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**WATER, SANITATION AND HYGIENE SERVICES BEYOND 2015:
IMPROVING ACCESS AND SUSTAINABILITY**

**Faecal sludge management in Faridpur, Bangladesh:
scaling up through service level agreements**

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Improving the situation of faecal sludge management is an urgent issue in all the rapidly growing towns across Bangladesh where there is no sewerage system. Simply improving access to sanitation will not lead to health benefits unless the sludge is safely dealt with. This paper reports on the findings of a situation analysis on FSM in Faridpur Town carried out in 2014. It goes on to outline the solution which will be implemented in the next three years with support from the Bill and Melinda Gates Foundation. This solution aims to create a city-wide solution, introducing incentives for safe disposal, sharpening the use of subsidies, and crucially doing this through the inclusion and mainstreaming of existing informal service providers.

Introduction

There is growing recognition globally of the importance of faecal sludge management (FSM). In 2010, the United Nations General Assembly recognised the human right to safe drinking water and sanitation. Even before that, the human rights discussion about sanitation included faecal sludge management defining sanitation as “a system for the collection, transport, treatment and disposal or reuse of human excreta and associated hygiene. States must ensure without discrimination that everyone has physical and economic access to sanitation, in all spheres of life, which is safe, hygienic, secure, socially and culturally acceptable, provides privacy and ensures dignity” (United Nations 2009). It is also advised that the manual emptying of pit latrines is “unacceptable from a human rights perspective” (De Albuquerque 2014). Similarly, the outcome of the Open Working Group on Sustainable Development Goals found, although criticised as being weak in comparison with the human right to water and sanitation, did include reference to water quality and ‘halving the proportion of untreated wastewater (United Nations 2014).

This is particularly pertinent in South Asia where the growth of urban populations involves such enormous numbers, but also where rates of access to basic sanitation have been increasing. The SacoSan V declaration in 2013 mentioned the issue for the first time, committing all South Asian governments to “recognise the importance of sustainable environmental sanitation and hygiene in urban areas including solid and liquid waste and faecal sludge management for all urban dwellers, regardless of tenure” (SacoSan 2013).

In Bangladesh, levels of access to sanitation are relatively high. The JMP report for 2014 finds that in Bangladesh in 2012, there was no open defecation and that 55% of the urban population was using an ‘improved’ toilet, and another 30% are using toilets defined as unimproved because they are ‘shared’ but may otherwise be acceptable (WHO/UNICEF 2014). However, in most secondary towns there are no sewers at all, with all the residents relying on on-site sanitation combined with faecal sludge management practices. In most cases there is hardly any effective or safe collection, transportation, treatment or disposal of sludge. Much of it ends up in water bodies or polluting nearby land.

The World Bank estimates the economic costs of poor sanitation in Bangladesh total \$4.2 billion each year. This was equivalent to 6.3 percent of Bangladesh’s GNP in 2007, or \$29.6 per person per year (WSP 2012). Health impacts dwarf the economic costs. Over 65 million cases of diarrheal diseases occur annually among children under five. On average, a Bangladeshi child will suffer 3-4 cases of diarrheal disease every

year. The water and faecal born disease burden is higher in urban slums than rural areas mostly due to unhealthy and unhygienic conditions from poor sanitation (People's Republic of Bangladesh, 2005).

This paper presents the findings of a situation analysis of the existing FSM system in the town of Faridpur. It then goes on to outline the solutions that are proposed for the next three years, highlighting the role of informal service providers both now and in the future.

Situation analysis of Faecal Sludge Management in Faridpur

Faridpur is one of the secondary cities in Bangladesh where 129,000 people live. There are 24 slums housing around 10,600 people. Levels of sanitation coverage are relatively high with 94% of the population having access to adequate sanitation (Practical Action Bangladesh 2014). However, there is currently no piped sewerage network and it is unrealistic to expect this in the near or medium term future.

Practical Action has been working in the town on a range of projects since 2003. This is part of the organisation's history and expertise in working with urban poor communities across a range of countries. From 2012, work on urban WASH was prioritised further as one of four strategic priorities for the organisation.

In March 2014, Practical Action Bangladesh secured funding from the Bill and Melinda Gates Foundation to carry out a scoping study of "Public Private Partnerships for Sustainable Sludge Management Services in Faridpur", resulting in a business case for future work. Second phase funding for a three-year project was then secured in November 2014.

The findings of the situation analysis identified four key problems which are at the heart of why the present sludge management system in the town is neither effective nor sustainable.

1. Unsafe containment of sludge at source

Despite a slum-dweller population of Faridpur of around 10,600 people, and other low-income areas within the municipality, 94% of residents have access to toilets. Most of these are either single pit latrines (42%) or toilets with a septic tank (32%). Septic tanks should have a soak well incorporated to manage the liquid fraction of sludge, but the Municipality estimates that a quarter of all septic tanks have no soak pit. In this case the effluent and some faecal sludge is discharged directly to open drains.

Both the pits and septic tanks are usually of a size which has limited storage capacity and requires frequent emptying or desludging. When the pits or septic tanks fill up, and if they are not emptied, households may by-pass containment and connect their toilets directly to a storm drain or surface water body. In other cases, pit latrines may simply fill up and overflow into the surrounding environment.

2. Lack of capacity in collection and transportation of sludge

Given the prevalence of illegal connections of containments to storm drains, and other methods through which households empty their pits themselves, pit emptying services in Faridpur are only used by 55% of individuals and 81% of institutions and the services are estimated to serve less than 30% of cases where a containment should be emptied (Practical Action Bangladesh 2014).

As such, the capacity of pit emptying: undertaken by both the municipality's conservancy department and by two private groups of low income sweepers, is substantially below what is necessary for an effective city-wide system.

Currently these services have the following contrasting characteristics:

Municipality Conservancy department: Limited formal procedures are in place by the city authorities at the municipality level, to offer the service through the conservancy department (whose primary task is the environmental cleanliness of the town), where there is a trained workforce with limited equipment. This service is insufficient as it uses substandard equipment, is highly centralized, costly, heavily subsidized and mostly only serves influential groups. It is slow, expensive, focused on institutions rather than individual household residents, struggles to meet demand and is almost 25% subsidised.

Sweeper groups: Informal, private pit emptying is also active and partially fills the service gap in an unregulated manner, providing a relatively profitable occupation for marginalized groups. In Faridpur, two semi-organised groups known as 'sweepers' currently offer this service. Some are in fact also casual labourers of the Conservancy Department, undertaking occasional additional pit emptying work at night in addition to salaried sweeping work. Of those who use an emptying service, 72% of households and 52% of institutions prefer the private sweeper groups, because they are available more quickly and charge less.

However, there is limited transport equipment and with no incentive to safely dispose, the workers typically apply the principle of the fastest disposal route. Some are known for leaving containments and their surroundings unclean due to the inappropriate use of small scale equipment such as a bucket and rope. There is a lack of operational safety, variable service fees and additional fees being levied.



Photograph 1. Vacutug used by Conservancy Department



Photograph 2. Manual pit emptying by private sweepers

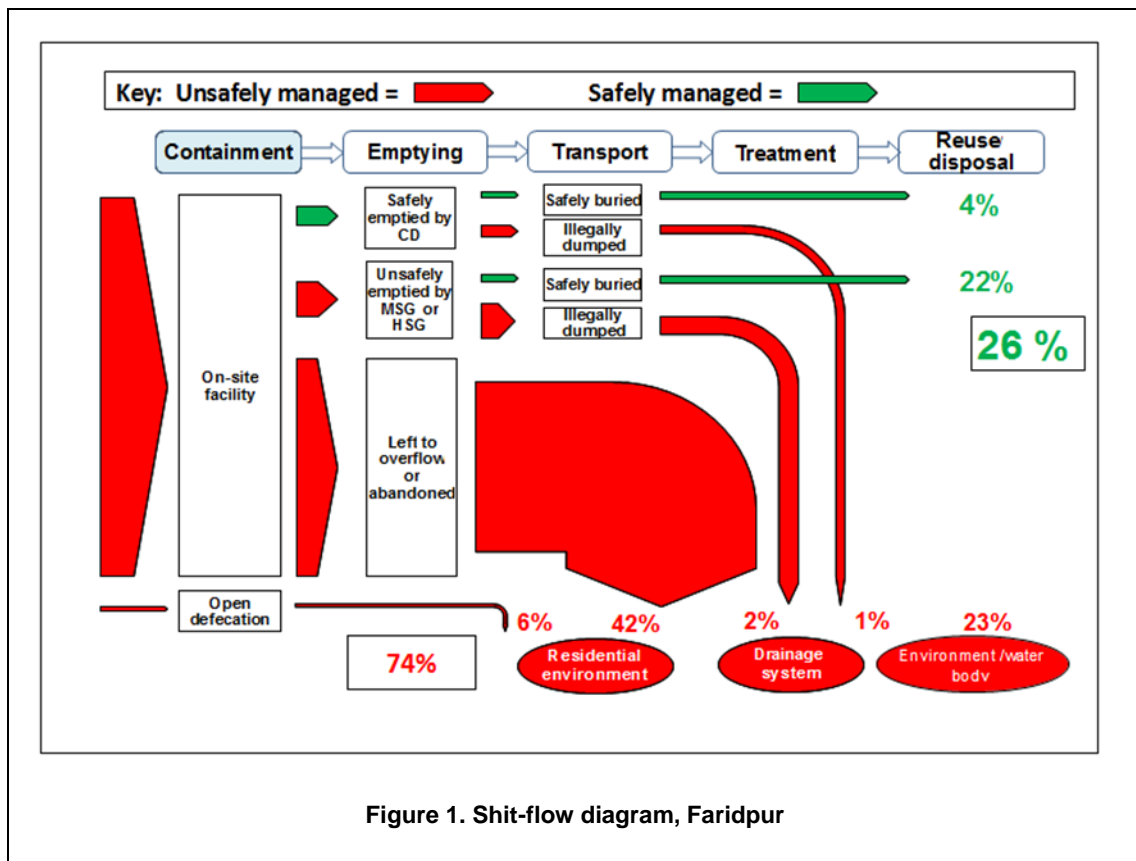


Figure 1. Shit-flow diagram, Faridpur

3. Unsafe disposal of sludge

We have seen that even where pits are emptied, sweeper groups and even at times the Conservancy Department, dispose of the contents directly into the drainage system. For the waste collected by the Conservancy Department, it is disposed of roughly equally in storm drains, on waste land including a place designated for the purpose by the Municipality (which is in fact close to water courses), or it is buried.

Similarly, the private sweeper groups either dispose of sludge in open drains (8 out of 12 occasions during July 2014) or they bury it in nearby mud holes which are dug for the purpose. This is also the case with individual households who may empty their pits themselves. When a job is completed, the emptiers wash themselves in a local pond or at a communal water pump.

Water quality tests were carried out including from three storm-water drainage sites close to where pits or septic tanks were freely emptying into the drain. Faecal coliform levels were found to be 2.5 times the safe limit (2,540 number/100ml: safe limit of 1000 number/100ml). Levels of Biochemical Oxygen Demand (BOD) were also extremely high: at 380 mg/l compared to the standard of 40 mg/l.

Overall, the most optimistic estimate is that only 26% of sludge is currently safely managed.

4. Gaps in national capacity and co-ordination

The Government of Bangladesh is finalising its national water supply and sanitation strategy. The strategy strongly highlights the importance of FSM for the sustainability of ODF achievement and put in place a draft framework. However, national attention on FSM is very limited and mainly focussed on big cities. As a result, local municipalities get very little guidance in establishing new systems, nor is there any strategy for significant investment in non-sewered systems (which are the reality for the vast majority of municipalities across the country).

Enabling environment for FSM within Faridpur Municipality

There are positive factors supporting the adoption of this system within Faridpur Municipality. FSM features as part of the municipality's detailed 30-year Pourashava Master Plan which has been recently drafted and is now with the Ministry of Local Government for approval. In addition, the municipality has already bought land to be used for the treatment plant. In its Pourashava Development Plan, there is a strong preference for private sector participation for the improvement of services such as water supply, sanitation and waste management. The Municipality also has experience of working in partnership with informal service providers. With support from a local NGO and Practical Action, it has out-sourced door-to-door waste collection services. This service now reaches 3,500 households.

Proposed solution to create a city-wide, sustainable service

As the situation analysis revealed there is a significant amount of work to be done to turn around a situation where sludge is not safely contained, only around 30% of pits are emptied, and only some of the contents is buried (it is questionable how safely). At the same time, a dual system in which the Municipal service is subsidised but mostly benefits institutions and a minority of households; and the private service operates in ways which do not always meet the needs and expectations of customers.

Instead, the proposal is for the municipality-run service to be closed. Members of the Sweeper Group who currently work as casual labourers for the Conservancy Department are likely to continue to be required (perhaps less often) for tasks such as solid waste collection, and open drain and storm sewer cleaning. Pit emptying services will be provided solely by the two existing 'Sweeper Associations' (SAs). Public-private partnerships will be created based on service-level agreements both for pit emptying, and for the operation of a new treatment plant. The Municipality's role will change from being a direct service provider, to focusing on monitoring and supervision of the service to ensure a better quality service is being delivered to customers, and the sludge is being safely disposed. The municipality will provide the necessary equipment under a leasing arrangement and monitor progress through quarterly targets.

An Executive Committee (of 5 sweeper leaders) will be formed to liaise with the municipality and manage the business. It will manage the service, collection of fees, payment of salaries and management of staff. So while the sweepers will report to the Municipality, they will not be directly managed by them. The SAs will run a Service Desk to be situated at the proposed new treatment plant to register demand for and allocate jobs to the relevant SA, document customer feedback and register the quantities of faecal sludge disposed at the treatment plant.

Pit emptiers will receive a number of incentives and benefits on top of a basic monthly salary, including emptying information fee (individuals will receive commission for finding customers for the service), organizational profit (each pit emptying service may use their profits to offer a bonus to the best performing member or for a group development purpose), incentives for exceeding targets, and additional payments for disposal at treatment plant (the members will be encouraged to dispose of their collected waste at the treatment plant via a financial benefit paid quarterly).

While the collection service will now be run on a no-subsidy basis, the treatment plant will continue to be subsidised for the time being. This will be in the form of a payment from the municipality per quantity of compost produced, which should help to reduce the price of the compost for sale to local farmers and nurseries during the start-up phase. The treatment system will be based on low-energy, low-cost systems that can be built on a modular basis as volumes increase (planted beds in one stream, and another using an unplanted flow through a sedimentation chamber and cess pool, both leading to a maturation pond). Ultimately the safe, dried sludge will be co-composted with kitchen waste.

The whole system will be overseen by a multi-stakeholder Steering Committee chaired by the Municipality Conservancy Department. This committee will take strategic decisions about the way the service agreements are working, and whether the incentives are driving improved and expanding service delivery. The committee will monitor customer feedback and complaints, register and quantify waste disposed at the treatment plant and register equipment and monitor its maintenance.

Overall, the proposed new system aims to build on the strengths of what already exists. It aims to incorporate the role of the informal sector, formalising their activities only to the extent that it will help both them and the municipality deliver a better service. Incentives will be in place that should drive both quality and the expansion of the system. This will be combined with both a public awareness campaign and stiffer penalties to try to reduce unsafe practices (where toilets are connected directly to storm drains or open water bodies).

Lessons learned

In carrying out the situation analysis and preparing the proposed new system, the following lessons have emerged:

- A dual system was operating in the town of municipal and private services (although sometimes involving the same people), each with their flaws and neither generating a system which has the capacity to meet existing or future needs.
- There are currently no incentives for safe disposal of sludge by municipal or private sweepers. There is little encouragement or incentive for households to stop dangerous practices of unsafe disposal.
- The shit-flow diagram was a useful tool in summarising the current situation, and for raising the issue as an even greater priority for the Municipality.
- Bringing the informal system of pit emptying into a more regularised relationship with the Municipality through a binding agreement, and creating private companies among the sweepers needs time and patience. Trust can be hard-won, there are cultural taboos and rigidities to be overcome.
- The system was being subsidised because of the Municipal service was loss-making. Subsidies will still be required to some degree in the future, depending on the extent to which the treatment plant can make a profit from the sale of compost. However, these need to be used in a way which provides incentives for a safer and better quality system.

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