



Government of the people's Republic of Bangladesh

Ministry of Housing and Public Works

Urban Development Directorate

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PREPARATION OF DEVELOPMENT PLAN FOR

REPORT ON ASSIGNMENT- 08

**Assist Urban Planner to Preparation of Structure Plan and Policies
Including report elaborating all containing sectors and extents**

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1.1 Environment Friendly and Sustainable recycle based Solid Waste Management and Promotion Existing Situation Analysis

1.1.1 Definition of Solid Waste

Solid waste refers to any discarded material, whether it be solid or semi-solid, originating from residential, industrial, commercial, or agricultural sources. This waste can be organic or inorganic and often includes materials such as paper, plastics, metals, food scraps, and yard waste. Effective management of solid waste is essential to ensure public health, preserve the environment, and promote sustainability. (Source: UNEP, 2018; World Bank, 2019; Department of Environment Bangladesh, 2021)

1.1.2 Solid Waste Management Scenario in Meherpur, Bangladesh

Meherpur District, located in the southwestern part of Bangladesh, faces significant challenges in managing its solid waste due to its growing population and increasing urbanization. While the district has made efforts in managing waste, key infrastructure in certain areas, like the Meherpur Municipality, remains inoperative or under-utilized.

Currently, to manage urban sanitation and waste effectively, the municipality has established a Faecal Sludge Treatment Plant (FSTP/FSM) covering 1,040 square meters of land. The facility was designed to handle both solid and liquid waste, particularly faecal sludge from septic tanks and pit latrines. However, at present, the treatment plant remains non-functional due to technical and operational challenges. This has resulted in limited processing of collected waste, forcing much of the solid waste to be dumped in open areas or transported to the designated dumping site without treatment. (Source: Department of Public Health Engineering [DPHE] and Meherpur Municipality Records, 2024)

Despite having the infrastructure, the municipality struggles with insufficient manpower, poor maintenance, and lack of equipment for systematic collection and processing. Waste segregation at source is not yet practiced, and community participation remains low. Unlike Gangni Municipality, where a functioning solid waste treatment plant supports recycling and controlled disposal, Meherpur's facility needs urgent rehabilitation and proper operation to ensure sustainable waste management.

The municipality currently maintains a solid waste dumping site, but due to the inoperative condition of the treatment plant, the waste is mostly disposed of without adequate processing or recycling. This poses potential environmental and health risks, particularly during the rainy season when unprocessed waste contaminates surface water.

However, the situation is somewhat better in Gangni Municipality, which has managed to implement a more functional waste management system. Gangni Municipality maintains around 400 formal dustbins, strategically placed throughout the town, ensuring convenient access for residents and businesses to dispose of waste. These dustbins are distributed based on the population density and the locations of key public and commercial spaces. The municipality operates three garbage trucks, each with a 3-ton capacity, making approximately five trips per day, allowing the town to collect an estimated 15 tons of solid waste daily.

Gangni Municipality's waste collection system is set to improve further with the addition of nine collection vans, which will offer door-to-door collection services free of charge. This initiative aims to promote community participation and ensure that waste disposal is easy and accessible to all households.

Gangni has also successfully integrated a Solid Waste Treatment Plant, with a daily processing capacity of 24 tons. This facility plays a critical role in recycling and reducing the volume of waste sent to disposal sites, supporting the municipality's goals of sustainability. The solid waste dumping site, located at Jhilir Pur Para (Mor Ghati), spans around 8-10 bighas of land and is used for environmentally safe disposal of non-recyclable waste.

1.1.3 Solid Waste Management Procedure in the Context of Bangladesh

Solid waste management (SWM) in Bangladesh follows a structured yet evolving process that aims to ensure the safe collection, transportation, treatment, and disposal of waste while minimizing environmental pollution. The procedure aligns with the National 3R Strategy (2010), the Eighth Five Year Plan (2021–2025), and the Bangladesh Delta Plan 2100, emphasizing waste reduction, recycling, and resource recovery for sustainable urban growth.

1. Waste Generation: Waste generation in Bangladesh arises mainly from households, markets, commercial areas, industries, healthcare facilities, and municipal services.

- The average per capita waste generation in urban areas ranges from 0.4 to 0.6 kg/day, depending on income and lifestyle.
- The composition is dominated by organic materials (around 70–80%), with the rest consisting of plastics, paper, glass, metals, and inert materials. (*Source: DoE, 2021; World Bank, 2019*)

2. Segregation at Source: Although still at an early stage, source segregation is being promoted under National 3R Strategy and through pilot initiatives by municipalities (such as Dhaka North, Narayanganj, and Rajshahi).

- Waste is expected to be divided into biodegradable, recyclable, and hazardous fractions at the household or institutional level.
- Awareness and behavioral change campaigns are necessary to make segregation an integral part of daily urban life. (*Source: DoE, 2023; LGD, 2022*)

3. Collection and Storage: Most municipalities and city corporations operate primary collection (door-to-door or community bins) and secondary transfer systems using containers or trucks.

- In smaller municipalities like Meherpur, Gangni, and Chuadanga, waste is collected through manual labor and rickshaw vans.
- Community bins are often placed near markets and busy intersections, and secondary collection points are linked to transfer stations or dumping sites. (*Source: Urban Governance and Infrastructure Improvement Project – LGD, 2022*)

4. Transportation: Collected waste is transported using trucks, trolleys, and tractor-trailers.

- City corporations use compactors and mechanical loaders, while small municipalities depend on open trucks.
- Many areas lack covered transport, leading to leachate leakage and littering along routes.
- Route optimization and fleet maintenance are now being introduced under ADB and JICA-supported urban projects. (*Source: LGD, 2022; ADB UGIIIP-II, 2020*)

5. Waste Treatment and Processing: Treatment facilities vary across urban centers:

- Composting plants (e.g., in Khulna, Rajshahi) convert organic waste into fertilizer.
- Waste-to-energy and biogas initiatives are emerging through public–private partnerships (PPP).
- Faecal Sludge Treatment Plants (FSTP/FSM) have been constructed in several municipalities (including Meherpur and Gangni), though many remain non-operational due to technical or financial constraints. (*Source: DPHE, 2023; DoE, 2023*)

6. Final Disposal: The final disposal of solid waste is often done in open dumping sites, but the transition toward engineered sanitary landfills is underway.

- Major cities like Dhaka and Chattogram have designated landfill sites (e.g., Matuail and Arefin Nagar).
- Smaller municipalities usually use earthen dumping pits without leachate or gas management systems.
- The government plans to develop regional sanitary landfills under 8th Five Year Plan to serve multiple localities efficiently. (*Source: Planning Commission, 2021; DoE, 2022*)

7. Recycling and Resource Recovery: Informal recycling plays a major role in Bangladesh's waste economy.

- About 15–20% of total waste is recovered through informal waste pickers and recycling industries.
- Paper, plastic, glass, and metal are major recyclable materials.
- Formalizing the recycling sector and introducing Extended Producer Responsibility (EPR) are priorities in upcoming waste management policies. (*Source: DoE, 2023; World Bank, 2019*)

8. Public Awareness and Institutional Capacity: Public awareness campaigns, municipal by-laws, and 3R-based education programs are being introduced to improve waste management. Capacity-building projects under LGD, DoE, and JICA focus on training municipal staff, improving recordkeeping, and adopting digital waste tracking systems.

1.1.4 Challenges and Opportunities for Meherpur

While Gangni's waste management model provides valuable insights for Meherpur, the district still faces significant gaps. The Meherpur Municipality's treatment plant remains non-functional, and the lack of proper maintenance for the dumping site further complicates the waste management process. Without a reliable system in place, much of Meherpur's waste is not properly segregated or processed, leading to higher environmental pollution and public health risks.

Incorporating best practices from Gangni Municipality could greatly improve Meherpur's waste management system. By re-establishing the solid waste treatment plant, ensuring better waste segregation, and implementing door-to-door collection services, Meherpur can significantly reduce its waste footprint. Moreover, local participation through awareness programs and community-driven initiatives can foster a more sustainable and environmentally conscious approach to waste management.

1.2 Review of Existing Policies and Legislations:

1.2.1 National 3R Strategy for Waste Management (2010)

The National 3R Strategy introduced the core principles of Reduce, Reuse, and Recycle in Bangladesh. It aims to transform waste into resources through stakeholder engagement, awareness, and municipal-level interventions.

Framework Highlights:

- 3R Approach – promoting reduction, reuse, and recycling of waste.
- Waste-to-Resource Model – encourages composting and recovery.
- Community and Municipal Collaboration – ensures participation from households, businesses, and local authorities.

1.2.2 Solid Waste Management Rules (2021)

These Rules provide a legal framework for solid waste management, specifying duties, collection, transportation, processing, and disposal standards.

Framework Highlights:

- Source segregation of waste (organic, recyclable, hazardous).

- Defined collection and transportation systems.
- Recycling, composting, and sanitary landfill standards.
- Monitoring, reporting, and enforcement mechanisms.

1.2.3 National Environmental Policy (2018)

This policy promotes pollution control, sustainable waste management, and eco-friendly development practices.

Framework Highlights:

- Waste minimization and recycling.
- Public-Private Partnerships (PPP) for SWM.
- Pollution prevention through local initiatives.

1.2.4 National Environmental Management Action Plan (NEMAP) (1995)

NEMAP was the first comprehensive national framework that acknowledged waste management as an environmental challenge.

Framework Highlights:

- Strengthening urban waste collection and disposal.
- Community awareness and local action.
- Institutional responsibility for environmental cleanup.

1.2.5 National Sanitation Strategy (2005)

This strategy focuses on integrating solid waste and sanitation management at the community level.

Framework Highlights:

- Community-based waste management.
- Decentralized collection and composting.
- Integration of waste management into public health systems.

1.2.6 National Action Plan for Clean Air (NAP-CA) (2019–2030)

NAP-CA provides measures to control open burning and air pollution through improved solid waste management systems.

Framework Highlights:

- Preventing open burning of waste.
- Promoting Waste-to-Energy systems.
- Integrating air quality management with SWM.

1.2.7 National Adaptation Plan (NAP) (2022)

The NAP includes urban waste management as part of climate adaptation and resilience-building efforts.

Framework Highlights:

- Urban resilience through improved waste systems.
- Waste management for climate adaptation.
- Enhancing institutional capacity for climate-smart SWM.

1.2.8 Bangladesh Climate Change Strategy and Action Plan (BCCSAP) (2009)

The BCCSAP recognizes waste management as a tool for reducing emissions and improving urban environmental quality.

Framework Highlights:

- Linking waste management with climate mitigation.
- Emphasis on reducing methane and carbon emissions.
- Urban waste management as part of adaptation measures.

1.2.9 Municipality Act 2009

Applicable for smaller towns, the Municipality Act outlines local-level SWM systems and promotes decentralized approaches.

Framework Highlights:

- Daily waste collection and designated dumping grounds.
- Decentralized composting and biogas initiatives.
- Involvement of private sector and NGOs through PPPs.
- Community awareness and penalty mechanisms.
- Annual budget provision for waste management.

1.3 Adopted Policies for this Plan

1.3.1 Source Segregation and Community Awareness

Localized Action:

- Two-bin household system – green for organic, red for non-biodegradable waste.
- Awareness campaigns in schools, mosques and markets under the slogan “**My Waste, My Responsibility.**”

These reflect the 3R principle of reducing, reusing, and recycling waste through behavior change at the household level. (National 3R Strategy 2010; Solid Waste Management Rules 2021)

1.3.2 Door-to-Door Waste Collection (Ward-Based System)

Localized Action:

- Each ward will use 1–2 rickshaw or tricycle vans for daily collection on a fixed schedule.
- Covered community bins in busy areas to be cleared twice daily.

This directly follows the SWM Rules’ call for organized collection and the Municipality Act’s assignment of that duty to local authorities. (Municipality Act 2009; SWM Rules 2021)

1.3.3 Organic Waste Composting (Community Compost Pit)

Localized Action:

- Simple community compost pits or drum composters near the dump site.
- Compost used in municipal gardens or by local farmers.

Implements the national encouragement of composting and organic resource recovery. (National 3R Strategy 2010; National Sanitation Strategy 2005)

1.3.4 Small-Scale Plastic Collection and Recycling Linkage

Localized Action:

- Coordinate with informal recyclers to collect and sort plastics.
- Send sorted material to nearby recycling centers (Kushtia/Jashore).

Follows the national push for circular economy and private-sector participation in recycling. (National Waste Management Framework (Draft 2023); National Environmental Policy 2018)

1.3.5 Inclusion of Informal Waste Workers

Localized Action:

- Register local waste pickers; supply gloves, boots, masks.
- Introduce a “**Best Collector Award.**”

Transforms the Rules’ safety provisions into practical local recognition and inclusion.

1.3.6 Awareness and School Engagement Program

Localized Action:

- “Clean School – Clean Ward” campaign in all schools.
- Monthly community clean-up day led by youth clubs.

Links education and community participation to environmental awareness goals in national policy. (National Environmental Policy 2018; BCCSAP 2009)

1.3.7 Small Biogas Pilot (Future Scope)

Localized Action:

- Pilot 100–150 kg/day biogas unit near the municipal yard using market waste.
- Gas used for streetlights or tea stalls.

Adapts national guidance on waste-to-energy and methane-reduction into a small demonstration project.

1.3.8 Local Waste Monitoring (Manual Record System)

Localized Action:

- Each ward keeps a simple Waste Log Book (amount collected, destination).
- Monthly municipal review meetings.

Builds accountability within the flexibility allowed for smaller municipalities.

1.3.9 Public-Private and Youth Partnership

Localized Action:

- Monthly “**Green Saturday**” clean-up with businesses, schools, youth groups.
- Promote plastic-free markets through local sponsorships.

Follows national emphasis on local partnerships for environmental management. (BCCSAP 2009; Municipality Act 2009)

1.3.10 Zero-Waste Market Pilot (Future Vision)

Localized Action:

- A pilot “Zero-Waste Corner” in Meherpur Central Market encouraging reusable or jute bags.
- Managed jointly by the municipality and local traders.

Represents the circular-economy direction in upcoming national frameworks. (National Waste Management Framework (Draft 2023); 3R Strategy 2010)