**Terms of Reference**

**Updating and validation of GIS data for developing Ward Sanitation Action Plans in three wards in Khulna City**

1. **Introduction**

SNV Netherlands Development Organisation is a not-for-profit development organisation working in the sectors of WASH, Agriculture and Energy through providing advisory services, facilitating knowledge development, networking, strengthening local capacity builders, and carrying out advocacy at national and international levels. Founded in 1965, SNV has built a long term local presence in countries of Africa, Asia, and Latin America. For more information, please refer to our website: [www.snv.org](http://www.snv.org).

SNV is implementing a program City Wide Inclusive Sanitation Engagement (CWISE) in different cities mainly located in the Southern part of Bangladesh under the leadership of City Corporations and Municipalities. CWISE promotes a state of urban sanitation, where all members of the city have access to adequate and affordable sanitation services through appropriate centralized and decentralized systems, without any contamination to the environment along the sanitation value chain. Over the past 5 years, the program has successfully developed a multi stakeholder coordination mechanism at the local level under the leadership of Local Government Institutions, bringing together local authorities, utility, national agencies, universities, private sector and civil society around urban sanitation.

Khulna City Corporation (KCC) has achieved important improvements in terms of sanitation needs in the city by introducing CWISE including Faecal Sludge Management (FSM) services with support from various organisations. The introduction of mechanised emptying service providers and the construction of a large Faecal Sludge Treatment Plant (FSTP) established the basis to achieve Sustainable Development Goals (SDG) by 2030, in particular 6.2 goal on sanitation. However, this challenging target requires to ensure safely managed sanitation for all, taking into account all market segments and especially the most vulnerable groups.

According to the Urban Poor Settlement Mapping 2017, by Livelihoods Improvement of Urban Poor Communities Project (LIUPCP), there are 1,910 poor settlements in the city within the 31 wards, with a total estimated population of 897,226 living in Low Income Communities (LIC). This comprises more than half of the population of KCC, which is around 1.5 million. In addition, 278 Community Development Committees (CDC) are organised in the different poor areas, 80% formed by women, which forms a CDC federation. As per Bangladesh Bureau of Statistics (BBS) data from slum census in 2014, there are about 300 slums recognized as vulnerable settlements, where the minimum number of households are 20 and maximum number of household are 2,200. About 4% of the population is living in vulnerable areas in Khulna according to the slum census 2014.

The access to adequate sanitation facilities in LIC is still a big challenge in Khulna, with more than 42% of households with unimproved or no toilet (Poorest and Poor), and none of the households with completely environmentally safe toilet.

Khulna Water Supply and Sewerage Authority (KWASA) was established in 2008 to provide water and sanitation facilities within the city. Currently, only a water network is in place covering a total of 25,000 households, and there is no sewerage system in place. On 2016, a Waste Water Management Master Plan was developed, which will be implemented by KWASA.

Several projects and organisations are supporting KCC and KWASA to improve the sanitation conditions in the city, but the main challenge is how to adequately address and ensure access and safely managed sanitation for LIC and slums. For this reason, the CWISE project developed a strategy to prepare Ward Sanitation Plans in three selected wards with different settings for demonstration of coordination of the interventions under different initiatives. The model to be replicated in the entire city by KCC and KWASA.

GIS-based Sanitation Mapping will be used as a tool to support the planning process by the stakeholders and for establishing effective FSM services in the selected wards.

1. **Background**

GIS based Sanitation Mapping exercise has been done in Khulna City area during previous phase in 2016. Under this, following tasks were done:

1. Updated existing GIS Database with new building structures and road network on the basis of latest available high-resolution Satellite Image and field verification of the new features.
2. Prepared digital version of updated large scale Base Map and Land Use Map of Khulna city in standard scale, layout and format as of KCC’s existing map in ward Level.
3. Developed GIS database of Khulna City Corporation for Faecal Sludge Management.

The GIS-database developed in Khulna City is based on the current situation of the containments, habitants of the city and other infrastructure which keep on vary as city grows, the data and information provided by this database may not represent the city’s status after some years. This database requires integration with other municipal services including the tax database to facilitate strategic decisions, municipal planning and service delivery. Side by side an initiative has been taken to establishing Integrated Municipal Information System (IMIS) for the cities for efficient Faecal Sludge Management that will help to get optimal benefit of this GIS-based database and regular updating of the database that enable municipalities to get real-time scenario of the sludge management, efficient service delivery in managing sludge, monitoring the containments, etc.

1. **Rationale of the assignment**

SNV has prepared a GIS database for Sanitation Mapping for Khulna City Corporation. To make it useful and integral part of municipal management an IMIS has been developed. To fit the GIS data into IMIS and make it effective, some other data need to acquire and develop along with the updating and validation of previously collected data. Additionally data verification is considered an integral step to check its authenticity, accuracy and consistency. It is important to check the validity and reliability of the data before we implement the IMIS at city scale.

However, at this stage we intend to develop Ward Sanitation Action Plans in three selected wards and therefore, like to concentrate updating and validation of the GIS data in these wards. In the meantime three wards has been selected through a consultative process and later approved by KCC. The ward numbers are 2, 15 and 22. Therefore, the CWISE project seeking appropriate consultant for updating and validation of GIS-based data and develop additional datasets and analytical maps in three wards in Khulna City, to support this planning process.

1. **Objective of this assignment**

The objectives of this updating & validation exercise of GIS data in three wards of Khulna City are:

1. Update Khulna and ward’s existing GIS Database with new building structures, containments and road network on the basis of field verification/ observation of the new features in three selected wards.
2. Prepare Ward Sanitation Profile Document and supporting maps of the specific three wards, to understand current sanitation situation and most critical areas.
3. Create new GIS database and new attributes for the three wards of Khulna City, for deeper understanding of sanitation needs.
4. Develop analytical maps on-demand of the three wards, as supporting tool for Ward Sanitation Action Plans.
5. **Scope of work:**

The Service Provider must have necessary experiences of creating GIS-based digital base maps using high resolution satellite image, field survey and map updating, socio-economic survey, familiar with urban elements for urban management. The KCC and SNV team will provide regular quality control support to the service provider team to ensure the integrity and reliability of data.

**5.1 Updating Khulna and ward’s existing GIS Database**

* Revise existing GIS Data of the three wards, review data set, documents regarding the GIS data and maps. This includes KCC’s databases, LIUPC Ward Sanitation Atlas and other available sources. This will be provided by SNV.
* Acquire latest high resolution satellite image available in archive and identify new missing features and features do not exist in the GIS Database but exist in the image, or vice versa.
* Verify these features in the field and also collect basic information that exist in the GIS data and update existing database accordingly (Annex 1 provides the data structure to be followed for this database update). The features includes holding number, confirm containment type and location, link to building and access road, road type and width, drainage type and width, confirm main building and it subsidiary building.
* Update land use database of KCC based on the land use changes identified in the Satellite image with field verification. Information and metadata of new features added and removed from existing GIS database has to be documented.

**5.2 Prepare Ward Sanitation Profile Document for each ward.**

* Develop a profile of each ward in relation to basic and sanitation information at current situation. This profile should be a document of 5 to 10 pages including a narrative summary of 1 or 2 pages, some graphs and indicators and supporting maps.
* The generated maps should include, at least, Base Map, Land Use Map, Containment type, Sanitation facilities (community and public toilets, water points,…), sludge discharging points, water logging areas, etc. of each of the three wards.
* These maps should follow the standard layout used by KCC with logos of KCC, SNV and other partner organizations, the service provider needs to get approval from SNV and KCC before finalizing the map.

**5.3 Create new GIS database and new attributes for the three wards.**

* Conduct containment survey on each ward to capture existing situation of septic tanks and pit latrines. Current dataset for containments only contains type, but it is required to include size of containment, construction material, soak well and drain discharge. The specific questions for the survey and required attributes will be provided by SNV. The size of the survey should be recommended by consultant team.
* Update the Building footprint layer linking with Holding Number, for all buildings within the three wards. As estimation, there is around 10,000 buildings in the three wards.
* In addition, integrate all information generated by the Community Action Plans (CAP) in each of the Community Development Committee (CDC) areas, as part of LIUPC project. Other minor datasets can be included if available, like community toilets an others.

**5.4 Develop analytical maps on-demand of the three wards, as supporting tool for Ward Sanitation Action Plans**

* Support SNV and KCC team on their request to produce analytical maps, field maps, lists of buildings for sample selection, etc. they need in the process of conducting surveys & studies, developing ward sanitation action plans, preparing reports, making presentation, etc.
* This support will be extensive during all consultant assignment, and as per estimation, a total number of 30 maps per ward can be requested, including profile and analytical maps, and around 15 additional maps at Khulna level.
* Orient SNV and KCC team to understand the GIS data and create and maintain data structure in EXCEL, so that data and information gathered about containment is always intact and can be integrated with KCC GIS database.

1. **Implementation arrangements**
2. The consultant will use the GIS and non-GIS data the project developed so far.
3. The consultant will recruit qualified enumerators for data collection/ verification. S/he will be responsible for designing the field survey tools and provide training to the enumerators.
4. The consultant with relevant personnel of KCC for tax zone adjustment, as required.
5. The consultant will be responsible for data entry as required.
6. The consult will take necessary measures to ensure quality of data to be collected and entered into the database.
7. A team comprising of KCC, SNV, KWASA and LIUPC Project will review the outputs and monitor the progress and provide feedback time-to-time. The consultant will update progress to the team on a weekly basis.
8. **Deliverables**

The Consultant is expected to deliver the following:

* 1. Updated GIS database and Ward Sanitation Profiles for each ward.
  2. Completed GIS Database for the wards, including related Maps and Report.
  3. Final Report on the activities and support provided to KCC and SNV team.

1. **Timeframe**

A total of twelve weeks is required for this assignment.

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| **Scope of work** | **Estimated time** |
| 5.1 Updating Khulna and ward’s existing GIS Database | Within two weeks after signing the contract. |
| 5.2 Prepare Ward Sanitation Profile Document for each ward. | Within four weeks after signing the contract. This activity is first priority, as it is required for Ward Sanitation Action Plans. |
| 5.3 Create new GIS database and new attributes for the three wards. | To be developed after Ward Sanitation Profile document. The estimated duration is of 6 weeks. |
| 5.4 Develop analytical maps on-demand of the three wards, as supporting tool for Ward Sanitation Action Plans | This activity will be continuous during the duration of the agreement, but mainly required during Ward Profile and Ward Sanitation Action Plan development by SNV, KCC, LIUPC, CDC and Councillors. |

1. **Human resource requirement**

The Consultant/s must have educational background on GIS application and experience working on GIS-based spatial analysis and WASH, preferably in sanitation mapping in municipalities in Bangladesh. Consultant must have understanding about municipal services and experiences in municipal tax system in Bangladesh.

1. **Application**

Interested organisations or consulting firms or individuals are requested to submit their technical and financial proposals with the details on organisational overall and similar experience, methodology including activities and milestones, budget details, time frame and CVs of experts.

Electronic copy of the proposal duly signed should be submitted to [**bangladesh@snv.org**](mailto:bangladesh@snv.org) with the subject line: **Updating, Validation and Finalisation of GIS Data for Establishing Ward Sanitation Map in three wards of KCC** latest by **24 August 2019**.

For any query related to the ToR, please contact Shahidul Islam, Governance Advisor, SNV. Email: [shahidulislam@snv.org](mailto:shahidulislam@snv.org)