

Terms of Reference (ToR) for GPS Technology-Assisted Mapping and Listing Exercise

Project Title: Health System Resiliency for Improved SRHR in Bangladesh
Geographic Coverage: Chattogram City Corporation (CCC)
Assignment Type: Third-Party Contract

1. Background and Context

The Health System Resiliency for Sexual and Reproductive Health Rights (SRHR) Project aims to enhance health system resilience in Chattogram City Corporation, with a particular focus on slum areas. To support this initiative, a comprehensive mapping and listing exercise is required to identify and document key geographic features, health facilities, dwellings, and household information within the slums. This exercise will utilize GPS technology and satellite imagery to create accurate base maps and a GIS database, enabling better planning and delivery of SRHR services.

The project seeks to engage a qualified third-party service provider (e.g., a consulting firm, NGO, or specialized mapping agency) through a competitive bidding process to conduct this mapping and listing exercise. The methodology outlined in this ToR is based on best practices for urban slum mapping but may be refined by the selected provider based on ground realities, available resources, and innovative approaches, subject to approval by the project authority.

2. Objectives

The primary objectives of this assignment are:

- To develop accurate base maps of slum areas in Chattogram City Corporation using satellite imagery and GPS technology.
- To map and list key features, including administrative boundaries, roads, water bodies, dwellings (baris), landmarks, and health facilities.
- To create a comprehensive GIS database integrating all mapped features and attributes.
- To conduct household listing in mapped dwellings, capturing household-level and individual member details to inform SRHR interventions.
- To ensure data accuracy through ground-truthing, verification, and iterative corrections.

3. Scope of Work

The service provider will be responsible for the following tasks, organized into key phases:

3.1 Base Map Development

- Acquire high-resolution satellite images of the study areas (slum settlements within Chattogram City Corporation) from reliable sources such as Google Earth Pro (latest version) or equivalent.
- Digitize key features from satellite imagery through on-screen visualization, creating separate layers for settlements, water bodies, vegetation, and other relevant elements.
- Deploy field mapping teams to conduct ground-truthing visits to verify satellite imagery accuracy for settlements, water bodies, and vegetation.
- Collect detailed attributes during field visits, including names, addresses, and other relevant information, using pre-designed listing forms.
- Use GPS devices to record precise locations (latitude/longitude) and basic information for:
 - Demarcation of all slums.
 - Identification of all baris (dwellings in the urban slum context).
 - Public health facilities.
 - Private health facilities.
 - NGO health facilities.
 - General Practitioners (formal and informal).
 - Educational institutions.
 - Other significant landmarks.
 - Road networks (captured using GPS auto-tracking systems for complete route data).
- Submit hard-copy maps and digital GPS data to a GIS expert on a regular basis for digitization, overlay onto satellite imagery, adjustments, and integration into a digital GIS database.
- Address inconsistencies through feedback loops between the GIS team and field teams for verification and correction.

3.2 GIS Database Development

Develop a comprehensive GIS database incorporating the following features:

3.2.1 Administrative Boundaries

- Utilize base maps from the Local Government Engineering Division (LGED) or equivalent sources to digitize boundaries (e.g., wards, metropolitan thanas, and mahallas).
- Conduct field verification to identify and correct discrepancies between mapped and actual ground positions.

3.2.2 Roads

- Verify and update existing LGED road data, adding any unmapped roads.
- Collect detailed information for each road segment, including name, type (paved/unpaved), seasonal accessibility, width, primary modes of transportation, traffic flow patterns, and passenger pick-up/drop-off points.

3.2.3 Water Bodies

- Initially digitize features such as rivers, canals, ponds, and marshlands from satellite imagery.
- Refine and update based on field verification to account for differences between imagery and ground reality.

3.2.4 Baris (Urban Dwellings)

- Collect GPS coordinates for every dwelling in the project area.
- Record the dwelling name and assign a unique identification number.

3.2.5 Landmarks

- Capture GPS locations of major community landmarks, including schools, mosques, temples, markets, and other significant structures.

3.2.6 Health Facilities

- Map all health service delivery points, including:
 - Governmental facilities (e.g., GoB: CMCH, General Hospital, MCWC, Urban Dispensary).
 - Chattogram City Corporation Facilities (e.g., Memon Maternity Hospital 1&2, PHCCs, CRHCCs, Health Entres run by CCC).
 - Private facilities (e.g., Max Hospital and National Hospital, Metropolitan Hospital, Royal Hospital and Chittagong Medical Centre Hospital, EPIC Hospital, Chevron Hospital, Popular Hospital, and Ibne Sina Hospital, Delta Hospital).
 - Non-governmental facilities (e.g., Ma-O-Shishu Hospital, Mamata Maternity Hospitals, CRCC, PHCCs, HCSDP-CCPP run by Mamata, BGMEA Hospital, Port Trust Hospital, Railway Hospital, Nishkriti Health facilities, Image Health Facilities, Ghashful Health facilities, BRAC Health Facilitates).
 - Informal health care providers.

3.3 Fieldwork Procedures

- Produce printed study area maps (showing roads, habitats, water bodies, and landmarks) and guide maps for field teams to facilitate navigation and independent access to locations.
- Ensure survey workers verify all geographic features on the ground and make real-time corrections during mapping and listing.

3.3.1 Mapping Process

- Deploy enumerators to systematically walk through the entire project area, ensuring 100% coverage.
- Mark GPS waypoints for every identifiable residential structure (dwelling) and non-residential landmark.
- Assign a unique dwelling number to each point for identification and tracking.

3.3.2 Listing Process

- Following mapping, enter each dwelling to conduct household listing.
- Obtain informed consent from the household head or a responsible adult prior to interviews.
- Collect data using a structured questionnaire administered via mobile devices/tablets or paper forms, based on field conditions.
- Register households with:
 - Household-level information (e.g., address, household head, socio-economic status [SES]).
 - Individual member details (e.g., name, age, sex, marital status, education, occupation, etc.).

The service provider must ensure ethical considerations, including data privacy, informed consent, and cultural sensitivity, especially in slum contexts. All fieldwork must comply with local regulations and health safety protocols.

4. Methodology

The service provider is expected to follow the methodology outlined in Sections 3.1–3.3 but may propose improvements or adaptations based on ground realities (e.g., alternative GPS tools, data collection apps, or integration with existing datasets). Any proposed changes must be justified in the bid and approved by the project authority. The approach should emphasize accuracy, completeness, and efficiency, leveraging GIS software (e.g., ArcGIS, QGIS) for database management.

5. Deliverables

The service provider will deliver:

- Digital base maps in GIS-compatible formats (e.g., shape files, GeoJSON).
- A comprehensive GIS database with all features and attributes as specified.
- Hard-copy and digital maps for field use and final reference.
- A detailed report on the mapping and listing exercise, including methodology, challenges, resolutions, and data summaries.
- Raw and processed data files (e.g., GPS tracks, listing forms, household registries).
- Training session for project staff on using the GIS database (if required).

All deliverables must be submitted in both digital and hard-copy formats where applicable, with quality assurance checks.

6. Timeline

The assignment is expected to be completed within 2 months from contract signing (bidders to propose a realistic timeline in their bids). Key milestones:

- Inception report and work plan: 1 week
- Field data collection (including tools and training): 4 weeks
- GIS database development, data cleaning, and verification: 2 weeks
- Final deliverables and report: 1 week

7. Qualifications and Requirements

- Proven experience in GPS-assisted mapping, GIS database development, and household listing in urban/slum contexts (at least 3 similar projects in the last 5 years).
- Team composition: GIS experts, field enumerators, data analysts, and project managers with relevant qualifications (e.g., degrees in geography, urban planning, or related fields).
- Access to necessary equipment (GPS devices, GIS software, mobile data collection tools).
- Demonstrated ability to handle sensitive data ethically and securely.
- Familiarity with Chattogram City Corporation and slum dynamics preferred.
- Ability to produce high-quality analytical reports and maps in English
- Bidders must submit: Technical proposal (methodology refinements, team CVs, work plan), financial proposal, and references.

8. Budget and Payment Terms

Bidders should provide a detailed budget breakdown, including personnel, equipment, fieldwork, and overheads. Payments will be milestone-based: 20% on contract signing, 40% on completion of fieldwork, 40% on database submission, and final report acceptance. Provision of Tax and Vat to be include in the financial proposal.

9. Evaluation Criteria

Bids will be evaluated on:

- Technical approach and methodology (40%).
- Experience and team qualifications (30%).
- Timeline and feasibility (15%).
- Cost-effectiveness (15%).

10. Submission Guidelines

Submit sealed bids (technical and financial proposals separately) to Md. Faruque, Deputy Chief Executive, Mamata, House#13, Road# 01, Lane# 01, Block# L, Haliashahar Housing Estate, Haliashahar, Chattogram by 15 February, 2026. Queries can be directed to Md. Faruque, Deputy Chief Executive, Mamata, House#13, Road# 01, Lane# 01, Block# L, Haliashahar Housing Estate, Haliashahar, Chattogram/email: mamatahq@yahoo.com.

This ToR may be amended during the bidding process if necessary. The project authority reserves the right to reject any or all bids.

11. Management

MAMATA will manage the assignment in coordination with **BAPSA**. All reports and datasets will be submitted to MAMATA, who will provide technical oversight and approval.