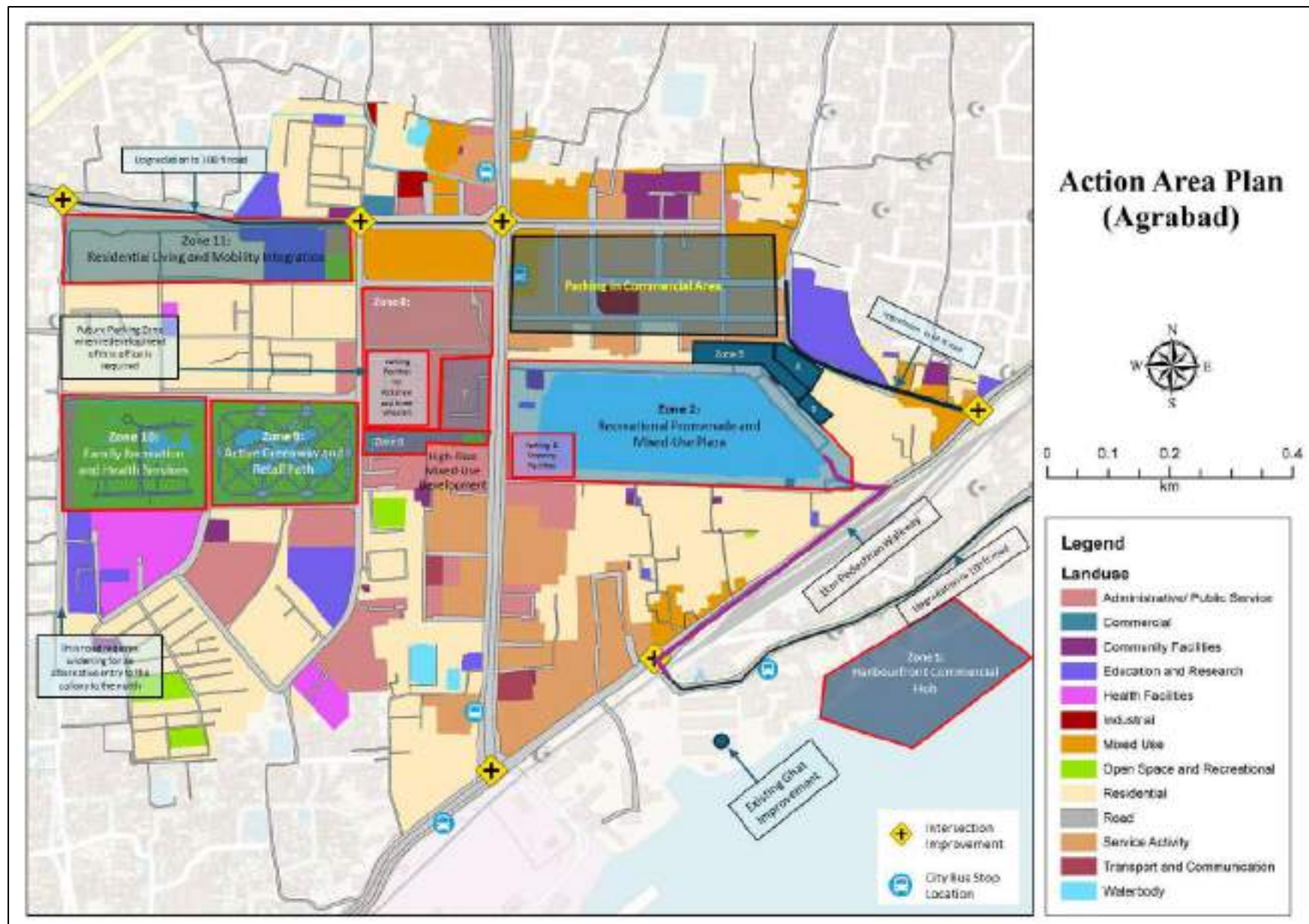
SL No.	Name	Location
88	Kumira Abandoned Shiva Mandir	Kumira Union
89	Sir's Hammamkhana	Muradpur Union
90	North Salimpur Vishnu Mandir	Salimpur Union
Patiya		
91	Buddhist Temple	Paraikora Union
92	Raj Bollov kanu dev Mondir	Kashiaish
93	Prashanna Kumar Ray Zamidar Bari	Bairag
94	Sarkar Bari	Barakhain
95	Bhatuapara Shib Mondir	Battali
96	Minnat Ali Dovashi Architectural Complex	Battali
97	Paraikora Buddhist Temple	Paraikora
98	Paraikora jomidar bari	Paraikora
99	Deyang Pahar	Bara Uthan
Raozan		
100	Kodolpur Jame Masjid	Kodolpur

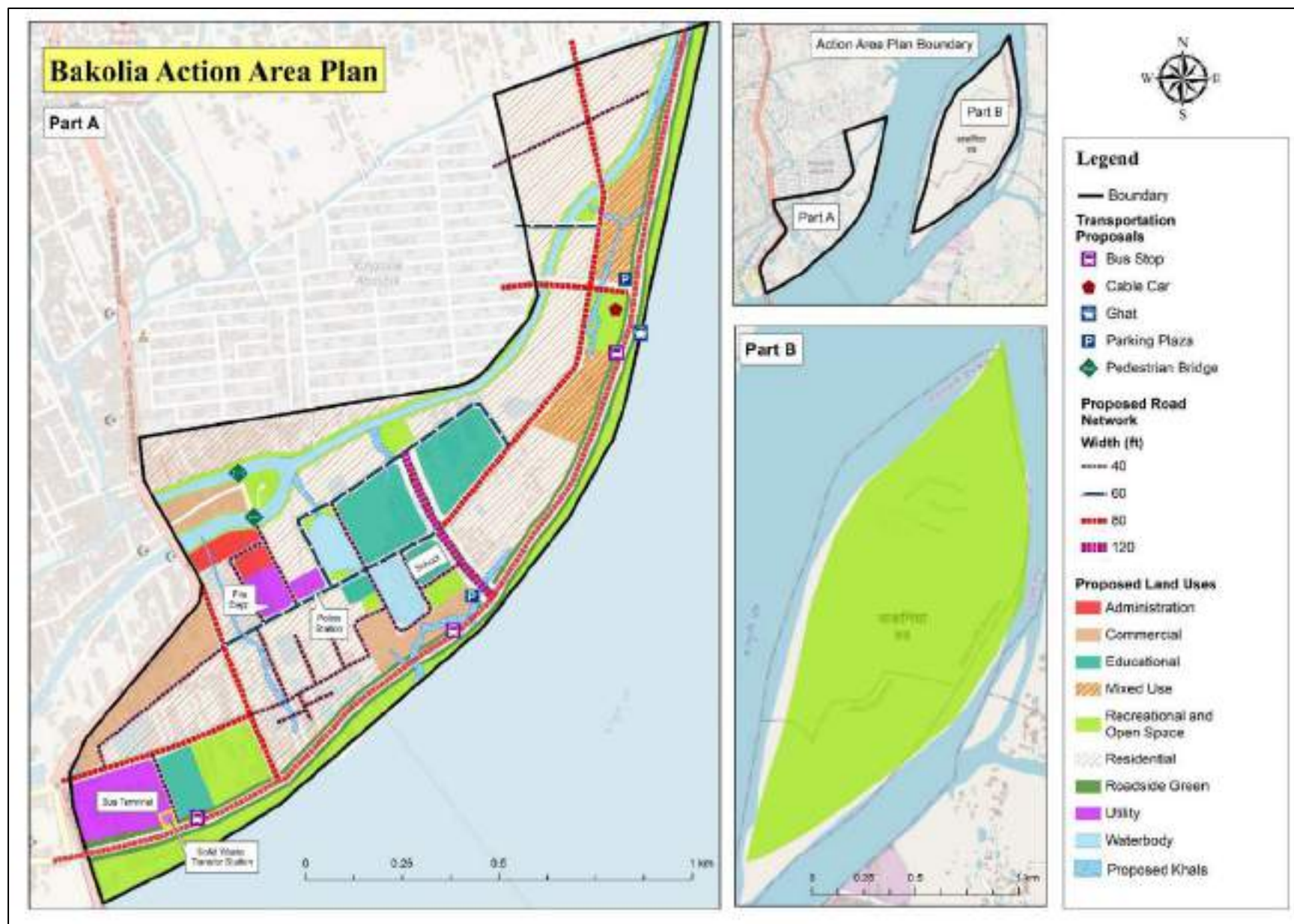


101	Shaheb Bibi Jame Masjid	Raozan Paurashava
102	Jagatour Temple	Pahartoli
103	Sawdagor Bari	Chikdair
104	Master Da Surjo Sen Memorial	Noapara
105	Ramdhor Jamindar Bhabon	Dabua
106	Bolir Jamindar Bari	Dabua
Rangunia		
107	First grave mausoleum of Martyred President Ziaur Rahman	Zia Nagar

Annexure E

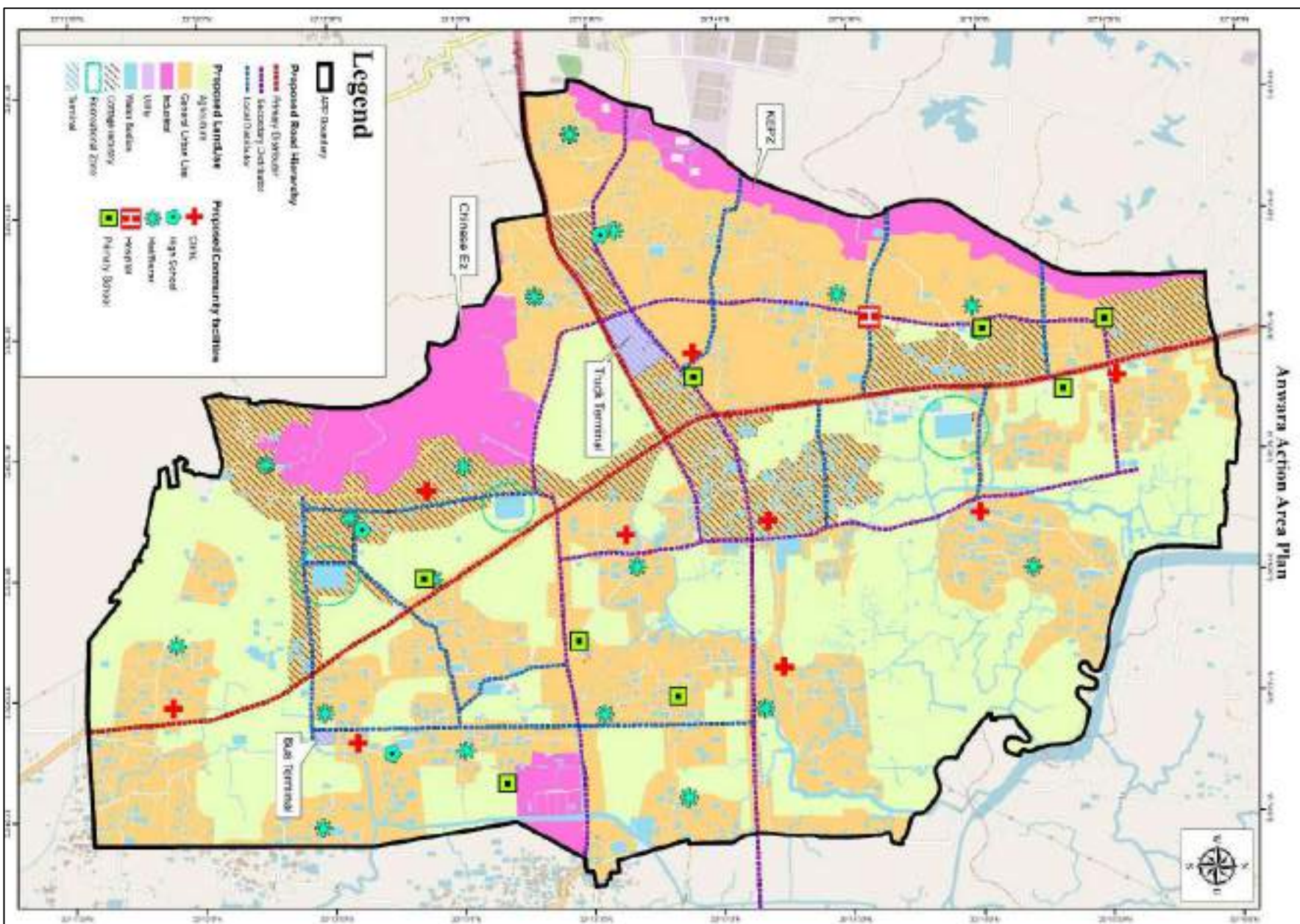
Maps of Action Area Plan







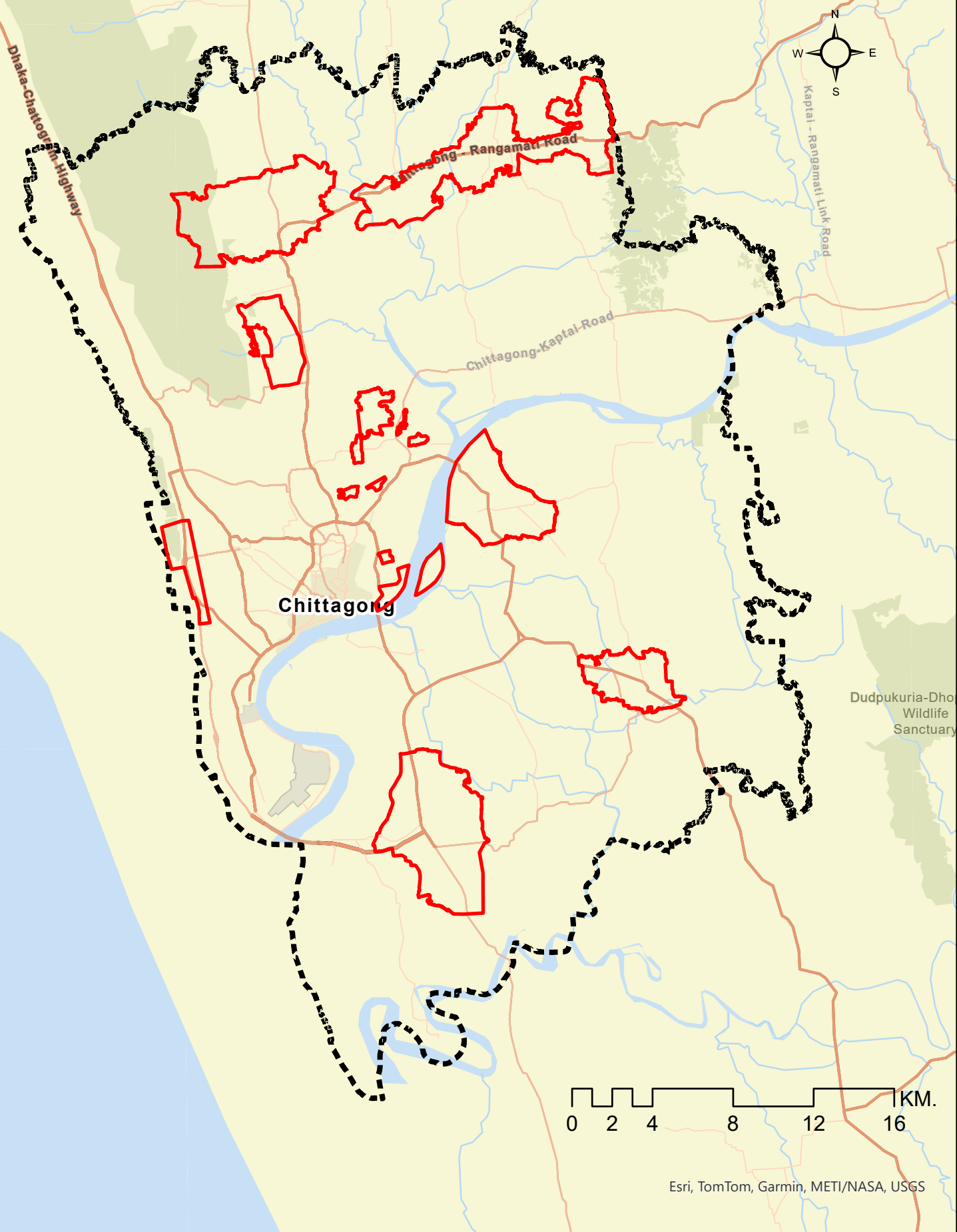
ANNEXURE



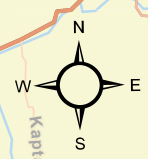
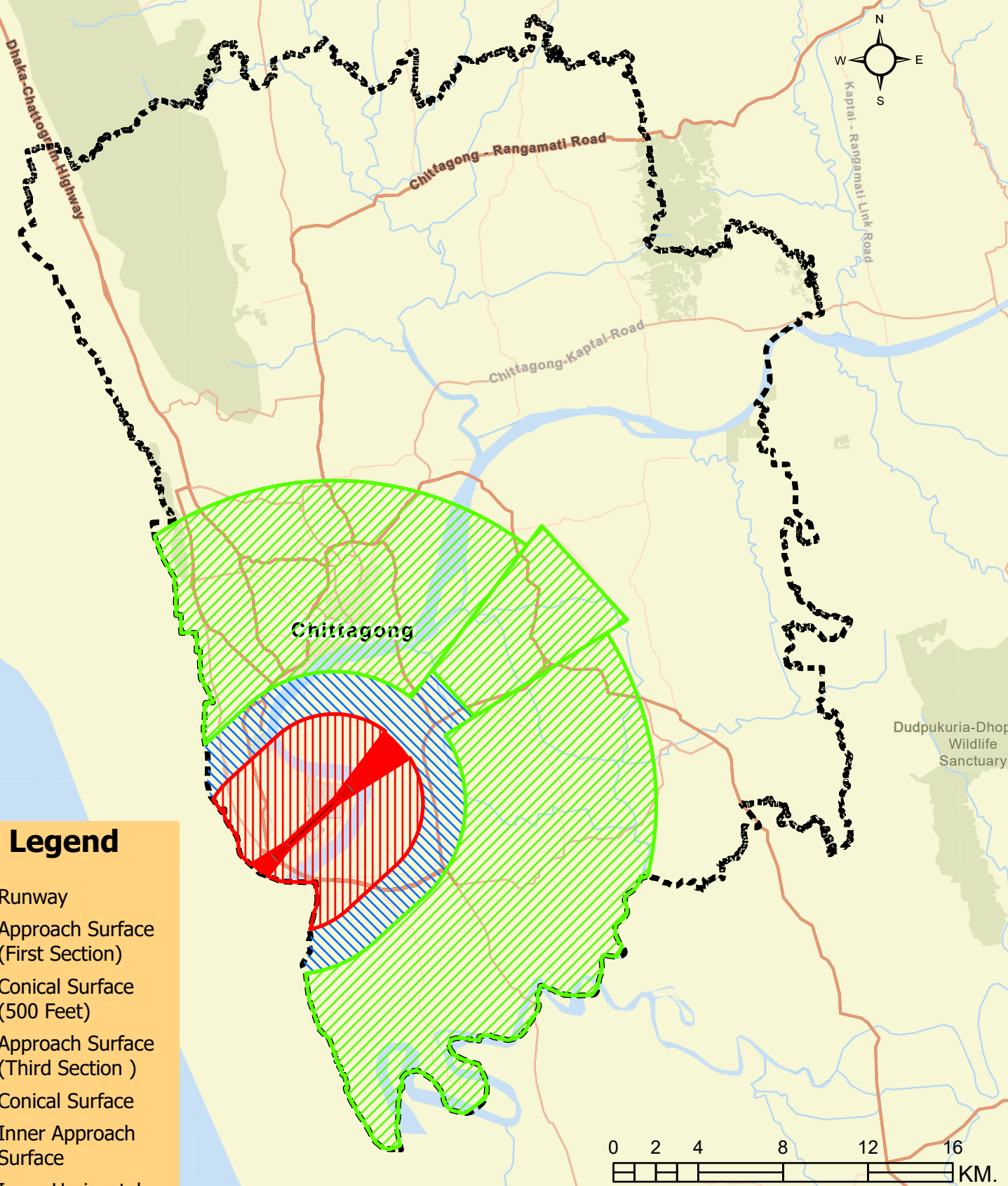
Annexure F

Regulatory Zone Maps

Proposed Action Area Plan Location



Air Funnel and Height Restriction

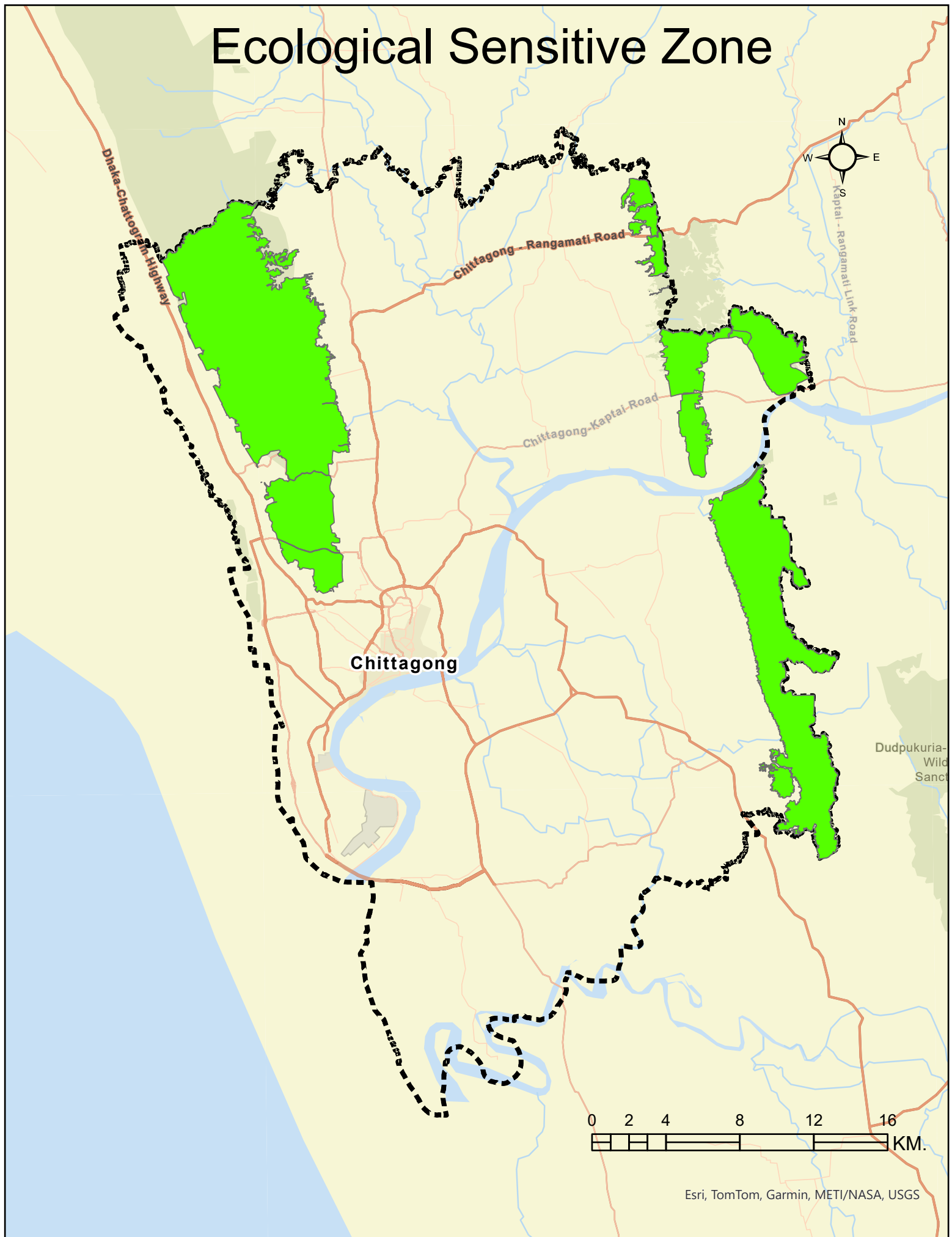


Legend

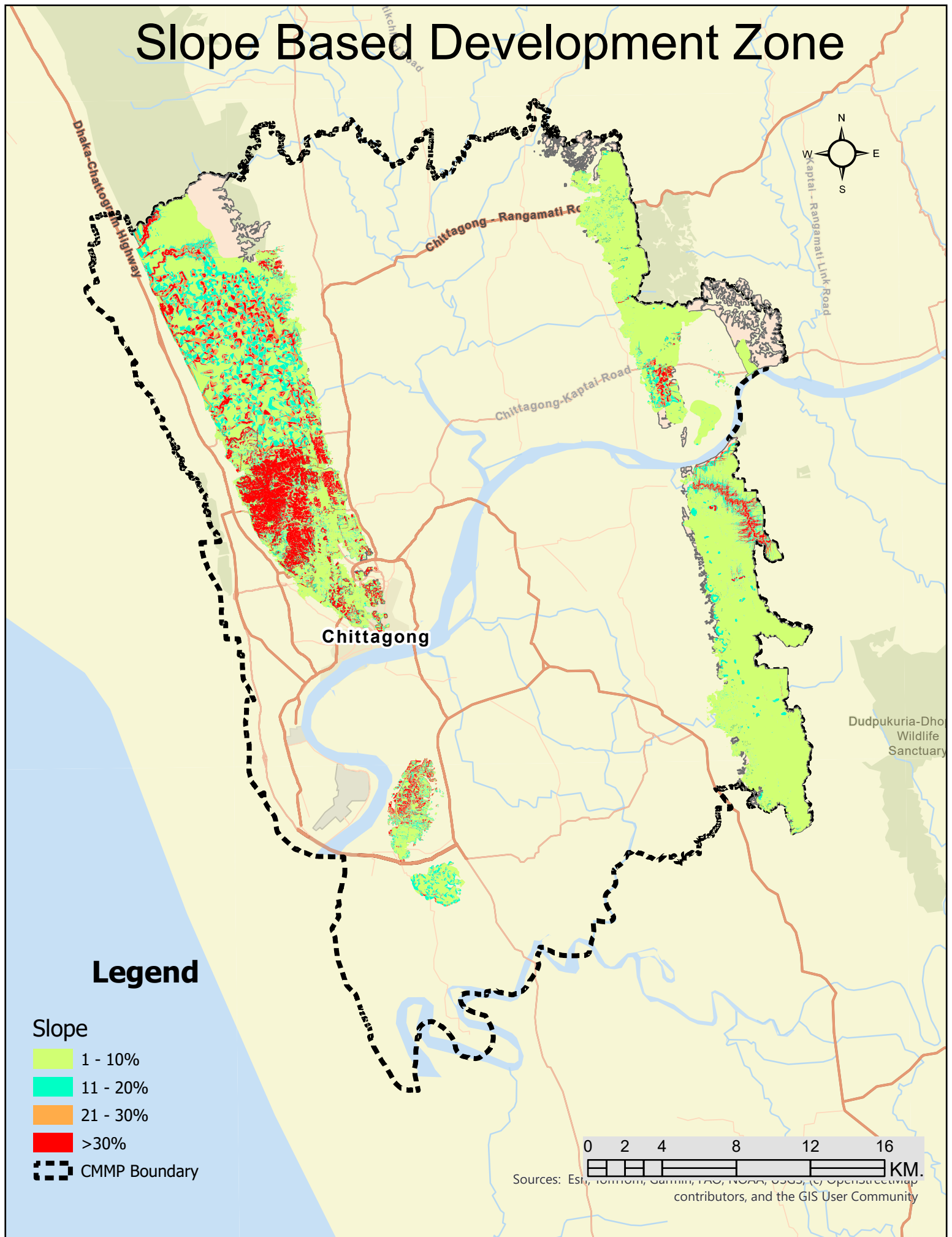
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- Approach Surface (First Section)
- Conical Surface (500 Feet)
- Approach Surface (Third Section)
- Conical Surface
- Inner Approach Surface
- Inner Horizontal Surface (150 feet)
- Outer Horizontal Surface (500 feet)

0 2 4 8 12 16 KM.

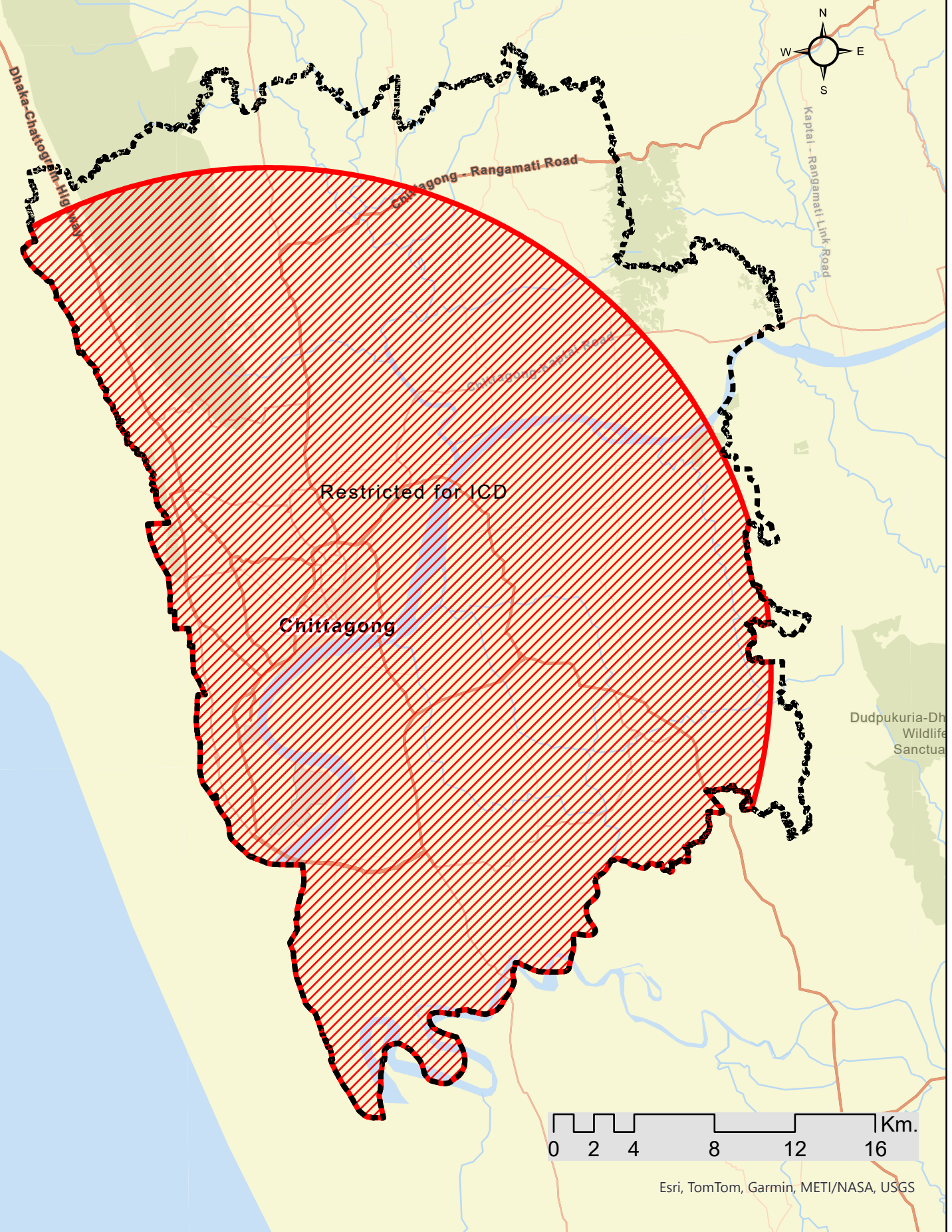
Ecological Sensitive Zone



Slope Based Development Zone



Restriction on ICD Development Zone



Inner City Development Restriction

