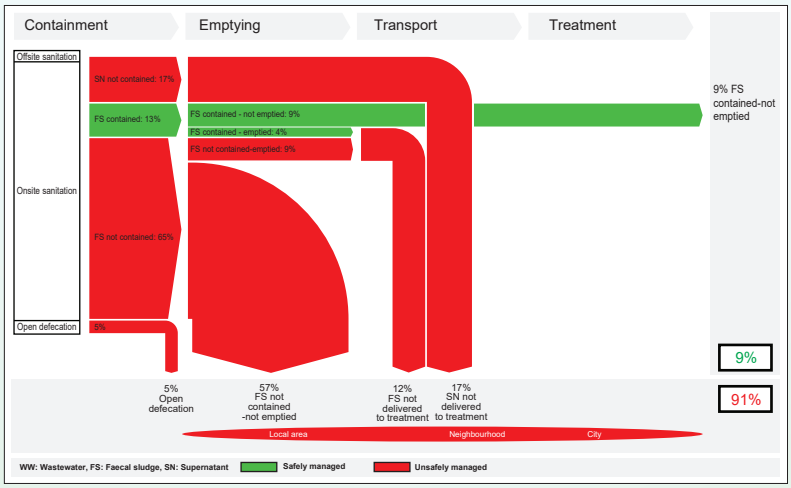
Freshwater Action Network South Asia

Freshwater Action Network South Asia-Bangladesh

SFD Report

Sreemangal Municipality
Moulvibazar



Study Led by: Dr. Md. Mujibur Rahman

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SFD Report

Sreemangal Municipality
Moulvibazar
Bangladesh

Final Report

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SFD Report Sreemangal Municipality, Moulvibazar, Bangladesh, 2024

Produced by:

SKS Foundation, Gaibandha, Bangladesh

Dr. Md. Mujibur Rahman, Professor, Department of Civil Engineering & Director, CSIRS-UIU.

Dr. Rumana Afrin, Associate Professor, Head, Department of Civil Engineering & Associate Director, CSIRS-UIU.

Syeda Aniqa Anjum, Research Officer, CSIRS-UIU.

S.M. Tariquzzaman, Managing Director, Edifice Consultancy Ltd.

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Foreword

The government and development organizations are promoting city-centered facilities to meet Bangladesh's rapid urbanization needs. Being an advocacy network in the WASH sector, the FANSA-Bangladesh is running its advocacy for the promotion of safely managed sanitation services (SMSS) following the city-wide inclusive sanitation (CWIS) approach. Being the FANSA-Bangladesh Secretariat, SKS Foundation has been implementing the project *Rising for Rights for Strengthening Civil Society Networks in South Asia to Achieve SDG 6* along with other members of the network. The Project covers the cities/towns under 3 geophysical locations namely Barishal City Corporation, Barishal; Sreemangal Municipality, Moulvibazar; and Gaibandha Municipality & Muktinagar Union, Gaibandha.

FANSA-Bangladesh realizes that to effectively promote SMSS following the CWIS approach through the duty-bearers, an analysis of the existing sanitation situation of the target city/town is imperative. Concerning this, SKS Foundation along with the Manifold Assistance Center for Bangladesh (MAC Bangladesh), the implementing FANSA-Bangladesh member in Sreemangal, Moulvibazar conducted a comprehensive study to dig out the overall sanitation situation of Sreemangal Municipality.

The study focused on assessing the sanitation situation and preparing a Shit Flow Diagram (SFD) for Sreemangal Municipality covering the service provision & standards. Sreemangal Municipality faces significant challenges in sanitation service delivery. Budget allocations for sewerage have been minimal indicating insufficient investment in addressing sanitation needs. Stakeholder engagement under the study in Sreemangal Municipality also revealed critical insights that the municipality lacks essential infrastructure such as a fecal sludge treatment plant, and many septic systems are improperly connected to drains or water bodies. About 34% use septic tanks connected to open drains, but only 5.7% of these tanks are emptied regularly which poses a serious environmental and health risk.

The municipal area stands in the haor zone covering some tea gardens too. Around 5% of the population still practice open defecation, mainly in tea gardens, which presents the highest public health risk. The Sanitation Flow Diagram (SFD) shows that only 9% of excreta is safely managed, while 91% is not, highlighting the urgent need for better fecal sludge management and sanitation infrastructure. The SFD for Sreemangal Municipality was developed reflecting on the local context. The SFD was designed following the model from www.sfd.susana.org that will help the respective duty-bearers for informed decisions to prioritize their efforts and resources to accelerate the safely managed sanitation actions in Sreemangal Municipality.

I express my heartfelt thanks & gratitude to Dr. Md. Mujibur Rahman, Professor, Department of Civil Engineering & Director, CSIRS-UIU, and his team members for conducting the Study & sharing the results through this SFD Report.

I appreciate MAC Bangladesh and my colleagues at SKS Foundation for their efforts in initiating and supporting the conduction of the study by organizing the community people & stakeholders consulted to make the study informative & purposeful towards achieving SDG 6.2.

Rasel Ahmed Liton
Chief Executive
SKS Foundation

Abbreviations

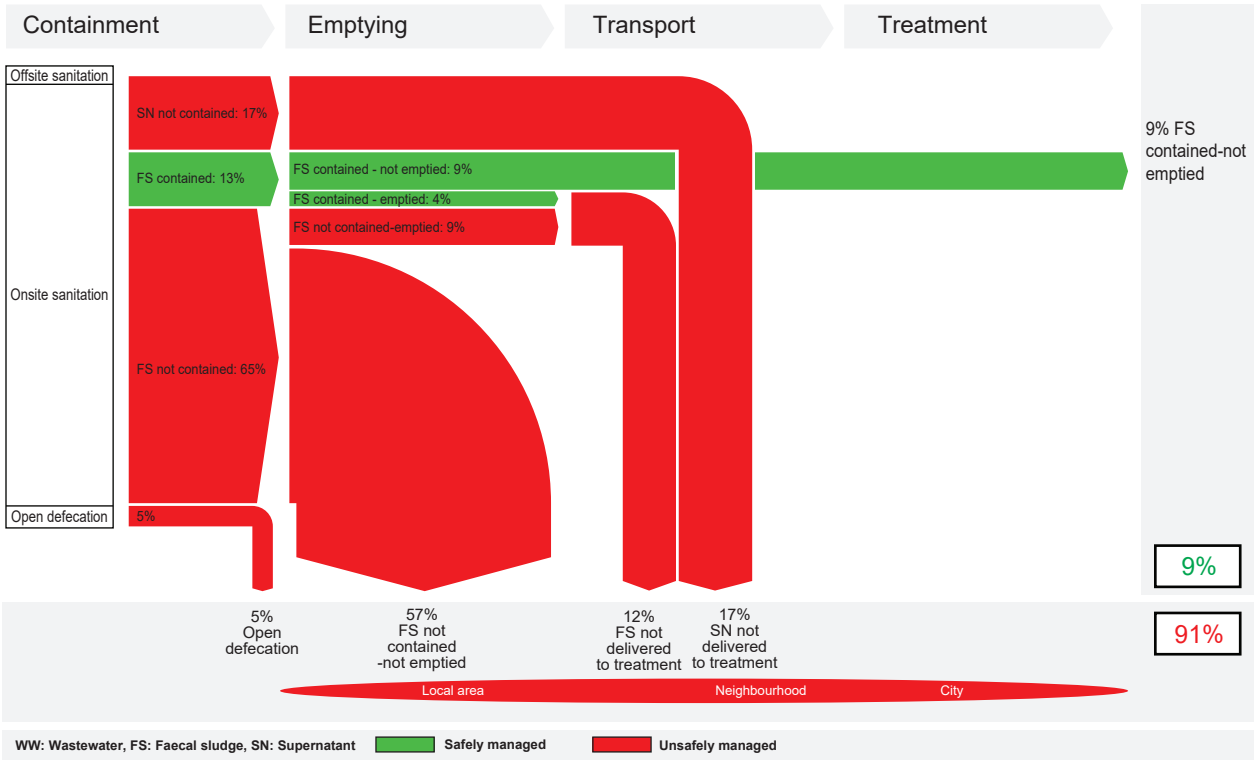
DoE	Department of Environment
DPHE	Department of Public Health Engineering
FANSA	Freshwater Action Network South Asia
FGD	Focus Group Discussion
FS	Faecal Sludge
FSM	Faecal Sludge Management
FSTP	Faecal Sludge Treatment Plant
IRF-FSM	Institutional and Regulatory Framework for Faecal Sludge Management
KII	Key Informant Interviews
LGED	Local Government Engineering Department
MoEF	Ministry of Environment and Forest
NGO	Non-Government Organization
SFD	Shit Flow Diagram

1. The SFD Graphic

Sreemangal, Moulvibazar, Bangladesh

SFD Level: 2 Intermediate SFD

Date prepared: 15 Sep 2024
Prepared by: SKS Foundation & CSIRS-UIU



The SFD Promotion Initiative recommends preparation of a report on the city context the analysis carried out and data sources used to produce this graphic.
Full details on how to create an SFD Report are available at sfd.susana.org

2. Diagram information

SFD Level:

Intermediate-Level 2 Report

Produced by:

- Center for Smart Infrastructure Resilience and Sustainability (CSIRS) of United International University (UIU)

- This report is a part of the project “Rising for Rights for Strengthening Civil Society Network in South Asia to Achieve SDG 6” of SKS Foundation (The FANSA-Bangladesh Secretariat)

Collaborating partners:

Sreemangal Municipality played a vital role in collecting and sharing data, producing this SFD graphics and SFD report.

Status:

Final SFD Report

Date of production: 17/09/2024

3. General city information

Sreemangal is a town of Sreemangal Upazila, Moulvibazar. The town is recognized as a Municipality. It is located about 20 km by road from Moulvibazar and 191 km Southwest of Dhaka city, the capital of Bangladesh. Sreemangal became an ‘A’ category municipality in 2002. It consists of 9 wards and covers an area of 2.58 square kilometers. Based on the Population and Housing Census (2022) of Bangladesh, Sreemangal Municipality has a total of 5,414 households. With a population of 23,326 in 2022 and growth rate of 0.9%, it can be estimated that the current population of Sreemangal Municipality is approximately 23,750. Sreemangal is well known for its’ tea production and tourism. The main source of revenue of the Municipality comes from the lease of different Bazar (Hat) and tourism.

The municipality faces challenges in waste management, since there is a lack of investment in the sector. The people rely on onsite sanitation systems, such as pit latrines and septic tanks.

4. Service outcomes

In Sreemangal, sanitation outcomes reveal major issues due to the lack of a centralized sewer system and treatment facility. Surveys show that most households rely on septic tanks or pit latrines. About 34% use septic tanks connected to open drains, but only 5.7% of these tanks are emptied regularly. Alarmingly, 3.7% of septic tanks and 14.2% of the lined tanks with open bottom are connected to water bodies, which poses a serious environmental and health risk. Another 18% use lined tanks with open bottoms connected to drains, but only 24.3% are emptied, leading to potential contamination of soil and groundwater. Additionally, 1.7% use lined pits where there is a significant risk of groundwater pollution. 57% of such high risk pits are emptied but none of it is transported to any treatment facility. 5% of the population still practice open defecation, mainly in tea gardens, which presents the highest public health risk. The Sanitation Flow Diagram (SFD) shows that only 9% of excreta is safely managed, while 91% is not, highlighting the urgent need for better faecal sludge management and sanitation infrastructure.

5. Service delivery context

Sreemangal Municipality faces significant challenges in sanitation service delivery due to limited resources and infrastructure. The current policy, guided by the Pourashava Act (2009), lacks specific instructions for faecal sludge management (FSM), though the municipality is responsible for this area. Budget allocations for sewerage have been minimal, with only a slight increase planned for the coming years, indicating insufficient investment in addressing sanitation needs. Service provision is hindered by a lack of essential equipment, inadequate staffing, and financial constraints, which limit the municipality's ability to manage and treat faecal sludge effectively. Additionally, low community awareness and uneven service coverage exacerbate these issues. To improve, there is a need for stricter adherence to environmental regulations, increased public education, enhanced service provider roles, and better partnerships with private sector actors.

6. Overview of stakeholders

Stakeholder engagement in Sreemangal Municipality involved Key Informant Interviews (KIIs), Focus Group Discussions (FGDs), observations, and data cross-verification. KIIs with municipal officials, NGO representatives, and ward council members revealed critical insights: the municipality lacks essential infrastructure such as a fecal sludge treatment plant, and many septic systems are improperly connected to drains or water bodies, posing significant health risks. Open defecation remains prevalent, particularly in Ward-1, and there's a general lack of awareness about proper sanitation. FGDs highlighted the severe shortage of sanitation staff and the urgent need for improved infrastructure and awareness programs. Observations of service providers confirmed these issues, particularly the absence of sludge transport facilities and the high workload of sanitation workers. Cross-verification of data from various sources validated these findings and underscored the need for targeted interventions to address Sreemangal's sanitation challenges effectively.

Table 1: Key Stakeholders

Key Stakeholders	Institutions / Organizations
Public Institutions	Sreemangal Municipality, Ministry of Local Government, DPHE
Non-governmental Organizations	SKS Foundation, AVAS
Private Sector	Sanitation Workers and local Sanitation Vendors.
Development Partners, Donors	N/A
Others	N/A

7. Process of SFD development

The Shit Flow Diagram (SFD) for Sreemangal Municipality was developed using the standard SFD methodology, with some adaptations to reflect the local context. The data required for developing the SFD was collected through a combination of household surveys, Key Informant Interviews (KIIs), and Focus Group Discussions (FGDs). Data was collected using the mWater tool for household surveys, which provided quantitative data on sanitation practices, access to facilities, and service provision across various wards. Additionally,

KIIs and FGDs with key stakeholders such as Secretary of Sreemangal Municipality, Councillors, community leaders, and sanitation service providers gave critical qualitative insights into the real challenges and gaps in the sanitation service chain.

- Data availability: Due to limited recent census data, some population estimates, and sanitation coverage figures may have been based on projections or smaller-scale surveys. This could introduce some margin of error in the percentages presented.
- Informal settlements: The standard SFD methodology may not fully capture the complex sanitation realities in Sreemangal's informal settlements, where practices can be highly variable and difficult to quantify precisely.
- Seasonal variations: Sreemangal's location in a flood-prone region means that sanitation practices and infrastructure effectiveness may vary significantly between dry and wet seasons. The SFD represents an average annual situation, which may not reflect these temporal variations.

The distinction between contained systems that are emptied versus not emptied may be somewhat fluid in practice, as emptying frequencies can vary widely among households.

8. Credibility of data

The household survey conducted in July 2024 contains detailed data on different stages of the sanitation value chain. The SFD matrix is generated from these data, collected during sample household surveys, along with informal interviews, open-ended consultations, key informant interviews, and focus group discussions with the Municipality officials, town-level coordination committee, households, social workers, business persons, pit emptiers and the citizens including women in all the wards of the Municipality.

Information regarding faecal sludge emptying schedules and overall waste disposal practices was difficult to obtain due to the absence of a formal tracking system. To account for this and other gaps, assumptions were made based on historical trends and estimates from the municipality.

The SFD matrix was generated from these data. Finally, data from all these sources were triangulated to produce the SFD matrix, the SFD graphic and the SFD report.

9. List of data sources

- Bangladesh Bureau of Statistics. (2022). Population and Housing Census 2022. Ministry of Planning. Government of the People's Republic of Bangladesh.
- Bangladesh Meteorological Department. (n.d.). https://live8.bmd.gov.bd/
- Department of Environment. (1997). Environmental Conservation Rules. Government of the People's Republic of Bangladesh.
- Legislative and Parliamentary Affairs Division. (2009). Local Government (Pourashava) Act. Government of the People's Republic of Bangladesh.
- Local Government Division. (2017). Institutional and Regulatory Framework for Faecal Sludge Management (FSM) Pourashavas. Ministry of Local Government, Rural Development and Co-operatives, Government of the People's Republic of Bangladesh.
- Local Government Division. (2005). National Sanitation Strategy. Ministry of Local Government, Rural Development and Co-operatives, Government of the People's Republic of Bangladesh.

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1 City Context

Sreemangal is a fast-growing town, which is 191 km away from Dhaka city (Figure 1). It is well connected by roads and railways. It is one of the oldest towns and was declared an 'A' class Municipality in 2002. The Municipality covers an area of 2.58 square kilometers. The Sreemangal Municipality is governed by a mayor, and 9 councilors for 9 wards.

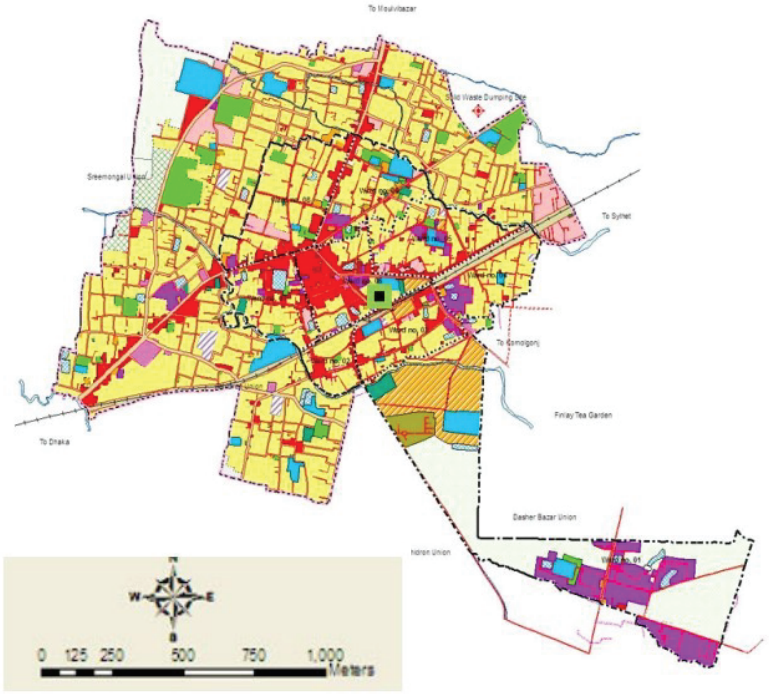


Figure 1: Map of Sreemangal Municipality (Source: Bangladesh Institute of Planners)

1.1 Population

Based on the Population and Housing Census (2022) by Bangladesh Bureau of Statistics (BBS), Sreemangal Municipality has a total of 5,414 households. With a population of 23,326 in 2022 and growth rate of 0.9%, it can be estimated that the current population of Sreemangal Municipality is approximately 23,750.

Sreemangal is well known for its' tea production and tourism. The main source of revenue of the Municipality comes from the lease of different Bazar (Hat) and tourism.

1.2 Climate

According to the Bangladesh Meteorological Department, the city area and surrounding area experience a tropical monsoon climate. It is characterized by warm, humid summers and cool, and dry winters. About 90% of the total annual rainfall occurs in the period from May through October. The driest months of the year are November to March. The maximum mean temperature observed is 31.3-34.2°C between April-August and the minimum mean temperature is between 12.1-13.7°C in January. The annual average rainfall is about 2,081 mm, according to BMD (1981-2017).

2 Service Outcomes

2.1 Overview

Data on sanitation situations were collected through a household survey. Further details are presented in Appendix 2. The results obtained after the triangulation and validation of the data with all the data sources including literature reviews, Key Informant Interviews (KIIs), and a validation workshop are presented in this section.

List A: Where does the toilet discharge to? (i.e. what type of containment technology, if any?)	List B: What is the containment technology connected to? (i.e. where does the outlet or overflow discharge to, if anything?)									
	to centralised combined sewer	to centralised foul/separate sewer	to decentralised combined sewer	to decentralised foul/separate sewer	to soakpit	to open drain or storm sewer	to water body	to open ground	to 'don't know where'	no outlet or overflow
No onsite container. Toilet discharges directly to destination given in List B					Significant risk of GW pollution Low risk of GW pollution					Not Applicable
Septic tank					T2A2C5 T1A2C5	T1A2C6	T1A2C7		T1A2C9	
Fully lined tank (sealed)					T2A3C5 T1A3C5	T1A3C6			T1A3C9	
Lined tank with impermeable walls and open bottom	Significant risk of GW pollution Low risk of GW pollution	Significant risk of GW pollution Low risk of GW pollution	Significant risk of GW pollution Low risk of GW pollution	Significant risk of GW pollution Low risk of GW pollution	Significant risk of GW pollution Low risk of GW pollution	T1A4C6	T1A4C7	T1A4C8	T1A4C9	Significant risk of GW pollution Low risk of GW pollution
Lined pit with semi-permeable walls and open bottom	Not Applicable									T2A5C10 T1A5C10
Unlined pit										Significant risk of GW pollution Low risk of GW pollution
Pit (all types), never emptied but abandoned when full and covered with soil										Significant risk of GW pollution T1B7C10
Pit (all types), never emptied, abandoned when full but NOT adequately covered with soil										T1B8C10
Toilet failed, damaged, collapsed or flooded										
Containment (septic tank or tank or pit latrine) failed, damaged, collapsed or flooded										
No toilet. Open defecation	Not Applicable						T1B11 C7 TO C9			Not Applicable

Figure 2: SFD Selection Grid

There is no centralized sewer system in Sreemangal. The most common on-site containment system is pit latrine or septic tank in the households. Different variations of pit latrines (direct pit, twin pit, offset pit) were observed during the household survey. Use of septic tank was also observed. However, an alarming amount of onsite containment is somehow connected to open drains (approximately 53%), posing significant health risks.

In addition, there is no sludge transport facility, no designated sludge dumping station nor any treatment facility in Sreemangal Municipality, indicating the vulnerable state of sanitation and hygiene practices in the concerned areas.

Figure 3: Containment Technologies and connections in Sreemangal

2.2 SFD Matrix

The results from the household survey are reflected in the SFD matrix. Table 1 shows the SFD matrix of Sreemangal Municipality.

Containment: From household survey, it was found that 44.8% people have septic tanks in their households, but only 3.2% of these are connected to soak pits (T1A2C5). Meanwhile, 34.3% are linked to open drains or storm sewers (T1A2C6), 3.7% to open water bodies (T1A2C7), and 3.4% are connected to unspecified outlets (T1A2C9). Despite being a preferred containment method, very few septic tanks in Sreemangal Municipality effectively manage faecal sludge. Additionally, 0.2% of septic tanks are connected to soak pits, which pose a significant risk of groundwater contamination (T2A2C5). 1.6% have fully lined tank (sealed) with various types of outlet (T1A3C5, T1A3C6, T1A3C9, T2A3C5). A notable number of households use lined tanks with impermeable walls and open bottoms; 18.1% are connected to open drains (T1A4C6) and 14.2% to water bodies (T1A4C7). Moreover, 8.1% of the population have lined pit with semi-permeable walls and open bottom with no outlet and overflow (T1A5C10) and 1.7% of containments which are lined pits with semi-permeable walls and open bottom, pose significant risk of groundwater pollution (T2A5C10). Open defecation is still prevalent in Sreemangal Municipality, with 5.1% of people lacking toilets within their premises and practicing open defecation (T1B11C7 TO C9).

Table 1: SFD Matrix for Sreemangal Municipality

Sreemangal, Moulvibazar, Bangladesh, 15 Sep 2024. SFD Level: 2 - Intermediate SFD
Population: 23,750
Proportion of tanks: septic tanks: 62%, fully lined tanks: 93%, lined, open bottom tanks: 80%

Containment						
System type	Population	FS emptying	FS transport	FS treatment	SN transport	SN treatment
	Pop	F3	F4	F5	S4e	S5e
System label and description	Proportion of population using this type of system (p)	Proportion of this type of system from which faecal sludge is emptied	Proportion of faecal sludge emptied, which is delivered to treatment plants	Proportion of faecal sludge delivered to treatment plants, which is treated	Proportion of supernatant in open drain or storm sewer system, which is delivered to treatment plants	Proportion of supernatant in open drain or storm sewer system that is delivered to treatment plants, which is treated
T1A2C5 Septic tank connected to soak pit	3.2	15.4	0.0	0.0		
T1A2C6 Septic tank connected to open drain or storm sewer	34.3	5.7	0.0	0.0	0.0	0.0
T1A2C7 Septic tank connected to open water body	3.7	6.7	0.0	0.0		
T1A2C9 Septic tank connected to 'don't know where'	3.4	14.3	0.0	0.0		
T1A3C5 Fully lined tank (sealed) connected to a soak pit	0.5	0.0	0.0	0.0		
T1A3C6 Fully lined tank (sealed) connected to an open drain or storm sewer	0.2	0.0	0.0	0.0	0.0	0.0
T1A3C9 Fully lined tank (sealed) connected to 'don't know where'	0.7	33.3	0.0	0.0		
T1A4C6 Lined tank with impermeable walls and open bottom, connected to an open drain or storm sewer	18.1	24.3	0.0	0.0	0.0	0.0

Containment						
System type	Population	FS emptying	FS transport	FS treatment	SN transport	SN treatment
	Pop	F3	F4	F5	S4e	S5e
System label and description	Proportion of population using this type of system (p)	Proportion of this type of system from which faecal sludge is emptied	Proportion of faecal sludge emptied, which is delivered to treatment plants	Proportion of faecal sludge delivered to treatment plants, which is treated	Proportion of supernatant in open drain or storm sewer system, which is delivered to treatment plants	Proportion of supernatant in open drain or storm sewer system that is delivered to treatment plants, which is treated
T1A4C7 Lined tank with impermeable walls and open bottom, connected to a water body	14.2	3.4	0.0	0.0		
T1A4C8 Lined tank with impermeable walls and open bottom, connected to open ground	1.5	0.0	0.0	0.0		
T1A4C9 Lined tank with impermeable walls and open bottom, connected to 'don't know where'	3.7	66.7	0.0	0.0		
T1A5C10 Lined pit with semi-permeable walls and open bottom, no outlet or overflow	8.1	54.5	0.0	0.0		
T1B11 C7 TO C9 Open defecation	5.1					
T1B7C10 Pit (all types), never emptied but abandoned when full and covered with soil, no outlet or overflow	0.7					
T1B8C10 Pit (all types), never emptied, abandoned when full but NOT adequately covered with soil, no outlet or overflow	0.2					
T2A2C5 Septic tank connected to soak pit, where there is a 'significant risk' of groundwater pollution	0.2	0.0	0.0	0.0		
T2A3C5 Fully lined tank (sealed) connected to a soak pit, where there is a 'significant risk' of groundwater pollution	0.2	0.0	0.0	0.0		
T2A5C10 Lined pit with semi-permeable walls and open bottom, no outlet or overflow, where there is a 'significant risk' of groundwater pollution	1.7	57.1	0.0	0.0		

Emptying: The survey revealed that only 16% of the containments have ever been emptied and 98.5% of the emptying is done manually.

15.4% of the septic tanks connected to soak pits have been emptied. In addition, 5.7% of those connected to open drains and 6.7% connected to water bodies have been emptied as well. Furthermore, 14.3% of septic tanks with unspecified outlets have been emptied within a period of 6 months to 1 year.

The survey found that considerable number of the lined tanks and lined pits are being emptied on various emptying schedule. In total, 27.7% of lined tanks with impermeable walls and open bottom, connected to an open drain, storm sewer or water body are being emptied. Additionally, 66.7% of lined tanks with unknown outlet connections have also been emptied. Moreover, 54.5% of lined pits with semi-permeable walls and open bottoms, which have no outlet, have been emptied, as well as 57.1% of similar systems that pose a significant risk of groundwater pollution.

Most of the emptied containments have an emptying frequency of every 6 months to 1 year, accounting for 38%. 32% were emptied less than 6 months ago. The remaining emptied containments were emptied between 1 and more than 3 years ago.

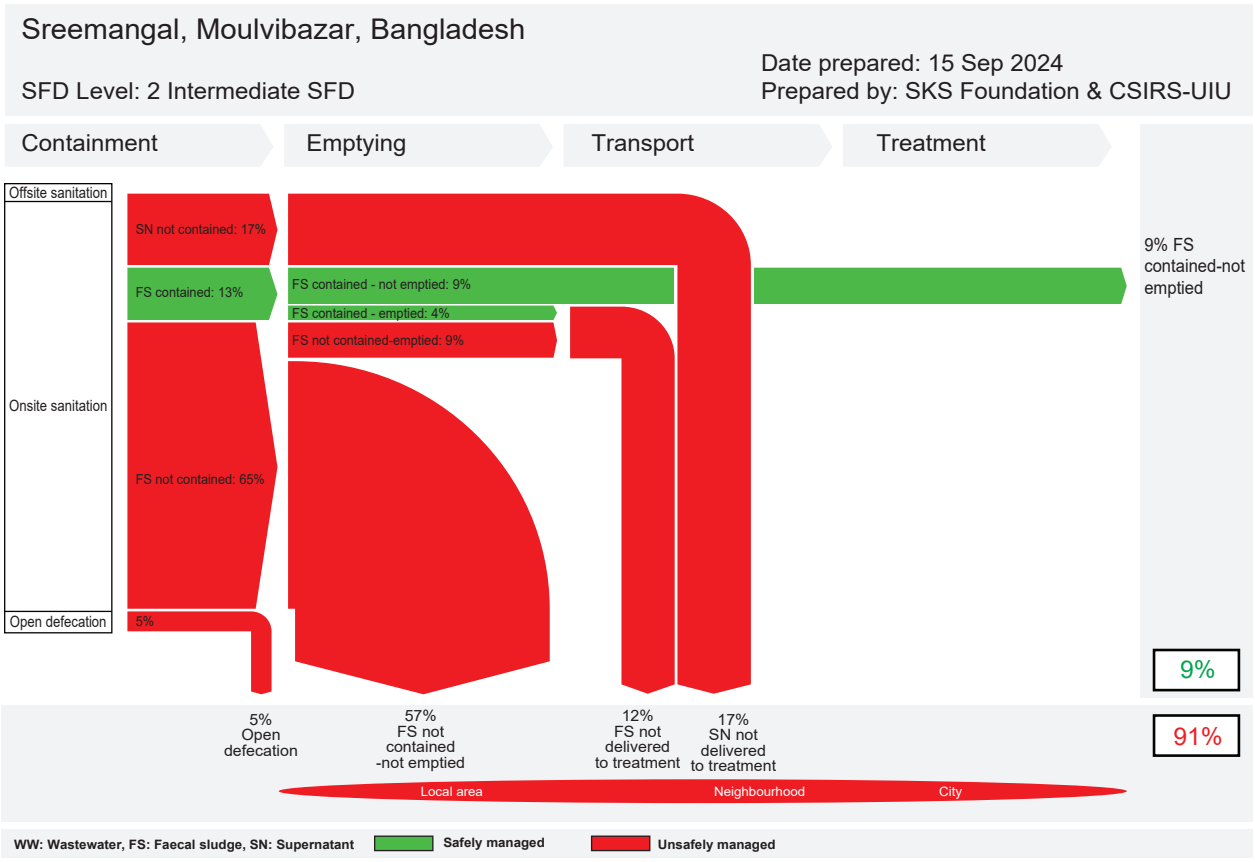
Transportation and Treatment: Currently, there is no treatment plant in Sreemangal Municipality. As a result, the values in column F4 (proportion of faecal sludge emptied, which is delivered to treatment plants) and column F5 (proportion of faecal sludge delivered to treatment plants, which is treated) of the SFD matrix is set to zero.

Assumptions:

The data used in the SFD Matrix comes from various sources, including field surveys, Key Informant Interviews (KII) and Focus Group Discussion (FGD). The following assumptions are made for developing the SFD for Sreemangal Municipality:

- Estimate of population growth are based on extrapolations from available census data and may not fully capture recent changes.
- The proportion of FS in septic tanks, fully lined tanks and lined, open bottom tanks are considered as per the guidance given in the Sustainable Sanitation Alliance (SuSanA) website.
- From the household surveys, if the respondents could state that the GW level at the time of construction of containment was relatively close to containment bottom, then it is considered that there is “significant risk” of GW pollution.
- There is no faecal sludge treatment facility in Sreemangal. As a result, collected FS are disposed in the environment. So, variable F4 and F5 are considered to be 0%.
- The field survey found that, in some cases pit latrines are connected to open drains or water bodies. Usually, this containment technology should not have any outlet. So, in such instances, it is defined as Lined tank with impermeable walls and open bottom.

2.3 SFD Graphic



The SFD Promotion Initiative recommends preparation of a report on the city context the analysis carried out and data sources used to produce this graphic.
Full details on how to create an SFD Report are available at sfd.susana.org

Figure 4: SFD Graphic of Sreemangal

The SFD Graphic, generated using the SFD Graphic Generator, visually represents the proportions of safely managed and unsafely managed excreta. The outcome of the SFD graphic shows that only nine percent (9%) of the excreta flow is classified as safely managed, and the remaining ninety one percent (91%) is classified as unsafely managed (Figure 4).

It should be noted that the proportion of safely managed excreta mostly originates from pits and septic tanks that have never been emptied, which might pose groundwater risk in the future. Majority of the unsafely managed excreta originates from uncontained faecal sludge (FS) that have not been emptied and transported for treatment. Key issues affecting sanitation service delivery in Sreemangal is the lack of FSTP, designated dumping ground and even well-coordinated sludge transport system. The unsafely managed excreta originate from the following sources:

- FS not contained- not emptied 57%
- Open Defecation 5%
- FS not delivered to treatment 12%
- Supernatant not delivered to treatment 17%

The depth of groundwater in the municipality is found below 100 m. The most common drinking water production technology is a borehole with a hand pump or motorized pump.

3 Service delivery context

3.1 Policy, legislation and regulation

3.1.1 Policy

According to the Local Government (Pourashava) Act, 2009 (amended in 2010) (hereinafter referred to as "Pourashava Act 2009"), municipalities are responsible for (a) water supply for residential, industrial and commercial use; (b) water and sanitation; and (c) waste management, in areas within its jurisdiction (sub-clause 2). Schedule 2 of Pourashava Act 2009 details the function of a municipality which includes that a municipality is responsible for maintaining sufficient number of public toilets for both male and female. The Municipality shall also make adequate arrangements for the removal and proper disposal of refuse from all public streets, public latrines, urinals, drains, and all buildings and land vested in the municipality (IRF-FSM, 2017).

The Municipality can collaborate with the Department of Public Health Engineering (DPHE), the Local Government Engineering Department (LGED), the private sector/ non-government organization to plan and implement FSM infrastructure and services in accordance with Clauses 95 and 96 of Pourashava Act 2009 (IRF-FSM, 2017).This is a clear indication that the DPHE and LGED should be included as the key institutions in developing the institutional framework on FSM in Sreemangal Municipality.

The 2009 Pourashava Act requires each municipality to take steps to include provision of infrastructure for the implementation of FSM services in its master plan. However, most municipalities have yet to even create a master plan, even though they may seek expert support from the external sources to assist with this complex process.

The National Policy for Safe Water Supply and Sanitation (1998) serves as the principal framework for water supply and sanitation sector. One of the objectives of the policy is ensuring the installation of one sanitary latrine in each household area and improving public health standard. In urban settings, the policy objective is to ensure sanitary latrine within easy access of every urban household. Additionally, the policy mandates that water supply and sanitation technologies be tailored to the unique regional, geological, and social conditions (National Sanitation Strategy, 2005). However, in the absence of a building code for septic tanks, it is not a requirement that the development of multi-story buildings include the construction of septic tanks.

3.1.2 Institutional roles

In general, the municipal authority is responsible for providing basic services to citizens. Chapter two of the Pourashava Act (2009) mentions the responsibility and function of municipalities with regard to Water, Sanitation and Hygiene (WASH). According to clause (50) (2), the municipality is responsible for (a) Water supply for residential, industrial and commercial use, (b) Water and sanitation, (c) Waste management, and (d) Issuing plans that promote economic and social justice. Even though it is not mentioned explicitly, faecal sludge management is considered to be included in the Clause (50)(2)(b) on water and sanitation and therefore is the responsibility of the municipality. Ministries are responsible for securing funding and formulating policy, strategy and amendments. The DPHE and LGED provide technical assistance, and the municipalities are responsible for FSM services, including engaging and supporting all stakeholders (the government, non-government organizations, development partners, research organizations, civil society and the media) in raising awareness, developing FSM infrastructure and effective delivery of FSM services.

3.1.3 Service provision

Sanitation services in Sreemangal are confronted with significant challenges, primarily due to limited resources and insufficient infrastructure. The municipality lacks the essential vehicles and equipment necessary for effective waste management. Although a drainage system exists, there is no proper sewage system in place. As a result, a large portion of the population resorts to disposing of their waste directly into the drains, further complicating the sanitation issues in the area.

3.1.4 Service standards

Municipalities are responsible for the execution of the entire FSM service chain. They are also in charge of ensuring that this is carried out in compliance with existing rules and regulations on the disposal of liquid effluent and quality of end products such as compost, without adversely affecting health and the environment.

Until any treatment facilities are built, fecal sludge will continue to be disposed of in pits or trenches dug on land designated by the municipality. The Ministry of the Environment and Forestry through the Department of Environment is responsible for ensuring that all relevant environmental laws, regulations and principles are followed to the letter by all concerned throughout the FSM service chain.

3.2 Planning

The municipality's budget for sewerage has been quite limited. For the financial year 2022-2023, it was only TK 100,000. This same amount was allocated for 2023-2024. However, there is a planned increase to TK 300,000 for the 2024-2025 financial year. This gradual increase suggests a growing awareness and concern for sewerage issues, although the overall budget remains insufficient to fully address the needs related to sewage management and sludge treatment.

3.3 Outputs

3.3.1 Capacity to meet service needs, demands and targets

The capacity of Sreemangal Municipality to meet its sanitation service needs, demands, and targets is currently constrained by several factors, including limited infrastructure, insufficient manpower, and inadequate financial resources.

- Infrastructure Gaps: The municipality lacks essential sanitation infrastructure, such as a faecal sludge treatment plant and adequate sludge transport facilities. The absence of these critical systems severely limits the municipality's ability to safely manage and dispose of faecal waste, leading to widespread environmental contamination. The current practice of connecting septic tanks to drains or directly to water bodies indicates a significant shortfall in proper containment and treatment capabilities.
- Manpower Constraints: The sanitation department is severely understaffed, with only 2 personnel available compared to the proposed requirement of 22. This shortage hinders regular maintenance, monitoring, and enforcement of sanitation practices across the municipality. The lack of a sanitary inspector, in particular, makes it difficult to oversee and ensure compliance with hygiene standards.

- Financial Limitations: Insufficient funding is a critical barrier to enhancing the municipality's sanitation services. The limited budget restricts the municipality's ability to invest in new infrastructure, such as a sludge disposal plant, and to expand its sewerage system. Without adequate financial resources, it will be challenging to meet the growing demands for improved sanitation services.
- Community Awareness: There is a significant gap in community awareness regarding proper sanitation practices. Many residents, particularly in vulnerable areas like Ward-1, continue to rely on direct pit latrines and engage in open defecation, further complicating efforts to improve overall sanitation. The lack of awareness also contributes to the improper use of septic tanks, with many households failing to understand the importance of safe waste disposal.
- Service Coverage: The coverage of sanitation services is uneven, with certain wards, such as Ward-1 and Ward-9, facing more severe challenges due to inadequate infrastructure and lower levels of awareness. The municipality's ability to deliver equitable sanitation services across all wards is currently limited, which hampers progress towards meeting overall service targets.

In conclusion, while there are efforts underway to address sanitation challenges in Sreemangal Municipality, the existing capacity falls short of meeting the service needs, demands, and targets. Significant investments in infrastructure, manpower, and community education are required to build a robust sanitation system that can meet the municipality's growing needs and ensure a healthy living environment for all residents.

3.3.2 Monitoring and reporting access to services

In the Institutional and Regulatory Framework (IRF) for FSM, different institutions have been identified for playing effective roles in the overall planning, development, implementation, practice and monitoring and evaluation of faecal sludge management in municipalities. The Ministry of Environment and Forest (MoEF) through the Department of Environment (DoE) shall ensure that all relevant environmental laws, regulations and principles are strictly followed by all concerned throughout the FSM service chain.

3.4 Expansion

3.4.1 Stimulating demand for services

The municipality and non-governmental organizations like SKS Foundation need to take a proactive approach to stimulating demand for improved sanitation services. Public education campaigns aimed at raising awareness about the risks of open defecation and the benefits of using proper sanitation facilities could help foster a demand for better services. These campaigns should be tailored to reach marginalized and underserved communities, where sanitation issues are most acute.

3.4.2 Strengthening service provider roles

To address the sanitation crisis, the roles of service providers must be strengthened. This includes increasing the capacity of municipal workers through training and the provision of better equipment. The municipality should also explore partnerships with private sector actors to expand its reach and improve service delivery. Additionally, fostering stronger collaboration between government institutions, such as the DPHE, and non-governmental organizations will be crucial in building a more efficient and effective sanitation system.

4 Stakeholder Engagement

Stakeholder engagement in Sreemangal Municipality involved a series of Key Informant Interviews (KIIs), Focus Group Discussions (FGDs), observations of service providers, and cross-verification of data. These steps were crucial in gathering insights into the current sanitation challenges and identifying potential areas for intervention.

*4.*1 Key Informant Interviews (KIIs)

Key Informant Interviews were conducted with various stakeholders, including municipal officials, NGO representatives, and ward council members. These interviews revealed critical insights into the state of sanitation in Sreemangal Municipality.

- Md. Mahbub Alom Patwari, the Secretary of Sreemangal Pourashava, highlighted the absence of a fecal sludge treatment plant, sludge transport facilities, and a dumping station, indicating the municipality's vulnerable sanitation system.
- S.A. Hamid, Executive Director of Map Bangladesh, pointed out that nearly 95% of containment systems in the area are connected to lakes or water bodies, posing severe health risks. He also noted that open defecation remains prevalent, particularly in Ward-1.
- Ward council members, such as Ms. Tania Akter and Lipi, discussed the widespread use of direct pit latrines and the improper connection of septic tanks to drains and water bodies. The overall lack of awareness about proper sanitation practices was a recurring theme across multiple wards.
- Kajol, Member of Ward-7 and FANSA Women Forums, presented a slightly more positive scenario, stating that 3-5% of households in Ward-7 have managed to install septic tanks. However, the majority still rely on direct pit latrines. Kajol emphasized the need for ongoing efforts to encourage more households to adopt septic tanks and improve their sanitation systems.
- Rukhshana Akter, Member of Ward-9 and FANSA Women Forum, highlighted that many households near the lake discharge their wastewater directly into it. A common misconception is that only extra water is being released, which reflects the community's lack of awareness regarding the harmful effects of such practices.
- Narayan Babu, NGO Worker in Ward-6, described the situation in Ward-6, where most households have septic tanks, yet a large proportion still use direct pit latrines. He suggested that education and awareness campaigns are needed to promote better sanitation practices.

Figure 5: KII with local community of Sreemangal Municipality

- Sweety Akter, Member of Ward-5 and FANSA Women Forum, confirmed that while most families in Ward-5 use septic tanks, they are often connected to drains that flow into lakes or water bodies. This improper disposal poses significant health risks, and she called for stronger enforcement of proper sanitation practices.
- Md. Abdul Jobbar Azad, Councilor of Ward-2, raised similar concerns regarding the improper connection of septic tanks to drains and water bodies in his ward. He highlighted that lack of regulation and inspection allows these unsustainable practices to continue.

The KIIs emphasized the need for improved infrastructure and community awareness to address the significant sanitation challenges in Sreemangal Municipality.

4.2 Focus Group Discussions (FGDs)

The Focus Group Discussions provided a platform for a broader group of stakeholders, including municipal officials, NGO workers, and women leaders, to share their perspectives on sanitation in Sreemangal.

- Participants voiced concerns about the widespread use of septic tanks improperly connected to drains or water bodies, leading to environmental and health issues.

Figure 6: FGD with Ward Councilor

- The sanitation department's limited manpower was identified as a major obstacle to effective sanitation management. The current staffs of two are insufficient compared to the proposed organogram, which calls for 22 personnel.
- Ward-1 was highlighted as an area of particular concern due to the prevalence of open defecation and the use of pit latrines, indicating a need for targeted interventions.
- Participants also discussed the absence of a functional sludge management system, including a lack of designated disposal sites for faecal sludge.

The FGDs underscored the urgent need for increased funding, manpower, and awareness programs to improve sanitation infrastructure in Sreemangal.

4.3 Observations of Service Providers

Direct observations of service providers in Sreemangal Municipality revealed significant gaps in the provision and management of sanitation services. The absence of key infrastructure, such as faecal sludge treatment plants and proper disposal facilities, was evident.

- The lack of sludge transport facilities was particularly concerning, as it forces households to resort to unsafe disposal methods, such as connecting septic tanks to drains or directly discharging waste into water bodies.
- Sanitation workers expressed challenges in managing the high workload due to the limited manpower and resources available in the municipality.

These observations reinforced the need for comprehensive improvements in the municipality's sanitation infrastructure and service provision.

4.4 Cross-Verification of Data

Cross-verification of data was conducted to ensure the accuracy and reliability of the information gathered through KIIs, FGDs, and observations. This process involved:

- Comparing the data from different sources to identify any inconsistencies or discrepancies. For instance, reports of improper septic tank connections were consistently mentioned across various interviews and discussions, confirming the widespread nature of this issue.
- Triangulating data with field observations to validate the information provided by stakeholders. The observed conditions in Ward-1, where open defecation and pit latrine use were prevalent, corroborated the concerns raised during the KIIs and FGDs.

The cross-verification process confirmed the critical sanitation challenges in Sreemangal Municipality and highlighted the need for targeted interventions to address these issues effectively.

5 Acknowledgements

We would like to express our sincere gratitude to all those who contributed to the development of this report. Our heartfelt thanks go to the local authorities of Sreemangal Municipality and the Ministry of Local Government for their support and collaboration throughout the process.

We appreciate the efforts of local NGOs and community-based organizations for their invaluable input and assistance in data collection and fieldwork. Special thanks to the private sector partners who provided critical insights into waste management practices and challenges.

Finally, we thank all the community members who participated in the surveys, key informant interviews, and focus group discussions, providing essential information and perspectives that shaped the findings of this report.

Your collective efforts and support have been instrumental in addressing the sanitation challenges faced by Sreemangal Municipality, and we look forward to continued collaboration in future endeavours.

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7 Appendix

7.1 Appendix 1: Stakeholder identification

Table 2: List of Stakeholders

Name	Designation	Organization
1. Md. Mahbub Alom Patwari	Secretary	Sreemangal Pourashava
2. S.A. Hamid	Executive Director	MAC Bangladesh
3. Mst. Tania Akter	Lady Councilor, Ward-1,2,3	Sreemangal Pourashava
4. Lipi	Member, Ward-4	FANSA Women Forum
5. Kajol	Member, Ward-7	FANSA Women Forum
6. Rukhshana Akter	Member, Ward-9	FANSA Women Forum
7. Narayan Babu	NGO Worker, Ward-6	Sreemangal Pourashava
8. Sweety Akter	Member, Ward-5	FANSA Women Forum
9. Md. Mahbub Alom Patwari	Secretary	Sreemangal Pourashava
10. Md. Abdul Jobbar Azad	Councilor, Ward-2	Sreemangal Pourashava
11. Md. Arman Khan	Chief Coordinator	MAC Bangladesh
12. Pankaj Ghosh Dostider	Project Manager	Idea
13. Md. Shaded	Program officer	Idea
14. Kajol	Women Leader	
15. Parvin Begum	Women Leader	
16. Shahriar Ahmed Shaiket	Community Leader	
17. Asma-Ul-Husna	Community Leader	

7.2 Appendix 2: Household Survey

In-depth information and data were collected for Sreemangal Municipality which included project documents, master plans, and baseline reports from town and national levels, statistical data like population and household income expenditure, satellite images, and Open Street Maps (OSM). Traditional paper questionnaire was not used rather android powered tab was deployed to collect household information. Questions were converted to appropriate format to use in mWater. Data collected through mWater are directly stored in a web-based database which is connected online with a website designed for this study.

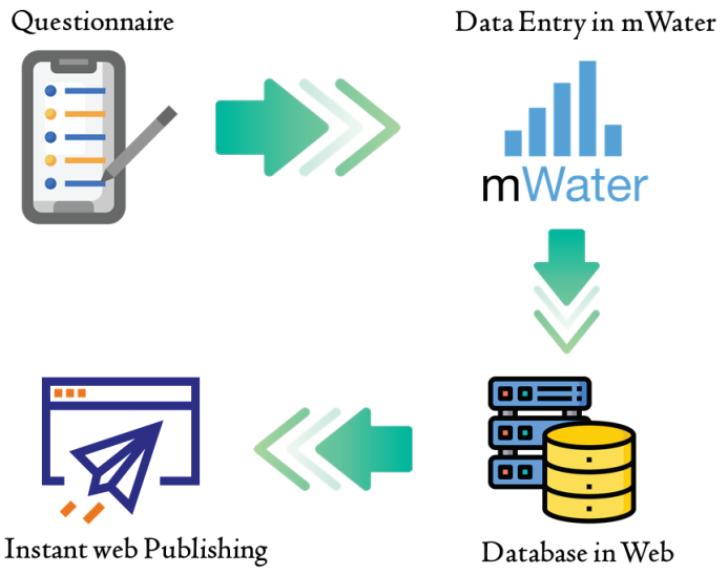
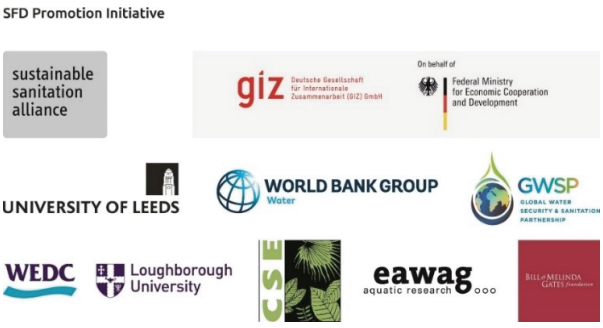


Figure 7: Workflow of mWater on HH survey.

mWater has been used for several reasons. It ensures the quality of data collection. It saves time and error in data entry. Moreover, for data analyst and field supervisor, it is convenient to examine data in real-time. It helps to prepare maps and visualize the spatial pattern of any phenomena. Extensive household questionnaire surveys were conducted for around 400 households for Sreemangal Municipality. This sample size ensures, at least, a confidence level of 95% with a margin of error of 5%. Different type of information is collected like demographic, socio-economic, household characteristics, status of water supply, existing practices of sanitation including faecal and solid waste management at the household and town levels, gender, financial and environmental status. The steps in field survey consist of downloading the mobile App and then conducting the questionnaire survey and finally transferring data to the central server. During the time of the questionnaire survey, geo-coordinates of the household and a photograph of the respondent (with her/his permission) were taken.

In addition to ensure the field data quality, the data collection team (8-10 enumerators) were properly trained. A set of different questions were asked during the survey on the full sanitation value chain. Few of the relevant questions on sanitation were: 1) User interface of the toilet, 2) Type of containment, 3) Type of building, 4) Outlets from the septic tanks, 5) Desludging of septic tanks and latrine pits, 6) Desludging frequency, 7) Responsibility of desludging, 8) Desludging process, 9) Location of sludge disposal, 10) Water supply source and risk of contamination and 11) Transportation, treatment and reuse of faecal sludge.



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Produced by:

SKS Foundation, Gaibandha, Bangladesh

Dr. Md. Mujibur Rahman, Professor, Department of Civil Engineering & Director, CSIRS-UIU.

Dr. Rumana Afrin, Associate Professor, Head, Department of Civil Engineering & Associate Director, CSIRS-UIU.

Syeda Aniqa Anjum, Research Officer, CSIRS-UIU

S.M. Tariquzzaman, Managing Director, Edifice Consultancy Ltd.

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SKS Foundation
College Road, Uttar Horin Singha, Gaibandha-5700, Bangladesh
☎ +88-02588877630 +88-02588877631 +880 1713 484430
sksfoundation@sks-bd.org, sksfoundation.bd@gmail.com

Dhaka Office:
SKS Bhaban, House # 2, Road # 16, Sector # 3, Uttara, Dhaka - 1230
☎ +88-0241091499 +880 1713 484485

www.sks-bd.org sksfoundation sksfoundationbd sks.foundation