

## **Sustainability Options of Sanitation Projects in the Slums of Khulna City**

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### **1. INTRODUCTION**

The success or sustainability of a sanitation project is achieved when it meets its objectives and is maintained by the users over a significant period of time (Ahmed et. al, 2000). A sanitation project is regarded as sustainable when it provides an efficient and reliable service at a level which is desired; can be financed or co-financed by the users with limited but feasible external support and technical assistance; and is used in an efficient and effective way without negatively affecting the environment. Despite huge investments in sanitation during the United Nations International Drinking Water Supply and Sanitation Decade (1981-90), an estimated 2.5 billion people, half of the developing world and more than 35% of the world's population lack access to adequate sanitation (WHO, 2000). The Local Government Division (LGD) of the Ministry of LGRD&C (1998) in its "National Policy for Safe Water Supply & Sanitation 1998" mentioned that it is globally recognized that physical provision of services alone is not a sufficient precondition for sustainability or improvement of health and well being of the people. Greater attention needs to be focused on elements of behavioral changes of users and sustainability through user participation in planning, implementation, management and cost sharing. The need for change within the conventional programs are recognized by the Government and all stakeholders in the sector. The aim to bring about the changes calls for transition from traditional service delivery arrangement. Institutionalization of strategic partnership process between the central and local Government in coordination with other organizations within the civil society is one way of bringing about this change. Regarding community participation in planning and management of sanitation system UNICEF (2000) in its report titled "Sanitation for All" highlighted that community members involved in sanitation programmes from planning to management to sanitation promotion feel a sense of ownership and show a greater willingness to help programmes succeed.

There are more than 520 slum and squatter settlements in the third largest industrial Khulna City of Bangladesh where more than 20% of total city population of 1.5 million live. There are some specific government organizations (GOs) and NGOs in Khulna City that implemented and still now implementing a number of sanitation projects in the slums since 1985. In spite of implementation of repeated sanitation projects or development initiatives by GOs and NGOs, the sanitation system in the slums could not sustain. Sustainability options are very important components of sanitation and hygiene projects of present days. In the study, communal and shared latrines are found nearly abandoned, unhygienic and in poor condition due to absence or lack of community participation for repairing and maintenance whereas twin pit latrines used mostly by individual families are found good. Some of the projects have shown good results with better performance whereas many projects could not sustain with good results. The paper highlights the sanitation projects in the slums of Khulna city since 1985, options considered in sanitation project for bringing their sustainability, reasons of insustainability and failure of the projects and recommendations for bringing their sustainability.

## **2. OBJECTIVES OF THE STUDY**

Objectives of the study are:

- To study the sanitation projects in the slums of Khulna city since 1985
- To find out the options considered in sanitation project for bringing their sustainability
- To find out the reasons of insustainability and failure of the sanitation projects in the slums
- To draw some recommendations of more options for sustainability of sanitation projects

## **3. METHODOLOGY**

The study was conducted during 2008-2009 in three slums of Khulna City, namely Rupsha slum on Government khas land and Christian community land; Montu Colony slum on Bangladesh Railway land; and Kulibagan slum on Ispahani Company private land. Primary data for the study was collected through structured household questionnaire survey, interview with group and committee members of sanitation and related projects, and concerned GO-NGO staffs. A total of 384 households (22%) were randomly selected and surveyed from the slums, where 215 households were from Rupsha slum, 75 households were from Montu Colony slum and 94 households were from Kulibagan slum. Books, project reports and implementation guidelines, journals, newspapers etc. were reviewed as secondary data sources.

#### 4. KHULNA CITY AND STUDY SLUMS

Khulna is the 3rd largest industrial city of Bangladesh. It is a divisional city and acts as regional hub of administrative, institutional, commercial and academic affairs. It is located on the banks of the Rupsha and the Bhairab rivers. The city covers an area of 45.65 square kilometers with a population of near about 1.5 million. There are 520 slums in Khulna city. Most of the slums of Khulna City have established after 1971, the year of independence of Bangladesh. About 73% slums have been established after 1971. Among 73% slums, 15.2% in 1971-75, 15.8% in 1976-80, 12.9% in 1981-85, 10.2% in 1986-90 and the rest 18% in 1991-2005. In the slums of Khulna city 188,442 poor and landless people live. Density of population per acre and per kilometer in the slum area is 538 and 132,988 respectively (CUS, 2006).

#### 5. SUSTAINABILITY OF SANITATION SYSTEM

The achievement of sanitation coverage is not enough, it must be sustainable to gain the benefit from total sanitation coverage. World Commission for Environment and Development (WCED) has defined sustainable development as “development that meets the needs of the present without compromising the ability of the future generation to meet their own needs”. Sanitation improves environment and hence sustainability refers mainly to “functional sustainability” and to some extent to “environmental sustainability” (GOB SACOSAN, 2003).

##### 5.1 Functional Sustainability

Improvement in sanitation is a change in practice and needs people’s acceptance and urge to build and sustain. In case of sanitation, proper operation/use and maintenance are most important for sustainability of the system. There are examples in which 100% sanitation coverage achieved in an area or in a pilot project gradually collapsed to disuse (GOB SACOSAN, 2003). The functional sustainability of sanitation facilities are shown in Figure 1.

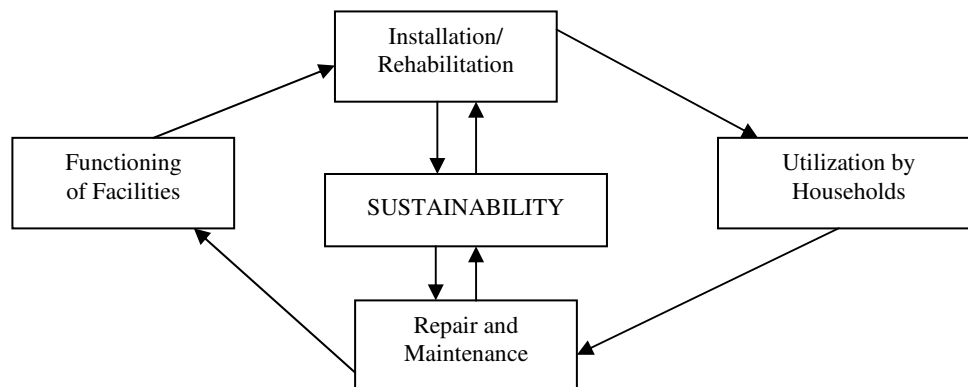


Figure 1: Functional Sustainability of Sanitation Facilities

The key issues of functional sustainability are:

- Installation and replacement of components, when needed
- Proper use of facilities
- Repair and timely maintenance
- Keep the system functional

## **5.2 Environmental Sustainability**

The provision of sanitation is intended to improve environment and quality of life. Hence, there is less possibility that the service provisions cause degradation of the environment. However, improper design and maintenance of sanitation facilities can cause environmental pollution (GOB SACOSAN, 2003).

## **6. ORGANIZATIONS FOR SANITATION AND SANITATION PROJECTS IN THE SLUMS**

Government bodies and NGOs implement some slum improvement programs in pursuit of meeting the needs of the poor slum people in the urban area. The organizations that absolutely work on sanitation are the sanitation organizations. There are some organizations that keep sanitation as one of the major components of their implemented development projects. List of sanitation and related projects implemented in the slums in Khulna City during the period 1985-2009 is enumerated in the Table 1. Once the previous sanitation projects and sanitation components do not sustain, repeated sanitation projects are needed for implementation in the slums.

### **6.1.Organizations for Sanitation in Khulna City**

There are specific government organizations (GOs) and NGOs in Khulna City that implemented and still now implementing some sanitation status improvement projects in the slum areas since 1985.

#### ***6.1.1 Government Organizations***

LGED, KCC and DPHE have been working in Khulna City for slum status improvement since 1985 through SIP. WASA has also been established in Khulna City in 2008 for providing water and sanitation services in Khulna City. Before establishing KWASA, KCC was responsible for the water supply and sanitation services in Khulna City. All the staff of the Water Supply Department of KCC has been shifted in KWASA. Activities of KWASA at this primary stage are preparation of plans for water supply networks and infrastructures, taking initiatives for collection of arrear water bills and system development etc. Firstly, KWASA will work for water supply and gradually it will work for sanitation and drainage.

### 6.1.2 Non Government Organization (NGO)

World Vision (WV) mainly works with temporary slums that are of cluster type and poor in drainage, road and sanitation condition on government land which are under threat of eviction. It has started its development interventions in the Khulna City slums around 10 years ago. It provides supports to establish sanitary latrines and construct low cost houses. All the groups of WV are of female. Each group consists of 30 women. Nabolok Parishad, a local NGO has been working in Khulna City with implementation of the ASEH project funded by WaterAid Bangladesh (WAB) since March 2005.

### 6.1.3 Private Sector Organizations

In Khulna City there are a large number of profit making public sector organizations in the form of contractors, enterprises and shops for production, marketing, installation, maintenance and repairing of both low cost and high cost sanitary latrines. These private organizations also work as supporting organizations for installation, repair and maintenance of water supply systems and facilities.

## 6.2 Sanitation and Related Projects in the Slums of Khulna City

A number of sanitation and related projects starting with Slum Improvement Project (SIP) since 1985 have been implemented in Khulna City. Brief of these projects with title, donors, implementation period, implementing agency and project area are shown in the Table 1.

**Table 1: Sanitation and related projects in the slums in Khulna city**

Sl.	Title of the Project	Donor	Period	Implementing Agency	Project Area/KCC Wards
1.	Slum Improvement Project (SIP) Phase I & II	GOB, UNICEF	1985-1995	LGED through KCC	All Wards (1 to 31)
2.	Urban Basic Service Delivery Project (UBSDP)	GOB, UNICEF	1994-1996	LGED through KCC	All Wards (1 to 31)
3.	Support for Basic Service in Urban Areas Project (SBSUAP) Component-Part II	GOB, UNICEF	January 2001- June 2006	LGED through KCC	All Wards (1 to 31)

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Sl.	Title of the Project	Donor	Period	Implementing Agency	Project Area/KCC Wards
4.	Urban Slums and Fringes Project	GOB, UNICEF	1999/2003-2006	LGED through KCC	19 Wards (3, 5, 7, 8, 9, 10, 12, 13, 15, 17, 18, 20, 22, 25, 26, 27, 29, 30 & 31)
5.	Local Partnership for Urban Poverty Alleviation Project (LPUPAP)- Part I	GOB, UNDP, UNCHS	January 2000-June 2006	LGED through KCC	All Wards (1 to 31)
6.	Urban Partnership for Poverty Reduction Project (UPPRP)	GOB, UNDP, DFID, UN-HABITAT	July 2006-June 2013	LGED through KCC	All Wards (1 to 31)
7.	Advancing Sustainable Environmental Health (ASEH)	WaterAid Bangladesh	April 2005-March 2008	Nabolok Parishad	All Wards (1 to 31)
8.	Micro-credit and Child Education Sponsorship Project	USAID	1998 to till now	World Vision	Slums and fringe areas

Source: KCC, DPHE and Nabolok Parishad Office, 2008.

## 7. SUSTAINABILITY OPTIONS OF SANITATION PROJECTS IN THE SLUMS OF KHULNA CITY

There are many sustainability options of sanitation projects in urban slums. Active and adequate community participation; developing sanitation volunteers and their skill at community level; increased community awareness on benefits of hygiene sanitation; improved socio-economic condition of slum dwellers; appropriate sanitation technologies in the slums; community knowledge on appropriate sanitation technology; adequate fund, logistics and technical staff of concerned organizations; transparency and accountability in project implementation; regular

repair and maintenance of latrines and tubewells; availability of adequate water for sanitation are the sustainability options of sanitation projects.

### 7.1 Active and Adequate Community Participation

Active and adequate community participation can bring sustainability of sanitation projects. Recently completed and ongoing sanitation projects had better mechanisms of community participation than the previous projects. Community cost sharing for establishment and repair-maintenance of latrines and tubewells, community involvement in purchasing quality hardwares, inter and intra community exchange visits and idea sharing etc. were the major components of community participation in recently completed and ongoing sanitation projects. Such components were merely found in previous sanitation projects. This is why most of the sanitation hardwares of SIP and some of the sanitation hardwares of LPUPAP could not sustain. Groups and committees formed under almost all the sanitation projects were found quite inactive after their completion or in the period of nearly completion.

Community involvement was found better in the sanitation projects of now days than the previous projects. Slum dwellers are generally found to memorize ongoing and recently completed project interventions and the implementing organizations. Nabolok Parishad has been currently implementing the WAB funded ASEH project in the study slums and as such the name of Nabolok Parishad was found instant in the memory of slum households.

**Table 2: Memorizing Water and Sanitation NGOs and Projects by Households**

Name of slums	Water and sanitation NGOs and projects			Total
	Nabolok Parishad	LPUPAP/KCC/CDC	World Vision	
Rupsha slum	146	69	0	215
	68.0	32.0	0.0	100.0
Montu Colony slum	26	0	49	75
	35.0	0.0	65.0	100.0
Kulibagan slum	74	20	0	94
	78.4	21.6	0.0	100.0
Total	246	89	49	384
	64.1	23.2	12.7	100.0

Source: Household survey, 2008-2009.

Table 2 reveals that 78.4% and 68% households of Kulibagan and Rupsha slums mentioned Nabolok Parishad's activities good respectively. Among the three study slums, World Vision works only in Montu Colony slum since around last 10 years. Around 65% households of Montu Colony slum mentioned their involvement with the World Vision. Slum dwellers could not easily memorize the interventions of SIP, UBSDP and LPUPAP. This was mainly due to limited and inefficient community participation interventions of the projects. Most of the slum people are poor. They have little fund or money to invest for sanitation development by their own. They can contribute in a sharing approach. Saving or paying a very insignificant amount at regular interval in a community fund can be an option of raising community fund. If the user community become organized and can participate actively in sanitation and related development projects through sharing of cost for establishment and repair-maintenance of sanitation services, the services must be sustainable.

### **7.2 Developing Sanitation Volunteers and their Skill at Community Level**

Skill is an important local resource that can contribute significantly in sanitation development of the slums. Sanitary latrines and tubewells installed in the slums by different development programs and projects are found in poor condition and about to out of order due to absence of proper repair and maintenance. The GOs and NGOs can not provide adequate services in time for the repair and maintenance of the latrines and tubewells due to shortage of their skilled staff, lack of fund and logistics and even absence of developed mechanisms for rendering repair and maintenance related service to the slums. If the skill of some volunteers or interested persons of the slum areas on repair and maintenance of the latrines and tubewells are developed through providing training, orientation and attachment with the concerned organizations, they can continue regular repair and maintenance of the latrines and tubewells in a sustainable manner.

As the slum households has to face problems to get services for repair and maintenance and cleaning of the latrines from the sanitation organizations, it is important to create experienced person and organization within the community for construction, repair and maintenance of latrines. Unsustainability of CBOs or groups formed under different sanitation project and discontinuation of activities or services of different NGOs are also the driving forces for creating experienced person and organization for self sustenance of the community.



**Table 3: Opinion on Creating Experienced Person and Organization within Community for Construction, Repair and Maintenance of Latrines**

Name of slums	Need of experienced person		Total
	Yes	No	
Rupsha slum	215	0	215
	100.0	0.0	100.0
Montu Colony slum	75	0	75
	100.0	0.0	100.0
Kulibagan slum	41	53	94
	43.8	56.2	100.0
Total	331	53	384
	69.2	30.8	100.0

Source: Household survey, 2008-2009.

Table 3 reveals that 69.2 % households have given their opinion to create experienced person and organization within the community for construction, repair and maintenance of latrines. User communities can mobilize local resources and can create local institutions in the form of CBOs and Groups and Committees for sanitation development and sustainability.

### **7.3 Increased Community Awareness on Benefits of Hygiene Sanitation**

Hygiene sanitation keeps the slum environment neat and clean, reduces frequency of diseases and illness, keeps the slum people in sound health, reduces medical costs and sufferings of family members, saves school hours of children and working hours of adults, and thereby enhances productivity of slum people to significantly contribute to reduce poverty. Community people of the slums were found not well aware on these benefits of hygiene sanitation. If the community people better know the benefits of hygiene sanitation, they feel interest to improve the sanitation status and its sustainability.

### **7.4 Improved Socio-economic Condition of Slum Dwellers**

Most of the slum people are poor and live from hand to mouth. About 46% households of the study slums had monthly income in the range of Tk.3,000/= to

Tk.6,000/=). As the slum dwellers can hardly afford food and clothing, they can not think to invest for improving their sanitation status. This is why, Government Organizations and NGOs have to undertake sanitation status improvement projects repeatedly for the slums.

Slum dwellers in now days than the previous period have been contributing more in cost sharing for establishment and renovation of WatSan facilities i.e. latrines and tubewells. If the socio-economic condition of the slum dwellers is improved, they can contribute significantly for establishment and repair-maintenance of WatSan facilities towards becoming the sanitation management system sustainable. Government organizations and NGOs should take more programs on socio-economic development of the slum dwellers.

### **7.5 Appropriate Sanitation Technologies in the Slums**

Slum specific appropriate sanitation technology is an important consideration for sustainability of sanitation management system. If the technologies i.e. latrines do not last long, the system becomes unsustainable. This is why, the slum dwellers need to select appropriate sanitation technologies. Selection of appropriate sanitation technology depends on soil and sub-soil condition, and socio-economic and environmental condition of the slums. Most of the slum dwellers of the study slums use simple pit latrines for their excreta disposal. Pit latrines are the most common and simplest form of excreta disposal in many developing countries. These are almost universally acceptable and widely used in low-income urban communities. Though pit latrines are often not appropriate, they are the cheapest system and most appropriate for individual householders responsible for their own sanitation.

Different types of sanitary latrines are provided under different projects in the slums and so slum dwellers of the study area were found to use different types of latrines. About 55.5%, 20.1%, 15.2% and 9.2% households of the study slums were found to use septic tank system community latrines, twin pit water sealed latrines, simple single pit latrines and hanging latrines respectively. The slums of Khulna City mostly are in low lying urban fringe areas and on derelict lands. The slums are characterized with organic clayey soil and poor drainage. As the single pit kutchha latrines of the study slums were found to last and remain good for a shorter period, single pit kutchha latrines are not suitable and appropriate for the slums. The existing saturated ground of the slums during high ground water level in monsoon season makes the soil wet and the simple single pit kutchha latrines fragile. In this case pits are filled up within short period from their establishment. Pucca twin pit and septic tank system latrines are appropriate for the slums of Khulna city as they were found to last for longer period than the simple single pit kutchha latrines.

### **7.6 Community Knowledge on Appropriate Sanitation Technology**

Technology focuses on the knowledge, the culture, the infrastructure and the tools. Appropriate sanitation technology provides the users good sanitation services that reduce the health and environmental risks of the community. The technology has to match the type of solutions the community wants, is willing and able to manage and sustain and that are in line with the technical, socio-economical, environmental, institutional and political conditions and capacities of the community. If new sanitation technology has to be introduced, testing is needed to allow for the necessary adaptation to the local conditions and to ensure that adequate operation and maintenance can be taken care of before promoting large-scale application. This also includes a review and adaptation of training materials for the different levels of education involved in the use of technology. Slum dwellers mainly require the technical services for cleaning their pits and septic tanks and for repair of latrines and tubewells. But they do not get the services easily and instantly from the Conservancy Department of KCC and sweepers of different sweeper colonies in Khulna City. Community people are not well acquainted with the technical aspects of the latrines. Almost all the community latrines that were provided from SIP and LPUPAP needed renovation. Some of them required replacement with new construction. This implies that the community people could not maintain the latrines properly. And the organizations under sanitation projects could not made the community adaptable with the technologies by providing training and guidelines. Again, the sanitation system in the study slums was found unsustainable as the slum dwellers were not well acquainted with the slum specific appropriate latrines. Nabolok under the ASEH has followed largely the issues of sustaining the technologies used in the slums.

### **7.7 Adequate Fund, Logistics and Technical Staff of Concerned Organizations**

The institutional environment needs to be taken into account in setting up a sanitation system. Management of the system must be adequate in order to make the level of service sustainable over time. Sustainability of the system can easily be achieved if the management capacity at the local level matches the operation and maintenance requirements of the system, requiring only a minimum of support from the government or external institutions.

Almost all the sanitation and community development projects implemented in the slums were designed by LGED and funded by GoB, Unicef, UNDP and USAID. The projects were implemented in collaboration with KCC, DPHE, NGOs, CBOs and profit making private organizations. The projects could not sustain due to limitations and drawbacks of these institutions. The limitations and drawbacks include inadequate fund, limited number of technically sound staff, inefficient

linkage and coordination among the institutions, and inadequate research initiatives on sanitation issues of the slums.

KCC, LGED, DPHE and NGOs (Nabolok Parishad, World Vision, WaterAid Bangladesh, PRISM Bangladesh and others) had and have lack of fund to implement and continue sanitation projects for a longer period. If the concerned organizations could continue project activities after their completion and withdrawal of donor support, sanitation status of the slums would always remain good. Due to lack of fund, the organizations could not continue sanitation projects for a longer period and could not cover all the households of the slums with sanitation facilities and services. Sanitation organizations can not provide the slum dwellers with quality sanitation services in time due to having inadequate logistics and technical staff.

Biogas generation from community latrines and sell to nearby poultry farms, shops, households etc. Can generate income for development and running of sanitation programs. Sanitation development fund from the ADP of Local Government bodies i.e. KCC can be used continuously for sanitation as the slum owners and households pay directly or indirectly holding tax and contribute to local and national development. Local NGOs can collect fund from national and international donors in the form of grant.

### **7.8 Good Coordination among Community and Concerned Organizations**

During the initial stage of sanitation projects, the implementing organizations had good coordination with the community and other concerned organizations. This was mainly due to budgetary allocation in the projects for meetings, orientation, training, exchange visits etc. in participation of the representatives of community and concerned organizations. After the completion of projects, organizations seldom have the provision of maintaining coordination with the community. Besides, community could not maintain good coordination with the organizations due to inactiveness and abolition of groups and committees.

### **7.9 Transparency and Accountability in Project Implementation**

Corruption, irregularities and nepotism in project implementation is one of the major reasons of unsustainability of sanitation projects. Project staff and community leaders involved in project management i.e. quality monitoring and decision making do not sincerely perform their duties and responsibilities due to corruption, irregularities and nepotism. And thus, quality of hardware and software components deteriorates leading to unsustainability of sanitation projects. Low profile and inexperienced staff recruited in the projects following irregularities and nepotism degrades quality of project interventions. At times, elected representatives i.e. Ward Councilors of City Corporation showing their political influence put pressure to the

project management for uneven and unjust distribution of WatSan facilities. This incurs inefficient use of WatSan facilities against attainment of sustainability of sanitation projects.

#### **7.10 Regular Repair and Maintenance of Latrines and Tubewells**

Slum dwellers can not regularly repair and maintain the latrines and tubewells due to absence of sustainable mechanism in the slums. Groups and committees formed under recently implemented and ongoing different sanitation projects for repair and maintenance of latrines and tubewells were found inactive. Many of the latrines and tubewells provided by different projects in the slums were found abandoned due to absence of regular repair and maintenance. Sanitation facilities and services in the study slums were found not to be used efficiently. Community people could not use most of the community latrines and tubewells for a longer period due to lack of regular repair and maintenance. The poorly maintained facilities could not cover the slum households at optimum level.

#### **7.11 Availability of Adequate Water for Sanitation**

Availability of adequate water is very important for flushing, washing and keeping the latrines neat and clean after their every use. Some of the tubewells adjacent to the latrines in study slums were found out of order for a longer period and the slum dwellers had to use little amount of water carrying from a long distance. This makes the latrines dirty, unhygienic and unused for a long time.

#### **7.12 Managing Space or Land for Latrines and Tubewells in the Slums**

Space or land for the establishment of latrine is a very important factor in sanitation development. Slums are densely populated and have lack of space or land to establish latrines for individual household. Besides, the households are not the landowner. They live in the houses established on government khas land or Bangladesh Railway land and other private land. Due to having no permanent place of the slum households, donors and government also seldom take development program in the slum area. As Bangladesh Railway has huge amount of vacant land or annually leased out land and a significant number of city people live on the slums on Railway land, so Bangladesh Railway should think for their development. It can collaborate with the government, local community leaders and local elected representatives.

### **8. REASONS OF INSUSTAINABILITY AND FAILURE OF SANITATION PROJECTS IN THE SLUMS**

The reasons for insustainability and failure of sanitation projects in the slums of Khulna City are as follows:

**▪Absence of active and adequate community participation in sanitation projects**

Most of the sanitation hardwares of SIP and some of the sanitation hardwares of LPUPAP could not sustain. Groups and committees formed under almost all the sanitation projects were found quite inactive after their completion or in the period of nearly completion.

**▪Absence of adequate and timely services of GOs and NGOs for repair and maintenance of latrines.**

The GOs and NGOs can not provide adequate services in time for the repair and maintenance of the latrines and tubewells due to shortage of their skilled staff, lack of fund and logistics and even absence of developed mechanisms for rendering repair and maintenance related service to the slums.

**▪Lack of community awareness on benefits of hygiene sanitation**

Community people of the slums were found not well aware on these benefits of hygiene sanitation. If the community people better know the benefits of hygiene sanitation, they feel interest to improve the sanitation status and its sustainability.

**▪Poverty and poor socio-economic condition of slum people**

About 46% households of the study slums had monthly income in the range of Tk.3,000/= to Tk.6,000/=. As the slum dwellers can hardly afford food and clothing, they can not think to invest for improving their sanitation status.

**▪Inappropriate sanitation technologies in the slums**

About 55.5%, 20.1%, 15.2% and 9.2% households of the study slums were found to use septic tank system community latrines, twin pit water sealed latrines, simple single pit latrines and hanging latrines respectively.

The existing saturated ground of the slums during high ground water level in monsoon season makes the soil wet and the simple single pit kutcha latrines fragile.

**▪Lack of community knowledge on appropriate sanitation technology**

Almost all the community latrines that were provided from SIP and LPUPAP needed renovation and replacement. The organizations under sanitation projects could not made the community adaptable with the technologies by providing training and guidelines.

**▪Inadequate Fund, Logistics and Technical Staff of Sanitation Organizations**

The projects could not sustain due to limitations and drawbacks of inadequate fund, limited number of technically sound staff, inefficient linkage and coordination

among the institutions, and inadequate research initiatives on sanitation issues of the slums.

▪**Lack of coordination among community and concerned organizations**

After the completion of projects, both the organizations and community could not maintain good coordination due to inactiveness and abolition of groups and committees.

▪**Corruption, irregularities and nepotism in project implementation**

Low profile and inexperienced staff recruited in the projects following irregularities and nepotism degraded quality of project interventions.

▪**Irregular repair and maintenance of latrines and tubewells**

Many of the latrines and tubewells provided by different projects in the slums were found abandoned due to absence of regular repair and maintenance.

▪**Inadequate and polluted water for sanitation**

Some of the tubewells adjacent to the latrines in study slums were found out of order for a longer period and the slum dwellers had to use little amount of water carrying from a long distance.

▪**Lack of space or land for latrines and tubewells in the slums**

Due to having no permanent place or land of the slum households, donors and government seldom take development program of providing latrines and tubewells in the slum area.

**8. RECOMMENDATIONS OF MORE OPTIONS FOR SUSTAINABILITY OF SANITATION PROJECTS**

The means and ways of attaining sustainability of sanitation project for slums can be-active and adequate community participation in sanitation projects; increased community awareness on benefits of hygiene sanitation; reducing poverty and improving socio-economic condition of slum people to contribute significantly for establishment and repair-maintenance of WatSan facilities; selection of appropriate sanitation technologies for the slums to last for longer period; developing sustainable mechanism for regular repair and maintenance of latrines and tubewells; increasing community knowledge on appropriate sanitation technology; adequate fund, logistics and technical staff of sanitation organizations to provide better sanitation services to the slum people; developing good coordination among community and concerned organizations; ensuring transparency and accountability for efficient and better implementation of the projects; creating adequate hygienic water options for

sanitation; developing sanitation volunteers and their skill at community level; managing space or land for latrines and tubewells in the slums; and mobilizing local resources i.e. biogas generation from community latrines. Following more specific recommendations are recommended for attaining sustainability of sanitation projects:

- Implementation of phase out or exit strategy of the sanitation projects can be made effective just from the initiation of sanitation and related projects for attaining their sustainability. Establishment of Project Sustainability Units (PSUs) with CBO and GO-NGO representatives can be considered and strictly followed while designing and implementation of the projects.
- Mass awareness campaign, orientation, training, exchange visits etc. can be organized for all the household members of the slums to bring them in practice for using soap and ash for washing hands, use sandel (shoes) and use more water for clean-up while using the latrines.
- Separate space and arrangement for keeping soap and ash within the latrine can be considered while designing and installing the latrines so that household members can use soap and ash to wash their hands just after defecation.
- For better functioning and sustainability of groups and committees of sanitation projects, unmarried girls who have the very chance of going to husband's home in separate locations after marriage can not be considered as group members. Likewise, the group members must be the permanent residents of slums. The future projects can have scope of assisting the community to create a fixed place for regular meetings.
- Every meeting place can have option of a mini office for keeping documents related to slums and their sanitation development projects.
- Duties and responsibilities of group members as per guideline can be made clear to each member prior to formation of groups. The groups can be regulated and controlled in a disciplined way following the guideline. Performance evaluation of the groups can be done on regular basis for their better functioning.

## **9. CONCLUSION**

Regular repair and maintenance of WatSan facilities i.e. latrines and tubewells; community mobilization and capacity development; Participatory Monitoring and Evaluation (PME); control by GOs and LEBs on sanitation and related development projects; and awareness raising of community can bring sustainability of sanitation projects. Establishment of Project Sustainability Units (PSUs) with CBO and GO-



NGO representatives can be considered and strictly followed while designing and implementation of the projects. Performance evaluation of the groups formed under sanitation projects can be done on regular basis for their better functioning.

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