
Barriers to Reach
WASH challenges of waterlogged community in Satkhira
WASH SDG 6 programme
WASH ALLIANCE International
Accelerating WASH
Simavi
Powerful women, healthy societies.
Uttaran

Barriers to Reach

WASH challenges of waterlogged community in Satkhira

WASH ALLIANCE

Simavi

Uttaran

Barriers to Reach

WASH challenges of waterlogged community in Satkhira

Overall Supervision

Shahidul Islam

Report preparation team

Gouranga Nandy
Jahin Shams Sakkhar
Zahid Amin Shashoto
Hasina Parvin
Hedayet Ullah
Nazma Akter
Rushated Ullah

February 2021

Published by

Uttaran

House # 32 (1st Floor), Road # 10/A
Dhanmondi R/A, Dhaka -1209, Bangladesh.
Tel: 88-02-91222, Cell: 88-01711828305
e-mai: uttaran.dhaka@gmail.com
web: www.uttaran.net

Printed by :

Digital Point, Ful Market More, Khulna.

Table of CONTENTS

Director's Message

It has been over 35 years since Uttaran has been struggling to ensure freshwater rights for the people of coastal areas of Bangladesh. Even though it has been one of the most talked about issues, but the community here is still deprived of fresh water. Now with climate change bringing new threats in all sectors, drinking water scarcity is reaching its peak due to salinity intrusion, sea level rise, frequent cyclones, and tidal surges. Nearly 4 million from southwest Bangladesh suffer from the drinking water crisis and the cost of a glass of fresh water is 3 times more than for a person living in the urban areas. The impact of this falls heavily on women, as 74% women in the area are responsible for fetching water for their families. A crude cycle that puts 20% - 30% of women's life span in searching and collecting fresh water.

Our close bond with the community and understanding about the local ecosystem has enabled us to understand the environmental and social challenges faced by the people to access drinking water and ways to adapt and overcome the crisis. Our right based approaches to ensure people's right to access to fresh water and simultaneously developing various sustainable water options for the community has been one of most effective methods in helping communities to access fresh drinking water. Yet a lot more needs to be done.

The research critically evaluates the existing drinking water crisis in the south western coastal belt of Bangladesh and tries to explain evidence-based solutions to overcome the crisis. It also elaborates about the social and economical aspects arising from the drinking water crisis and why we must urgently allocate our resources for its solutions.

My special thanks go to all the members who contributed to this study to explore the drinking water scarcity and probable sources for the south-western coastal zone of Bangladesh. I express my hearty gratitude to grass root staff of Uttaran and members of Paani Committee without whom gathering the required information would have been impossible. I am grateful to the Department of Public Health, Khulna, NGO Forum For Public Health, and every other stakeholder who shared their valuable information with us. Special thanks should be given to Government of Bangladesh, SIMAVI, UNDP Bangladesh, Care Bangladesh, BSRM for their generous support to Uttaran in WASH sector over the years.

With Best Regards

Sahidul Islam
Director
Uttaran

Abbreviations & Acronyms

BBS	Bangladesh Bureau of Statistics
Beel	Low Land
BWDB	Bangladesh Water Development Board
CEP	Coastal Embankment Project
DMB	Disaster Management Bureau
EC	Electric Conductivity
EP-WAPDA	East Pakistan Water and Power Development Board
FGD	Focus Group Discussion
FSM	Fecal Sludge Management
FY	Financial Year
Gher	Shrimp Firm
GIS	Geographical Information System
GoB	Government of Bangladesh
HHS	House Hold Survey
HYV	High Yield Varieties
JICA	Japan International Cooperation Agency
Kancha	The houses made with mad/soil
km	Kilometer
Kobadak	The main river of the study area
LGED	Local Government Engineering Department
LGIs	Local Government Institution's
LPG	Liquid Petroleum Gas
NGO	Non-Government Organization
O&M	Operation & Maintenance
PSU	Policy Support Unit
PWD	Persons with Disability
SDP	Sector Development Plan
SPARRSO	Space Research and Remote Sensing Organization
SWM	Solid Waste Management
ToR	Terms of Reference
WASA	Water Supply and Sewerage Authority
WASH	Water Sanitation and Hygiene
WATSAN	Water Supply and Sanitation
WHO	World Health Organization

EXECUTIVE SUMMARY

Among the five areas, Satkhira and Kalaroa are two municipalities and rest three are rural areas. Both urban and rural areas are common problem waterlogging. Due to heavy siltation river is going to die. River is was the main drainage channel of this coastal district Satkhira. According to the SPARRSO research findings (2017) the waterlogging problem has gradually intensified in three south-western districts over the last four decades, significantly reducing arable land. In 1973, around 6,279 hectares (ha) of land in Khulna, Jessore, and Satkhira was waterlogged, and the amount rose to 47,143ha in 2016. Report explains, silting in nearby rivers, like the Chitra, the Madhumati, the Kobadak and other rivers and canals, which reduced the water flow, was one of the major reasons of waterlogging. Global warming as well as sea level rise causes an excessive silt flow. The other reasons include unplanned sluice-gates and bridges across rivers and canals.

In the observed areas, most (81%) of the household-heads are male. Majority of the household-heads are small business owner (15.8%), service holders (14.4%), rickshaw/van/curt puller (12.9%) or day laborer (12.2%). Average size of the surveyed households is 4.62.

Reported monthly income of surveyed households did not vary significantly among the five areas. Overall, 2% HHs earn less than 5000 taka, 49% earn between 5,000 to 10,000 taka, 38% earn between 10,001 to 15,000 taka, 10% earn between 15,001 to 20,000 taka and 2% earn more than 20,000 taka per month. 69.2% of the HHs have no monthly saving and only 5.5% save more than 5,000 takas per month. 49% of the HHs have only one earning member, 31% have two earning members, 13% have three and the rest 7% have four earning members.

In two municipality areas have access to water supply. Besides, community based tube well and some other options are available in these areas. But rural areas have no access to water supply but exist community based tube well and private and public pond.

Majority of the respondents are unhappy with the present condition and blamed the public representatives and authority as they not to pay proper attention to remove waterlogging situation.

Peoples opined that waterlogging is the main problem and main obstacle to improve water supply system. However, they suggested improvement in certain areas, including making available new house connections, building storage facilities at household level, construction of platform at water point, water quality improvement, supplying water at lower cost and above all improving the drainage system of wastewater.

Whereas access to water is relatively good in all five areas, there are significant disparities among rich and slums areas in Satkhira and Kalaroa municipalities as well as rich and poor peoples in rural areas. In addition, there is significant problem in availability of water; sometimes there is no water, dirty water or water comes in drops in municipality areas.

In municipality areas, community people and NGOs played major role in selecting type of water supply. Both community people and a section of "influential people" in the community played major role in the selection process. In rural areas, also influential people in the village played a significant role to selecting points of tube well installations. In fact, the low-income group people have no say in decision making process.

While access to water supply was relatively good in all both urban and rural areas, access to proper sanitation facilities has been found to vary significantly. The situation has been found to be particularly alarming in the rainy season and post rainy season (four to six months) while waterlogging aggravated the whole scenario. Open defecation is still practiced by some children living both in the rural and some lower part of the urban areas. Above all, the sanitation system collapses in waterlogged period which make a very unhealthy situation.

The condition of toilets has been found to be very poor in some areas. Incidences of children falling into waste water were reported. Financial difficulties and temporary nature of settlement have been reported as reasons for not having better toilets.

The situation is worsening in waterlogged period while many latrines are gone under water. Many toilets constructed earlier are not functioning properly, and have become unhygienic.

The reported hygiene practices by the households are comparatively better in all areas. The reported hand washing practice by households before taking meals in the municipality 100% and after defecation 98%; whereas in rural areas, these are 82% on an average in both cases. 100% household members reported wearing sandal (slipper) before going to latrine in urban areas, compared to 92% in rural areas. Although the "reported hygiene behavior" is encouraging, it should be kept in mind that "actual hygiene practice" are often poor among communities, as revealed in the national hygiene survey 2014.

Sufferings from various waterborne diseases like diarrhea, dysentery in the both urban and rural areas are almost similar. Majority people demanded more support in WASH for further improvement of hygienic practice in their community.

Though women have sound knowledge on menstrual hygiene management but they face different kinds of difficulties related to menstruation. The difficulties cited include drying of used clothes, washing of used clothes and physical illness. Campaign is going on to develop the knowledge on menstrual hygiene management among the adolescent girls in schools and community level.

Based on the results of this study, the following major WASH challenges are identified:

1. Sanitation services in the both municipality and rural areas are still poor; most of the areas are in under water six to nine months of the year, where WASH interventions by GO/NGOs would be a challenge.
2. Absence of fecal sludge management (FSM) is endangering the sustainability of sanitation services as well as public health and environment; initiating FSM services in the areas is imperative but would also be a major challenge.
3. Integrating gender issues (with respect to design and use) and addressing special needs (e.g. for persons with disability, young and the old) are yet to be mainstreamed in sanitation interventions.
4. In many areas, ensuring long-term sustainability of water supply and water source remains a concern.
5. With respect to hygiene, significant efforts are needed for converting good knowledge/awareness (on hygiene behavior) into practice.

6. Integrated approach (i.e., covering diverse challenges, beyond WASH) for development is needed for sustainable improvement of areas.

The important observations from the present study and recommendations to address the major challenges are summarized below:

General Issues:

- o WASH challenges vary significantly among the working areas. Policy intervention is needed to make LGI's (Local Government Institution's) accountable for providing adequate WASH services to the peoples.
- o Drainage is a major problem, and should be addressed along with water supply and sanitation, considering natural condition, drainage linkages. Increased wastewater due to waterlogging aggravates drainage problem.
- o Past and ongoing interventions have significant positive impacts; such interventions play a positive role in community mobilization and participation in decision making, in the development of facilities and their O & M.
- o Active community participation promotes sustainability of WASH services. Future interventions should put more emphasis on community mobilization and participation of the community in implementation and management of WASH services.

Water Supply:

- o Despite good access to water supply, there is significant scope for improvement, e.g., with respect to number and location of water points, price of water. Municipality-NGO interventions appear to be working well in expanding sustainable water supply in the areas. Initiative is needed to replicate such good practices.
- o Water quality remains an area to be addressed more comprehensively in future interventions.
- o Sustainability of water sources/options e.g. common reservoir, individual connections, etc. needs to be assessed in greater detail in future interventions. Entrepreneurship model for water point/water distribution management should be considered in future interventions.

Sanitation:

- o Sanitation services are in a poor state in many parts of the selected areas, the situation is particularly challenging under waterlogged situation, where there is limitation in carrying out WASH intervention.

- Immediate intervention is needed to improve sanitation services with poor sanitation coverage, through involvement of Municipality (who are responsible for on-site sanitation services), NGOs and the Development Partners.
- Sustainability of sanitation services is an important issue; both technology and management affect sustainability, and hence both should be addressed adequately in future interventions.
- Absence of fecal sludge management (FSM) services is affecting sustainability of sanitation services, and contributing to environmental pollution and spreading of diseases. FSM services should be included in future interventions.

Hygiene Practices:

- Despite having good knowledge about hygiene, poor hygiene practices, especially about hand washing, appear to be a concern, and needs to be addressed in future interventions.
- Poor hygiene practices (e.g. disposal of children's faces, cloth in toilet) affect sustainability of sanitation services, and should be addressed in future interventions.

Gender Issues:

- Gender issues (e.g., separate toilets for women/girls, ensuring easy/convenient access of women/girls especially during night) and access of persons with disability (PWD) and children are often not addressed adequately. These issues need to be mainstreamed in future interventions.

Other Issues:

- Household garbage management including recycling should also be emphasized in future interventions to avoid clogging of drains as well as generate livelihood opportunities.
- Fire hazard, fuel wood, and indoor air pollution should be addressed in future interventions for inclusive development.
- Other areas of development that were not within the scope of this study, e.g., internal road network and connectivity, access to electricity supply, education, etc. are also important issues to be addressed through integrated development approach to ensure sustainability.

1. Background

Although Bangladesh has achieved commendable success in overall coverage of water supply and sanitation services, still urban WASH (Water, Sanitation and Hygiene) remains a major challenge in the context of rapidly growing urbanization in Bangladesh. But some localized problems make obstacle to reach WASH achievement, natural and artificial disaster one of them.

All of we know, Bangladesh is one of the most vulnerable countries in the world to disasters and climate change impacts. Different types of natural hazards such as flood, drought, cyclone and storm surge, tidal surges, intrusion of saline water, increase of soil salinity and river water salinity, water-logging, tidal flooding, river bank erosion, tornadoes etc., significantly affect the agriculture production systems and overall economic and social development of the country (Miah, 2010). The coastal zone covers 47,201 square kilometer land area, which is 32 percent of total landmass of the country (Miah and Islam, 2005). The coastal districts of Bangladesh have been demarcated into three adjoining regions, as south-west constituting Satkhira, Khulna and Bagerhat; south-central comprising Jashore, Patuakhali, Noakhali and Barisal, and south-east consisting of Chittagong and Cox's Bazar (BCAS, 2010). The land in these regions is intensively used for agriculture, settlements, forests, shrimp firms (local name Gher), water bodies and fisheries, salt production, industrial, infra-structural developments and tourism. The coastal areas are important ecologically, as well as they provide many environmental goods and services to people. Water-logged areas have significantly increased to 147,917.00 hectares (2008-09) from 61,929.00 hectares (1975-76) due to seasonal submergence, tidal surges, drainage congestion, increased roads and embankments, faulty sluice gate, increased shrimp culture under gher areas and heavy clays in the coastal region (Miah, 2010).


BANGLADESH
NEPAL
INDIA
INDIA
INDIA
MYANMAR
BAY OF BENGAL
Mouths of the Ganges
Sundarbans
RAJSHAHI
DHAKA
KHULNA
BARISAL
CHITTAGONG
Dhaka (Dacca)
Rajshahi
Khulna
Barisal
Chittagong
Sylhet
Rangpur
Dinajpur
Bogra
Pabna
Kushtia
Jessore
Mymensingh
Tangail
Comilla
Noakhali
Cox's Bazar
Rangamati
Bandarban
Kolkata (Calcutta)
Brahmaputra
Jamuna
Ganges (Padma)
Meghna
National capital
Provincial capital
Town, village
Major airport
International boundary
Provincial boundary
Main road
Railroad
0 25 50 75 100 km
0 25 50 75 mi
The boundaries and names shown and the designations used on this map do not imply official endorsement or acceptance by the United Nations.

Three southwestern coastal districts of Bangladesh namely Satkhira, Khulna and Jashore are the worst hit areas and experiencing severe prolonged water logging and remain submerged for long periods every year, especially during the monsoon season (Hossain, 2010, Oxfam, 2011 and UNDP, 2011). The combined effect of higher sea water levels, subsidence, siltation of estuary branches, higher riverbed levels and reduced sedimentation in flood protected areas will impede drainage and gradually increase water logging problems (Ali, 1996). According to Disaster Management Bureau (DMB) of the Ministry of Food and Disaster Management (MoFDM) estimation about 20,0000 people of about 41,000 families were affected in the year 2009 and more than 80,0000 people were affected in the year 2011 by monsoon flood in Satkhira district.

Drinking water, sanitation, solid waste management and other basic services including health, education, fire safety, and security remain inaccessible due to gaps in relevant policies and disparity in development plans and strategies. Absence of specific policies and regulatory framework for development of communities and squatter settlements are also major barriers. A certain period of a year usually people are not able to use safe water living in both urban and rural areas are often unaware of the ill effects of unsafe water, unhygienic latrines, and improper disposal of solid wastes and consequently suffer from diseases and burdens of health care costs.

For improving WASH services, it is a prerequisite to have a clear understanding of the WASH challenges in Satkhira areas. However, there is lack of reliable data/information on the current WASH situation in both urban and rural areas.

2. Study Objectives

The objective of this study was to assess the current situation and challenges of WASH in five selected area in rural three unions (Agardari, Balli and Jhaudanga) of Satkhira upazila and Satkhira and Kalaroa Municipality.

Specific objectives of this study were:

a) To establish evidence based strong rationale for improving access to WASH services for waterlogging communities; and

b) To influence relevant stakeholders including GoB line departments, donors, I/NGOs and raise public awareness on sustainable water and sanitation interventions for waterlogging communities.

3. APPROACH AND METHODOLOGY

The approach and methodology followed and major specific activities carried out under the study are summarized below:

3.1 CONSULTATIONS AND FIELD VISITS

The study team had many meetings with Uttaran officials. The meetings were very useful for better understanding of the assignment and getting a clear overview of the projects implemented by Uttaran. The study team finalized the modalities of work (including contents of questionnaire and areas to be focused in questionnaire survey) in consultation with Uttaran. Special emphasis was placed on the WASH facilities and challenges especially waterlogging along with other important issues. The study team also visited the possible project locations to have an overview of the present situation in the field. Selection of sites for questionnaire sample survey and Focus Group Discussions (FGDs) were finalized based on the findings of the field visits by the study team and discussions carried out with Uttaran officials.

3.2 DOCUMENT REVIEW

The study team collected, compiled and reviewed necessary relevant documents, particularly those on WASH situation in urban and national level surveys (PMID-WSUP, 2013; PSU-ICDDR'B-WaterAid, 2014; WHO-Unicef, 2014).

3.3 SURVEY

A questionnaire sample survey was conducted during the month of January 2021 in five selected areas. The activities carried out under the survey are listed in the following section.

3.3.1 DEVELOPMENT OF SURVEY INSTRUMENTS

A draft questionnaire was developed considering the objectives of the study and applying best professional judgment. The questionnaire was designed with a view to collect information on all major aspects of this project. The questionnaire comprised of six major sections: Socio-economic profile, Water supply, Sanitation, Hygiene (including menstrual health and hygiene management), Waterlogging situation, and other related issues. The questionnaire was designed to capture a clear picture about the present situation, gaps, challenges and sustainability of WASH facilities and cross-cutting issues.

The questionnaire was also made flexible so that required information could be gathered from context-specific information using the same questionnaire. The draft questionnaire was shared with Uttaran. Based on the feedbacks from Uttaran and field tests, the draft questionnaire was finalized (See Annex-1).

3.3.2 FIELD TESTING OF QUESTIONNAIRE

On 04 January 2021, field testing of the draft questionnaire was performed in the Agardari Union and Satkhira municipality areas. The primary objective of field testing of the draft questionnaire was to fine-tune the questionnaire for overcoming the difficulties that would have been faced otherwise, and facilitating smooth conduction of the questionnaire survey by the enumerators. The outcome of the field tests was used to finalize the questionnaire.

3.3.3 TRAINING OF ENUMERATORS

A total of 10 enumerators (five male and five female) and one supervisor, working for Uttaran, having long experience of working in community development in both urban and rural areas, were engaged considering their experience, qualification and availability to carry out the field survey works. To effectively bring out the required information from the study sites, extensive training was provided to the field enumerators with the finalized survey instruments so that the enumerators are aware of the major objectives of this project.

3.3.4 LOCATION AND SAMPLE SIZE SELECTION

Three rural areas in Satkhira Sadar Upazila and two areas of two municipality areas where each area of the one municipality.

In compliance with the ToR and discussion with Uttaran officials, a total of 100 households were interviewed in five areas (i.e, 20 households in each area).

3.3.5 HOUSEHOLD INTERVIEWS

Based on the sampling protocol mentioned in the previous section, 100 households were interviewed using the finalized survey instruments. Special attention was given to develop a friendly relationship with the community so that correct information could be gathered through the household interview. The study team also supervised the interviews closely and helped to eliminate confusions, as and when one was encountered.

Most of the respondents were female (87%) and 93% of them were in the age group of 18-65.About 35% of them were illiterate and 40% passed primary school. Most of the respondents were housewives (45.9%). Among others, domestic help (20.7%) and small businessmen (9.1%) were major profession of the respondents.

3.3.6 DATA PROCESSING

The data collected from the survey were scrutinized, processed and entered into a computer database system.

The database was designed in accordance with the questionnaire, so that minimum effort is required to enter the data. The system was built keeping some provision for cross checking of data to minimize errors. The design also considered quick and effective analysis of data.

3.4 FOCUS GROUP DISCUSSION

A total of 6 Focus Group Discussions (FGDs) in the 6 selected areas were carried out in accordance with the ToR. The main purpose of the FGDs was to get views of the people of the Uttaran's working areas on different aspects of WASH and other issues (e.g., waterlogging problem, indoor air pollution, fuel-wood and cooking practices). Participation of different stakeholders including member of different professions, age groups, genders and social groups were ensured in the FGDs. FGDs being conducted at: (a) Two FGD's -one is women group and another is adolescent girl, at Ranadipur, Satkhira municipality; (b) Two FGD's (male, female mix group) at Sultanpur 4 no councilor office, Satkhira sadar and (c) Two FGD's (Female) at Patharghata, Jhaudanga, Kalaroa.

To understand the peoples' view and their understanding and observation about the WASH situation and water logging problem five key informant interviews has also been taken.

3.5 DATA ANALYSIS AND INTERPRETATION

The primary data collected under the study were analyzed with a view to assess the present situation of WASH, and to identify gaps and challenges related to WASH. The objectives of this study were kept in mind during data analysis and interpretation. Different software packages like IBM SPSS Statistics 22 and MS Excel were used for data analysis.

4 FINDINGS

The following sections describe the major findings of the study, highlighting WASH challenges in waterlogged Satkhira based on the results of the questionnaire survey, information gathered in the FGDs, and discussions held with key personnel.

4.1 OVERVIEW OF AREAS

Satkhira is a city and district headquarter of Satkhia District of Khulna Division, south-west Bangladesh. The city has a population of about 200,000, making it 20th largest city in Bangladesh. Satkhira is also a municipality with a 31.10 square kilometer.

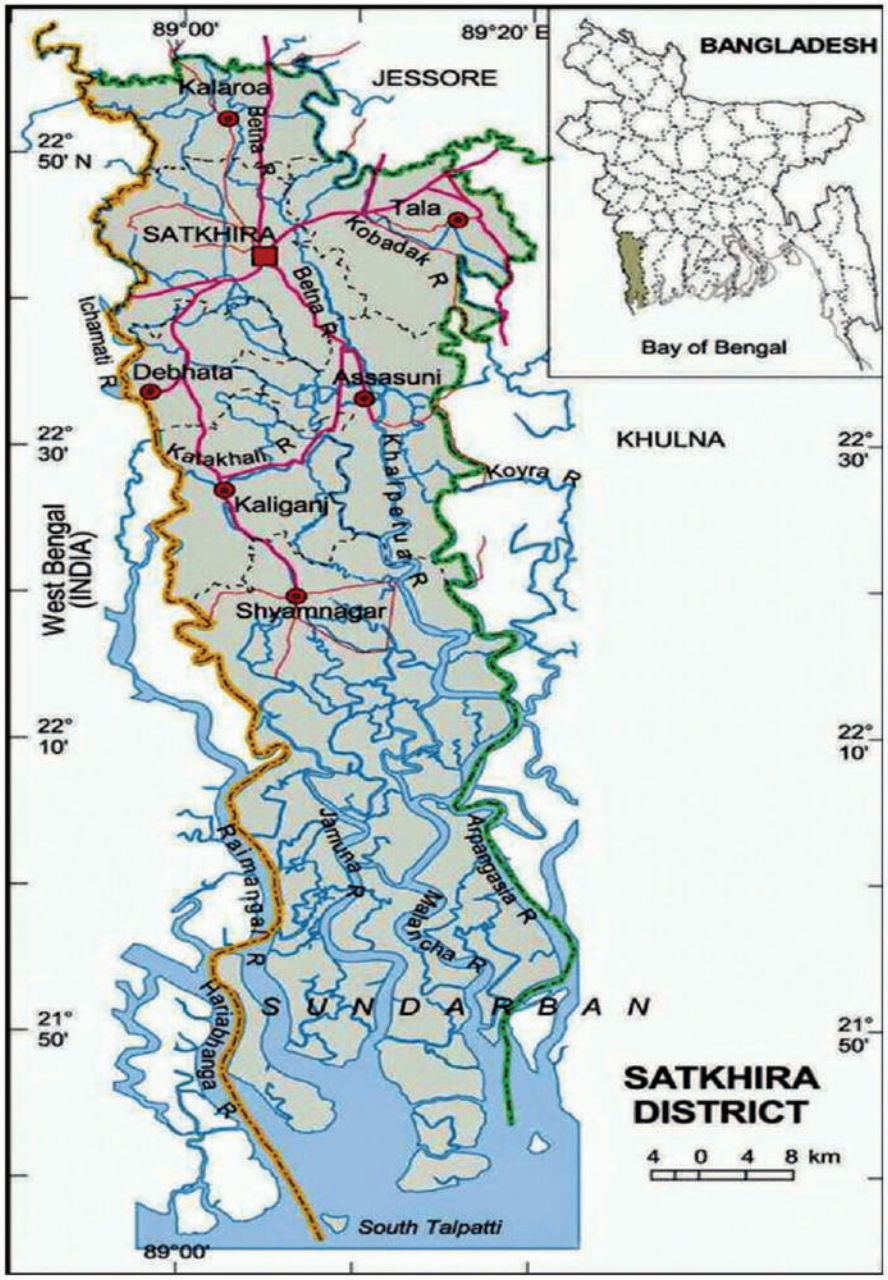
Satkhira district is situated in the south west corner of the country with the tidal flow of the Bay of Bengal. Over the terrain of the district there are four rivers flowing namely Morirchappa, Betna, Shalika and Kopatakkha (Kobadak) among them 100% loss its navigability which creates congestion problem.

The Space Research and Remote Sensing Organization (Sparrso), a government organization said it's research report (2017), the waterlogging problem has gradually intensified in three south-western districts over the last four decades, significantly reducing arable land. In 1973, around 6,279 hectares (ha) of land in Khulna, Jashore, and Satkhira was waterlogged, and the amount rose to 47,143ha in 2016. The research was conducted in the districts from 2008 to 2016 through analyzing satellite images of the region between 1972 and 2016.

According to the report, silting in nearby rivers, like the Chitra, the Madhumati, the Kobadak and canals, which reduced the water flow, was one of the major reasons of waterlogging. Global warming as well as sea level rise causes an excessive silt flow. The other reasons include unplanned sluice-gates and bridges across rivers and canals. The three districts face the most severe waterlogging in the country, and last year, Keshabpur, Dumuria, Abhaynagar, Monirampur, Tala, Satkhira Sadar, Kalaroa, Terokhada and Jashore Sadar upazilas suffered the most, said the study.

The report recommended improving the drainage system, building of barrages in rivers, if necessary, to increase the water flow, and forming a national expert committee to monitor waterlogging. (The daily Star, 12:00 Am, May 01, 2017 / Last Modified: 12:00 Am, May 01, 2017)

Satkhira district has about 18 lac population. In every year this district has met the demand of fish in the district and supplied about 20 thousand tons of fish to the other part of the country.


89°00'
89°20' E
JESSORE
Kalaroa
Betna R
22° 50' N
SATKHIRA
Tala
Kobadak R
Betna R
Ichamati R
Debhata
Assasuni
22° 30'
Katakhali R
Khalpetua R
Koyra R
KHULNA
Kaligonj
West Bengal (INDIA)
Shyamnagar
22° 10'
Jamuna R
Ralmangal R
Arpangasia R
Malancha R
Hariabhanga R
S U N D A R B A N
21° 50'
South Talpatti
89°00'
BANGLADESH
Bay of Bengal
SATKHIRA DISTRICT
4 0 4 8 km

In the district, there has been some damage in cereal production due to increasing shrimp cultivation in agricultural saline belt. From the early time of 1980's unauthorized cutting of embankment and unplanned intrusion of saline water has been increased and consequently some influential people started shrimp cultivation.

In all over the district about 25 thousand shrimp Gher (shrimp farm) has been established in about 54 thousand hectares of agricultural land in saline water.

Water logging has been the severe problem in the district. Local people have been suffering due to the long-time water logging of their land. Drainage problem has been acute. Health service and educational activities are also affected for water logging. In the city area, unplanned infrastructure causing normal water flow obstructed that makes life abnormal.

Waterlogging have varying degrees of inundation, both in terms of duration of inundation as well as height of the water.

As elevation is the key determinant of inundation, those city areas and villages with large amounts of low lying land are the ones facing the most severe impacts. These villages are affected severely every year regardless of the rainfall situation. Other affected villages face moderate to severe levels of impact depending on the rainfall intensity. In much of the zone there are areas where there are affected villages interspersed non-contiguously with non-affected villages due to elevation variations.

Kalaroa Upazila has very high level of coverage of waterlogging, meaning there are very few non-affected villages.

It is not an overstatement to say the direct impact of the waterlogging on livelihoods is massive. Cultivation of amon rice, vegetables, jute and mustard seed is minimal to zero in the affected villages. Mango production is very low in affected areas due to the death of trees (very high rate of tree death). Variations from year to year mean that sometimes some of these crops are cultivated in small amounts. For example, jute was being harvested in small amounts recent years.

It is likely that people's ability to maintain a minimum level of hygiene and dignity related to bathing and defecating is much more challenging during waterlogging given they are surrounded by water.

Other indirect impacts on livelihoods is the impact on education and marketing. Many schools in the affected areas are inundated and during peak flood periods roads and trading areas are covered.

Many households need to make repairs to their homes after mud foundations have been inundated with water for months on end. People seeking work need to travel further to find opportunities. There is an overall trend of increasing migration out of the area. Poorer households tend to migrate to neighboring districts and divisions to find seasonal work.

4.2 SOCIO-ECONOMIC CONDITION

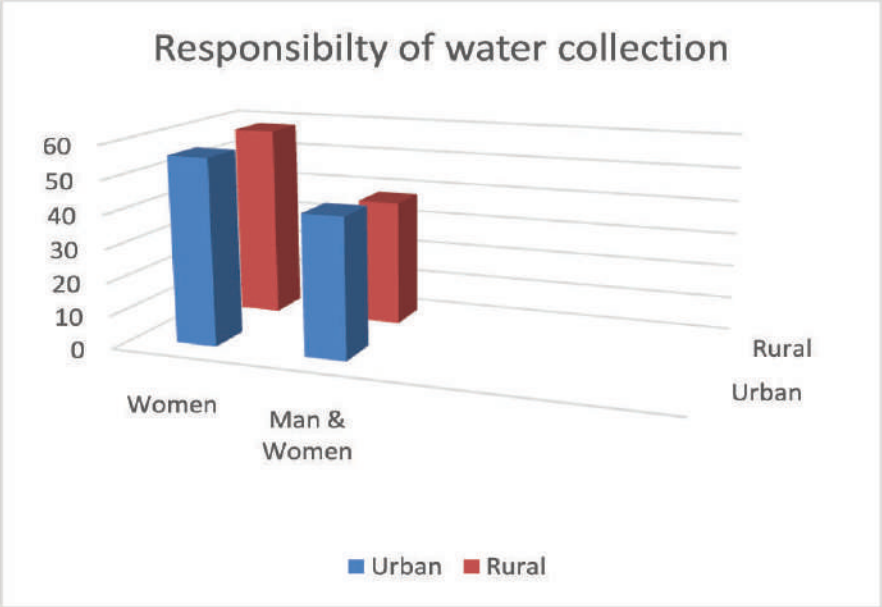
In the studied areas, most (81%) of the household-heads are male. Majority of the household-heads are small business owner (15.8%), service holders (14.4%), rickshaw/van/curt puller (12.9%) or construction laborer (12.2%).

Average size of the surveyed households is 4.62, comprising of 34% male, 36% female and rest children under age of 18.
About 57% of the respondents are living semi-pucca building. 97% of the HHs have electricity in their house, and 14% HHs (among those who pay house rents) do not pay electricity bill separately.
Reported monthly income of surveyed households did not vary significantly among the five areas. Overall, 2% HHs earn less than 5000 taka, 49% earn between 5,000 to 10,000 taka, 38% earn between 10,001 to 15,000 taka, 10% earn between 15,001 to 20,000 taka and 2% earn more than 20,000 taka per month. 69.2% of the HHs have no monthly saving and only 5.5% save more than 5,000 taka per month. 39% of the HHs have only one earning member, 41% have two earning members, 16% have three and the rest 3% have four earning members.

4.3 WATER SUPPLY

4.3.1 OVERALL SCENARIO

In two municipality areas have access to water supply; municipal authority has given them connection of water supply. Besides these two types of sources, community based tube well and ponds are available in these areas. The rural areas have also access to water supply but not in connection while community based tube well and ponds are available.



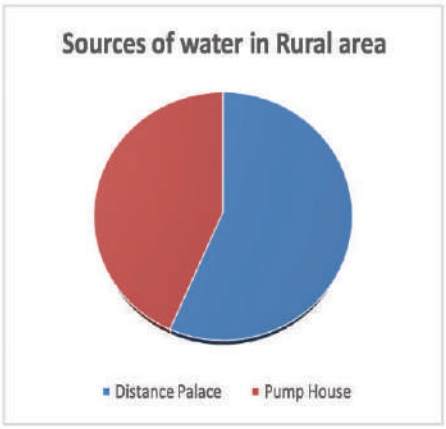
Most of the households in the surveyed both urban and rural areas have good access to water. In dry season, they face some problem but acute problem has arisen in rainy season while waterlogged situation developed. Water supply pipe-line, roads, houses go under water in waterlogging period resulted safe water become a very costly thing.

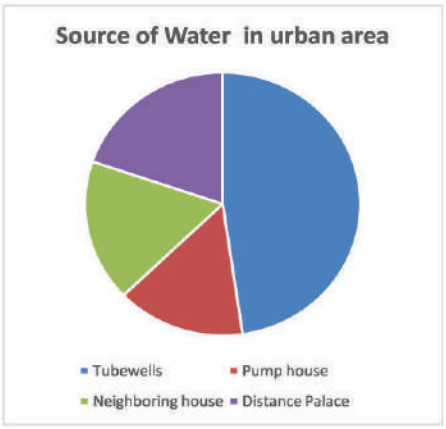
Wastewater generated from water use is discharged into nearby surface drains by most of the HHs in the municipal areas. Discharging to low lying areas/water bodies, nearby pond or ditches are other common options for drainage of wastewater. Generation of wastewater increases with increase in water use; however, disposal of wastewater is seldom addressed along with water supply in any intervention.

According to 56% respondents in urban areas and 58% respondents in rural areas, mostly women and girls of the households collect water. However, 42% and 38% respondents respectively opined that both men and women collect water. The water point is located within 20 feet of the house for 51% cases. Around 83% HHs spend less than 60 minutes per day to collect water. Whereas in rural areas, the water point is located at distance 50 feet or more for 58% cases; and 73% HHs spend more than 60 minutes a day for collecting water.

Thus, distance traveled to fetch water, and time spent for collecting water do not appear to be unreasonable in the communities.

Majority of respondents in all five areas reported that water quality is not being monitored regularly by any organization. No doubt, water quality is an important issue, and should be given more emphasis if positive impacts of interventions are to be achieved.





Sources of water is collection from mosque/ pump houses, neighboring houses, tubewells or purchase from street vendors. Poorer area of both municipalities, tube well (41%) is a major option along with pump house or mosque (13%), neighboring house (15%), and collection from a distant place (17%). On the other hand, in the three rural areas, collection from a distant place (26%), mosque and pump house (20%) is the major options. Thus, sustainability of water sources remains a major issue and needs to be addressed in future interventions.

Respondents identified various issues regarding the water options they use. In Satkhira pourashava, the major problems reported by the respondents included not getting sufficient water (25%), water point at a distant place (16%), long time required for water collection (19%), water not always available (18%) and dirty water (12%). In the three rural areas, the problems identified included water point at a distant location (27%), long time required for collection (23%) and not getting sufficient water (21%), along with some other problems.

The major benefit of present water supply options as reported by the respondents is water availability; it was reported by 58% respondents in both municipality areas (Satkhira and Kalaroa) and 45% respondents in the three rural areas. Some other benefits mentioned by the respondents include less time required to fetch water and travelling of less distance to collect water. Majority of the respondents are happy with the present system and did not feel any requirement for upgrading the system. About 30% of respondents in both urban and rural areas opined for some improvement of the changing the present system.

Major improvements suggested by the respondents included drainage system developed, making available new house connections, building storage facilities at household level, construction of platform at water point, water quality improvement and supplying water at lower cost. In the urban areas, 18% of the respondents reported "fully satisfied", 70% "somewhat satisfied", and the rest 12% reported "neither satisfied nor dissatisfied" in overall performance of present water supply system.

In the rural areas, 18% are "fully satisfied", 59% are "somewhat satisfied", 14% are "neither satisfied nor dissatisfied", 8% are"slightly dissatisfied" and the WASH Challenges in both urban and rural areas is water logging pointed out by the respondents. In crisis like dry season and waterlogging period when the present water supply system is broken or become non-functional, the households collect water from other sources, which include collecting from neighboring households, from pump-houses and mosques or buying water from street vendors.

4.3.2 VARIATION IN ACCESS TO WATER AMONG URBAN and RURAL AREA

Whereas access to water is relatively good in all two municipality areas, there are significant disparities among rural areas with respect to nature of access. Both urban and rural people are facing significant problem in availability of water; sometimes there is no water, comes dirty water or water comes in drops. In the absence of water, people are often forced to use contaminated water and pass their life without taking bath.

In crisis period, most people buy water from available sources managed by a section of influential community people or individual; cost of water varies from taka 1 to taka 5 per Kolshi (each Kolshi can hold about 10 to 12 Liters of water). Water requirement varies from 10 to 20 Kolshi per day. However, inwaterlogging period (almost half of the year) is the major problem with availability and quality of water.

4.4 SANITATION

While access to water supply is relatively good in all the areas, access to proper sanitation facilities has been found to vary significantly among the areas. The situation has been found to be particularly alarming in the lower part (bordering area) of municipality areas. It should be noted that some unhygienic (Kancha) latrine still exists both urban and rural areas. During FGD, participants reported that open defecation is still practiced by some children living in the rural areas.

In bordering area of municipality, where some people are still practicing open defecation (some childreen) and majority of the latrines are unhygienic (i.e. without water-seal pan and venting system). The condition of toilets in these areas has been found to be very poor. Incidences of children falling into toilet were reported by participants in the FGD. Financial difficulties and temporary nature of settlement were reported as reasons for not having better toilets.

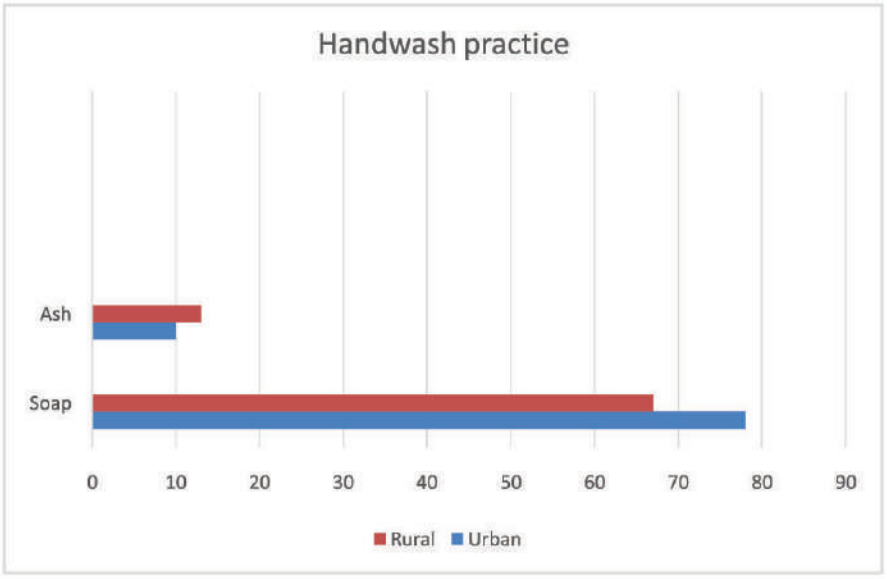
The situation is much better in middle part of municipality where open defecation has been eliminated. Comparatively rich people are living here who have own building and water sources like deep tube well. However, it has been reported during FGD that many of the latrines constructed under earlier "intervention" are not functioning properly, and have become unhygienic.

There is no organized fecal sludge management (FSM) service in any of the areas. When the pit or septic tank of sanitary latrine becomes full, then the household/community call sweeper to clean the septic tank/pit manually or sometimes they utilize mechanical equipment. The emptied sludge is directly discharge into drains, ditch/water bodies or low-lying areas in both urban and rural areas of Satkhira. This practice is causing serious environmental pollution and posing risks to public health which is aggravated in waterlogging period. Very few reported discharges into municipal sewer network and a significant number of households have no idea/knowledge on this issue. Desludging of pit/septic tank in an environmentally friendly way is a major issue and some households want an environment friendly pit emptying service and they are willing to pay for such service. However, most of the households did not feel any necessity for such a service and they are not willing to pay for this service.

4.5 HYGIENE AWARENESS AND PRACTICES

According to survey results, the reported hygiene practices by the households are comparatively poor in the bordering areas of municipality and rural areas. The reported hand washing practice by households before taking meals is 100% in urban areas, and after defecation 98%; whereas in rural areas, these are 82% on an average in both cases. 100% household members reported wearing sandal (slipper) before going to latrine in urban areas, compared to 96%in rural areas. The survey also revealed that in urban areas, 98% household members wash their hands before feeding and after anal cleansing of their children, which are slightly better in comparison to the rural areas, where the figures are 82% and 78%, respectively. Although the "reported hygiene behavior" is encouraging, it should be kept in mind that "actual hygiene practice" are often poor among communities, as revealed in the national hygiene survey (PSU-ICDDR'B-WaterAid, 2014).

About 78% households practice hand washing with soap and 10% with ash in urban areas; the corresponding figures in the rural areas are 67% and 13%, respectively. In all (100%) households have enough water for bathing and washing clothes and 98% can take bath every day; but in waterlogging period, the scenario is totally reverse while bathing, washing even drinking water become shortage and contaminated.



Sufferings from various waterborne diseases like diarrhea, dysentery in the five areas are almost similar. 41% of households in urban and 27% in the rural areas think that their behavior on hygiene practices has been changed gradually. Majority (over 95%) of the respondents in all areas demanded more support in WASH for further improvement of hygiene practice in their community. Though 89% of women have sound knowledge on menstrual health and hygiene management in the urban areas, 39% of the respondents reported that they face different kind of difficulties related to menstruation. In the rural areas 49% women on an average have sound knowledge on menstrual health and hygiene management and 51% respondents mentioned about difficulties during menstruation. The difficulties cited include drying of used clothes, washing of used clothes and physical illness. In urban areas 45% women and rural areas only 35% women said that safe and suitable menstrual health and hygiene management facilities are available and women and adolescent girls can manage their menstruation hygienic maintaining privacy.

4.6 OTHER RELEVANT ASPECTS

Majority of respondents in the surveyed areas could not recognize the existence of any systematic approach (such as composting or van collection) for solid waste management (SWM). Overall about 20% respondents participated in campaigns or awareness raising sessions on Solid Waste Management in urban areas. Most of the households (83%) in the studied areas drain household waste water in nearby drains or khals (canals) or open lands. The other options for draining the wastewater are platform of the water-point, low lying area and municipality's sewer network.

88% of the respondents in all areas have identified water logging is a major challenge in WASH activities. This problem at present is being taken care of by manual drainage of wastewater at distant location; about 85% respondents in all areas said that responsible person is not clean the existing drains. Many respondents expressed their concerns for no action in this regard, which is exacerbating their sufferings.

Most of the respondents (71%) in urban areas and only 7% respondents in rural areas opined that their communities have firefighting preparedness. However, majority of the respondents (80%) in urban and 45% respondents in the rural areas told that it would not be possible for the firefighting vehicles to enter most of the areas due to narrow road.

4.7 FINANCIAL ASPECTS

Most of the respondents of the all areas pay for using water monthly or buy water as needed. The water bill is collected by the municipality authorities. The reported payment varies from less than Taka 30 to more than Taka 150 per month. Some people reported contributing for installation of present water options.

5. MAJOR CHALLENGES

Based on the results of this study, the following major WASH challenges are identified:

1. Sanitation services in bothmunicipality and village areas poor; privately owned houses are of concern in this regard, where WASH interventions (by GO/NGOs) would be a challenge. In city area people are not always follow rules and regulations related house construction and city authority are also not making proper drainage system.

2. Drainage is a major problem, and should be addressed along with water supply and sanitation, considering micro (i.e., within the slum) - macro (i.e., surrounding the slum) drainage linkages. Increased wastewater due to improved water supply often aggravates drainage problem.

3. Absence of fecal sludge management (FSM) is endangering the sustainability of sanitation services as well as public health and environment; initiating FSM services in community is imperative but would also be a major challenge.

4. Integrating gender issues (with respect to design and use) and addressing special needs (e.g, for persons with disability, young and the old) are yet to be mainstreamed in sanitation interventions.

5. In many areas, ensuring long-term sustainability of water supply and water source remains a concern.

6. With respect to hygiene, significant efforts are needed for converting good knowledge/awareness (on hygiene behavior) into practice.

7. Integrated approach (i.e. covering diverse challenges, beyond WASH) for community development is needed for sustainable improvement of localities.

6. OBSERVATIONS AND RECOMMENDATIONS

The important observations from the present study and recommendations to address the major challenges are summarized follows:

General Issues:

o WASH challenges vary significantly among both urban and rural areas; WASH challenges appear to be particularly acute in waterlogged period which continuing four to six month a year. Policy intervention is needed to make develop this situation.

o Past and ongoing interventions have significant positive impacts; such interventions play a positive role in community mobilization and participation in decision making, in the development of facilities and their O & M.

o Active community participation promotes sustainability of WASH services. Future interventions should put more emphasis on community mobilization and participation of the community in implementation and management of WASH services.

Water Supply:

o Despite good access to water supply, there is significant scope for improvement, e.g., with respect to number and location of water points, price of water.

o Water quality remains an area to be addressed more comprehensively in future interventions.

o Sustainability of water sources/options e.g. common reservoir, individual connections, etc. needs to be assessed in greater detail in future interventions. Entrepreneurship model for water point/water distribution management should be considered in future interventions.

Sanitation:

o Sanitation services are in a poor state in many areas, especially in bordering areas of municipality; the situation is particularly challenging in waterlogged period, where there is limitation in carrying out WASH intervention.

- Immediate intervention is needed to improve sanitation services with poor sanitation coverage through involvement of municipality authority (who are responsible for on-site sanitation services), NGOs and the Development Partners.

- Sustainability of sanitation services is an important issue; both technology and management affect sustainability, and hence both should be addressed adequately in future interventions.

- Absence of fecal sludge management (FSM) services is affecting sustainability of sanitation services, and contributing to environmental pollution and spreading of diseases which is aggravated in waterlogged period. FSM services should be included in future interventions.

Hygiene Practices:

- Despite having good knowledge about hygiene, poor hygiene practices, especially with regard to hand washing, appear to be a concern, and needs to be addressed in future interventions.

- Poor hygiene practices (e.g., disposal of children's faces, cloth in toilet) affect sustainability of sanitation services, and should be addressed in future interventions.

Other Issues:

- Gender issues (e.g., separate toilets for women/girls, ensuring easy/convenient access of women/girls especially during night) and access of persons with disability (PWD) and children are often not addressed adequately. These issues need to be mainstreamed in future interventions.

- Household garbage management including recycling should also be emphasized in future interventions to avoid clogging of drains as well as generate livelihood opportunities.

- Other areas of development that were not within the scope of this study, e.g., internal road network and connectivity, access to electricity supply, education, etc. are also important issues to be addressed through integrated development approach to ensure sustainability.

References

Policy Support Unit (PSU) of Local Government Division, 2012. National Strategy for Water and Sanitation Hard to Reach Areas of Bangladesh.

Policy Support Unit (PSU) of Local Government Division, 2011. Sector Development Plan (SDP) (FY 2011-25): Water Supply and Sanitation Sector in Bangladesh.

PSU-ICDDR'B-WaterAid (2014) Bangladesh National Hygiene Baseline Survey, Preliminary Report, June 2014.

The daily Star, 12:00 AM, May 01, 2017 / LAST MODIFIED: 12:00 AM, May 01, 2017

WHO-Unicef (2014) Progress on Drinking Water and Sanitation, 2014 Update.

WSUP (2013) Report on analysis of factors affecting the usage, operation and maintenance of community latrines in low income communities (LICs) in Dhaka city, October 2013.

ANNEXES-1

Name of the FGD's participants

FGD 01. Rasulpur, Satkhira Municipality with housewife

01. Fatema
02. Kajol
03. Marufa
04. Beauty
05. Anwara
06. Rabea
07. Rehana
08. Nasima
09. Anwara
10. Rina
11. Pia
12. Juin
13. Sabina
14. Selina

FGD 02. Rasulpur, Satkhira Municipality with students

01. Boishakhi Parvin Tisha
02. JarinTashnimAddri
03. Sumayalasmin
04. Sadia
05. Lipika Sultana
06. Ria Khatun
07. Riad Hossain
08. Md. Rezoan Hossain
09. Rahima Khatun
10. Suraiya
11. Sohanur

FGD 03. Sultanpur Councilor's office Satkhira Municipality

01. Md. Kabir Hossain
02. Fatema Begum
03. Shahnaj Parveen
04. Azmira Begum
05. Asma Khatun
06. Jajal Begum
07. Majeda Begam
08. Md. Rana Kazi
09. NazmaAkter
10. Rehana Begam
11. Tuli Islam

FGD 04. Sultanpur Councilor's office Satkhira Municipality

01. Anjuara
02. Abeda Khatun
03. Toma Sultana
04. Banecha Khatun
05. Sufia Begum
06. Md. Fazlu Gain
07. Nilufa khatun
08. Kulsum Begum
09. Asma Khatun
10. Sabina Khatun
11. Hasnahena
12. Doly Begum

FGD 05. Pathorhgata, Jhaudanga, Kalaroa, Satkhira

01. AleaAkter
02. Minar Nahar
03. Shawpna Nahar
04. Jamela Begum
05. Rehena Begum
06. Hridoyahasan
07. Sajela Begum
08. Suma Begum
09. Tania Begum
10. Momena Begum
11. Jannatara Begum
12. Shahidul Islam
13. Sakhina Begum
14. Lipika Begum

FGD 06. Pathorhgata, Jhaudanga, Kalaroa, Satkhira

01. Suromi Begum
02. Amirannesa
03. Tumpa Khatun
04. Jesmina Sultana
05. Rokeya Begum
06. Arifa Nahar
07. Nazira Khatun
08. Beuty Begum
09. Ferija Begum
10. Anwara Begum
11. Shanara Begum
12. Shila begum
13. Sakhina Begum
14. Keya Khatun
15. Ayesha Khatun
16. Rehena Begum

Uttaran

House # 32 (1st Floor), Road # 10/A
Dhanmondi R/A, Dhaka -1209, Bangladesh.
Tel: 88-02-91222, Cell: 88-01711828305
e-mai: uttaran.dhaka@gmail.com
web: www.uttaran.net