ITN-BUET K-Hub Policy Brief 2

OPERATIONAL/ BUSINESS MODEL FOR SUSTAINABLE FSM SERVICES IN URBAN AREAS OF BANGLADESH

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What is happening with Fecal Sludge?

- Despite the prevalence of on-site sanitation (OSS) systems throughout the country, disposal of fecal sludge in low-lying areas and in lakes and canals within urban areas is common, leading to serious environmental degradation.
- Lack of awareness regarding the adverse impacts of fecal sludge, lack of fund and trained manpower for service delivery are primarily responsible for the lack of interest for fecal sludge management (FSM) services.
- Only a handful of local government institutions (LGIs) have initiated FSM services in parts of their localities with support from DPHE, development partners, and I/NGOs.
- In some cases, the service is limited to empting of fecal sludge and its subsequent disposal without any treatment. Incomplete/partial services as practiced by some institutions lead to continued environmental degradation through disposal of emptied fecal sludge in the open environment.

Only two City Corporations out of 11, and 15 Paurashavas out of 325 have so far initiated limited FSM services.

Challenges

In the absence of a clear Government policy/ strategy for FSM services, many LGIs are not showing interest in initiating FSM services. Lack of trained manpower and guidelines for establishment of FSM service infrastructure (e.g. treatment plant) and services are major obstacles for LGIs to initiate FSM services.

LGIs are finding it difficult to arrange land for construction of treatment plants, as well as funds for establishment of treatment plants and procurement of collection and transport equipment.

In Shakhipur Paurashava, a fecal sludge treatment plant was constructed by WaterAid at a cost of about USD 69,000 on a piece of land donated by the Mayor of the Paurashava. Cost of collection equipment was USD 32,500 which also came from project support.

POLICY MESSAGES:

- Government and/or LGI intervention is essential for procuring land for construction of fecal sludge treatment plants.
- Ministry of LGRDC/or LGIs should arrange financial support to mobilize initial investment required for construction of treatment plant, and procurement of collection and transportation equipment.
- Ministry of LGRDC should take steps for setting up a Unit/ Division for FSM in the LGI organogram, and facilitate training of LGI officials for effective delivery of FSM services.

Revenue that could be earned from sale of by-products at fecal sludge treatment plants is unlikely to cover the cost of treatment.

At Shakhipur Paurashava, the yearly O&M cost of the fecal sludge treatment plant is about USD 10,600, while the yearly revenue generated from sale of soil conditioner is about USD 5,625, indicating a net loss.

Figure 1: Government and/or LGI intervention would be needed for securing land for fecal sludge treatment plants.

This Policy Brief presents an operational guideline for establishing effective FSM services in urban areas of Bangladesh. The model has been developed based on a detailed assessment of existing operation of FSM services in different urban centers of Bangladesh, a review of data/ information and experiences of running FSM services in other countries, and through extensive consultation involving all stakeholders.

Collection and transportation cost of fecal sludge is often set on an ad hoc basis, without considering the cost associated with treatment of fecal sludge. Collected sludge is often reported to be disposed of in surrounding open environments even when there is treatment facilities present, in order to save transportation costs.

Need for an Operational/Business Model

The LGIs who have initiated FSM services are facing significant challenges in providing and sustaining services due to the absence of suitable operational/ business models for delivery of FSM services.

In LGIs providing the complete FSM services, i.e. from collection to treatment, the initial investment came from project/external support; the operation of FSM services is either marginally at break-even or is still subsidized either by the LGIs and/or external support.

Incomplete/partial services as practiced by some institutions lead to continued environmental degradation through disposal of emptied fecal sludge in the open environment.

Initiation of FSM Services

With the forthcoming approval of the institutional and regulatory framework (IRF) of fecal sludge management (FSM) by the government, more and more LGIs are likely to feel the urge to initiate FSM services in their localities. But it is also clear that without external support, either from the government or I/NGOs/NGOs/development partners, they would most likely not be able to offer FSM services covering the entire chain from collection to treatment/ disposal.

Many of the LGIs are also not ready to initiate FSM services for a number of reasons, including lack of awareness and capacity (both in terms of manpower and finance). Therefore, it is imperative that the government (i.e. the Ministry of LGRDC) come up with an "action plan", based on the IRF, to initiate FSM services in urban centers in phases, based on need, competitive advantage and capacity of the LGIs.

FSM Operational/ Business Model

This section presents a guide/ model to initiate and operationalize FSM services in urban areas of Bangladesh.

Demand for FSM Services

FSM project ideas would be conceived through inciting community demand with consultations, assessing the existing situation, analyzing options to overcome the problems involving concerned stakeholders, and reviewing existing policies and strategies.

Planning and Design of FSM Program

A preliminary environmental and social impact assessment of the project needs to be done based mostly on preliminary information at hand.

Major activities that should be included in this phase are technological options assessment, financial analysis and economic viability, stakeholder analysis, stakeholders' consultations, capacity needs assessment, and assumptions and risk assessments. The above activities would be followed by project planning and design, project implementation plan, operational modalities and monitoring and evaluation plans. Important considerations in carrying out these tasks include accessment of OSS facilities, FS volume estimation for determining collection, transportation and treatment requirements, identifying cost-effective FS transport routes, and identifying appropriate FS treatment sites.

Figure 2: Access to OSS facilities is extremely important for proper collection and transportation of fecal sludge.

It is important to consider FS treatment goals, i.e. reuse potential and quality of the receiving environment, before selecting treatment options. The MoLGRDC through its line organizations (DPHE, LGED, WASAs) would provide technical and other relevant support directly or on a project-basis in planning and implementation of FSM service infrastructure (e.g. fecal sludge treatment plant).

Reuse of treated fecal sludge constitutes an important element in the FSM service chain, which if promoted adequately, could lead to profitable business models, making FSM service sustainable.

Business promotion campaigns related to use of soil conditioner from treated fecal sludge in agriculture, and ill effects of untreated or partially treated fecal sludge, is to be undertaken by concerned institution/private company/NGOs.

Making FSM Program Operational

Securing funds and land for FS treatment facility are key requirements to make FSM programs operational. This must be ensured following appraisal and approval of project feasibility, planning and design, and operational plans. Current experience of FSM services in Bangladesh suggests that in general, if initial investments required for procuring collection and transportation equipment and building of the treatment plant can be secured, the FSM services, particularly collection and transportation, can be immediately made viable.

Given the scarcity of land, present experience in Bangladesh further suggests that government and/or LGI intervention would be needed for procuring land for treatment of fecal sludge. It is also important that the external support agencies/ development partners and MLGRDC/or LGIs mobilize initial investments required for procuring collection and transportation equipment.

Cost of FSM Services

Fecal sludge management systems involve different activities and there are costs involved at each step. *LGIs e.g, City Corporations/ Paurashavas shall collaborate with the Ministry of LGRDC for establishment of major FSM infrastructure (e.g, treatment plant, vacutugs), and develop appropriate mechanism for cost recovery with contribution/ fees/ charges from service recipients in line with the provisions of the Local Government Act 2009 and the Institutional and Regulatory Framework for FSM in Bangladesh 2017.*

A Proposition of Fund Flow for Sustainable Operation of Fecal Sludge Management Services

Figure 3 shows a flow chart describing the operational/ business model for sustainable delivery of FSM services in urban areas of Bangladesh. Flow of funds from one step to another has to be considered carefully so that the FSM services are sustained. Considering the existing situation of FSM in a city or a municipal town, and the level of awareness among different stakeholders about the importance of FSM, a financial flow approach for the FSM service chain can be considered as suggested below.

Important features of the FSM operational/business model in respect of the flow of funds are described below:

1. In the approach the fund flow starts from HH/ Community/Institution (both public and private), the collection points of fecal sludge. *Payment by HH/ Community/ Institution is divided into two channels –*

   Collection and Transportation service provider as septic tank/ pit emptying fee, and to the concerned LGI as sanitation tax/charge along with holding tax to cover all other expenses including, at least partially, the cost of FS treatment.

2. The emptying fee will be determined *based on volumetric pumping rate, and other considerations as may be determined by the LGI; sanitation tax/charge can be determined based on water use or more conveniently on flat rate proportionate to holding tax and should be worked out through consultation with concerned stakeholders.*

3. *This two-channel payment mode will help support the low income people in slums, as in most cases sanitation tax/charge will be subsidized or fully waived*, and will be covered by government funds to City Corporations/ Paurashavas to cover FS treatment and other expenses.

4. An important feature of the above fund flow approach is the direction of the fund transfer to the treatment facilities. *Treatment facilities will pay the collection and transportation service provider a discharge incentive to dump/discharge collected sludge at the fecal sludge treatment plant. The financial incentive here is used to encourage socially desirable behavior i.e. to encourage sludge collection and discharge at the treatment plant and reduce illegal discharge elsewhere.* With this approach, the collection and transportation service provider would only have to recover a portion of the total operating costs from the emptying fee and the remaining portion would be made up by the discharge incentive from the treatment facility. *As a result, the collection service would be more affordable for poorer households, more sludge would be collected, less sludge would be discharged to the environment and the community as a whole would benefit.*

5. Treatment facilities will receive a part of the sanitation taxes/charges collected by the Paurashavas/City Corporations to cover treatment plant operation and management expenses. The Paurashava/ City Corporation will charge fees for permits/ licenses for collection and transportation. *Treatment facilities may also receive profits from end products from private enterprises or NGOs engaged in marketing and selling of the end products.*

6. However, *substantial government support will be needed to fill the budget gaps of the Paurashavas/ City Corporations, particularly to cover some of the major capital expenditures.* The GoB will increase funding support to fill the budget gaps and provide other assistance (e.g. securing land for construction of treatment facility) for development of FSM infrastructure.

7. *Development partners, multilateral or bilateral, may provide funding support and/or technical assistance to the LGIs for establishing FSM services through the Ministry of Local Government.*

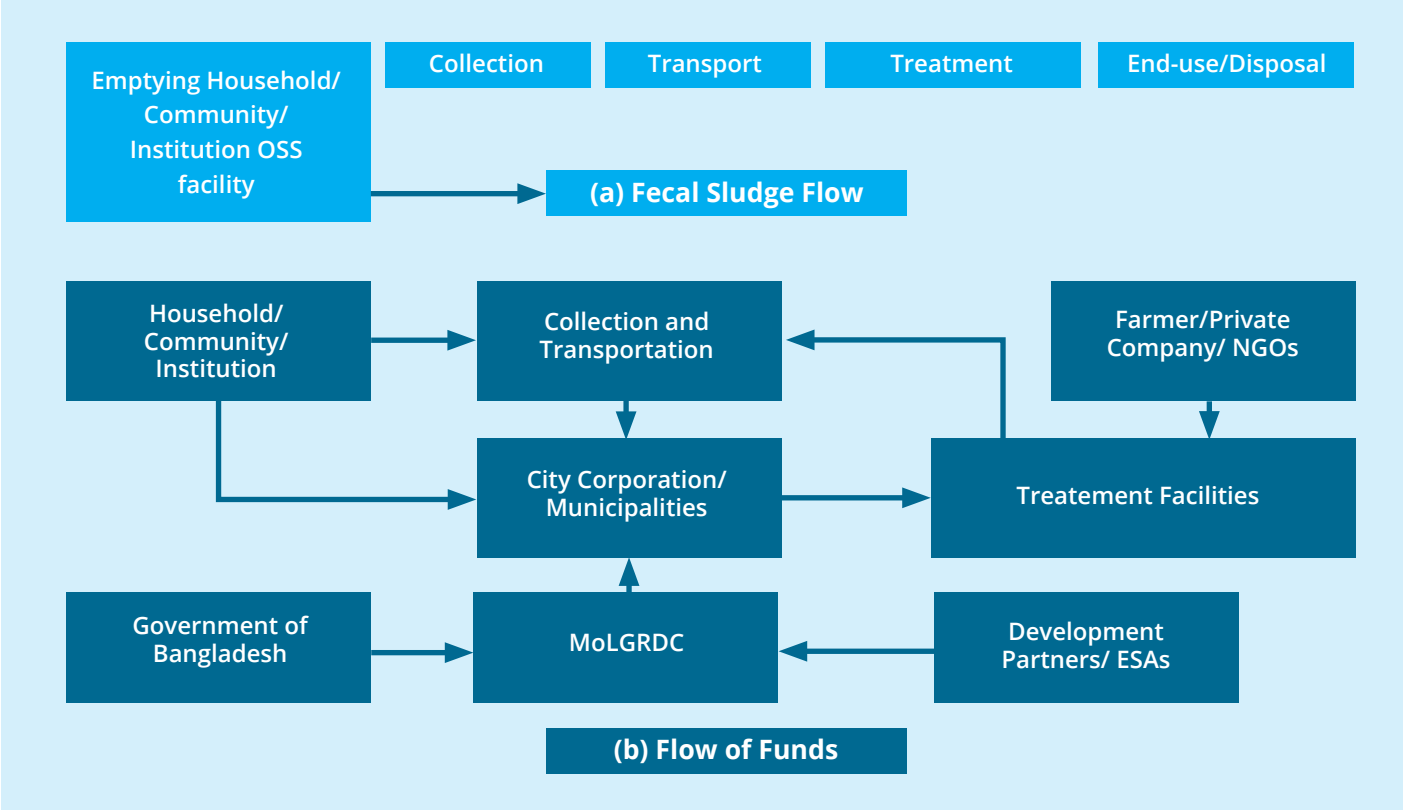

Figure 3: (a) Direction of sludge flow from HH to enduse/disposal of treated sludge; (b) Direction showing flow of fund from different stakeholders for FSM service chain.

Way Forward

- **It is important that the Ministry of LGRDC develops a "national action plan" to initiate FSM services in urban areas in phases, based on need, competitive advantage and capacity of LGIs.**
- Once the Government develops an "action plan", it can facilitate mobilization of funds from its own resources as well as from development partners and others for delivery of full-scale FSM services (including appropriate treatment) in these urban centers.
- The "fund flow model" is extremely important for sustainable delivery of FSM services and must be applied considering local context.

This Policy Brief puts forward a FSM operational/business model focusing on "flow of fund" for sustainable delivery of FSM services. The proposed operation/business model spells out specific steps for initiation of FSM services including situation assessment, a range of activities associated with planning and design of the FSM program, and identifies the important requirements for making FSM programs operational.

Further Reading:

Rahman, M. M., Ali, M. A. and Dakua, M., (2016) "Case Study: Business models for delivery of FSM services in urban areas of Bangladesh", K-Hub Bangladesh, International Training Network Center, Bangladesh University of Engineering and Technology, Dhaka, Bangladesh. A Case Study by South Asia Urban Knowledge Hub (K-Hub), ITN-BUET, Bangladesh National Center, Dhaka.

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