

Public Private Partnership (PPP) approach for Sustainable Solid Waste Management (SWM) in Faridpur Municipality

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Abstract:

Faridpur is one of the 324 secondary and small towns in Bangladesh where more than 150000 people live and generate daily 55 tons solid waste. The municipality collects around 20 ton wastes from dustbins and kitchen markets and dispose crudely in roadside. The rest of the wastes disappear in drains, surface bodies and open places and creates foul environment, water logging and bring adverse threat to public health and environment. Practical Action supported Faridpur municipality to design and deliver a pilot scheme on integrated sustainable waste management which consider the whole waste service and value chain. The pilot project introduced door step waste collection services to 5100 households. A significant portion of collected wastes are transferred to a recycling plant by motorized three wheelers. The recycling plant has both aerobic and anaerobic treatment facility to produce organic fertilizer (2 tons/month) and biogas (180 m³/month). Monitoring system has been developed to maintain the standard and quality for marketing of compost and to assess the satisfaction of both waste collection service and compost users. The municipality hired a local private development agency named WORD (member of the coalition for Society for the Urban Poor) for operational responsibility and running services with income from waste collection fee and selling of compost and biogas. A multi stakeholders committee lead by Municipality has been formed and enhanced their capacity for monitoring, supervision and coordination of improve attempts to tackle waste problems. This pilot scheme has created at least 20 full time green jobs and reduces 91 ton carbon annually. Appropriate selection of private agencies and staffs, behavior changes of municipal dwellers for safe disposal of wastes, availability of land to establish recycling plant, certification of organic fertilizer, coordination among stakeholders, local capacity building is key challenging areas to promote integrated sustainable waste management.

Keywords: 3Ps (Public private partnership), SWM (Solid Waste Management), ISWM (Integrated sustainable waste management)

1.0 Introduction:

Bangladesh is one of the fastest urbanizing countries across the world. Currently, around 53 out of 160 million people live in the urban areas and generate waste 20,000 tons/day. The Urban Local Authorities (11 City Corporations and 324 Municipalities) are responsible to provide solid waste management services and adopt “end-of-pipe” approach– collect-transport-dispose for a livable and healthy environment of urban dwellers. The Conservancy section of municipalities/cities usually collect wastes from dustbin, street, drains and transport by open truck, trolley and finally dispose to low land, water bodies or landfill. The indiscriminately disposed wastes cause blockage in the drainage system which leads to flooding in the streets, bad smells, and produce greenhouse gas.

1.0 Situation of Faridpur Municipality: The case of Faridpur which is a secondary town is not different from others where more than 1, 50,000 people live and generate daily 55 tons solid waste. The municipality collects around 20 ton wastes from dustbins, kitchen, markets and dispose crudely in roadside. The rest of the wastes disappear in drains, surface bodies and open places and creates foul environment, water logging and bring adverse threat to public health and environment. Safe Management of Wastes was identified as one of the pressing demands and reflected adequately in Pourashava Development Plans (PDP) and Master Plans.

2.0 Integrated Solid Waste Management (ISWM)

Integrated Solid Waste Management (ISWM) is an approach for sustainable management which covers all aspects of waste streams including: generation, segregation, transfer, sorting, treatment, recovery and disposal. It brings a wide range of stakeholders like community, local authorities, NGOs, inorganic waste traders, informal waste workers, service providers and donors coordinated by municipalities and strongly promote public private partnership considering different aspects of technical, environmental, health, financial, economical, and institutional with policy, legal and political arena.

Practical Action shared this approach with municipality in 2007 and they became interested to promote.

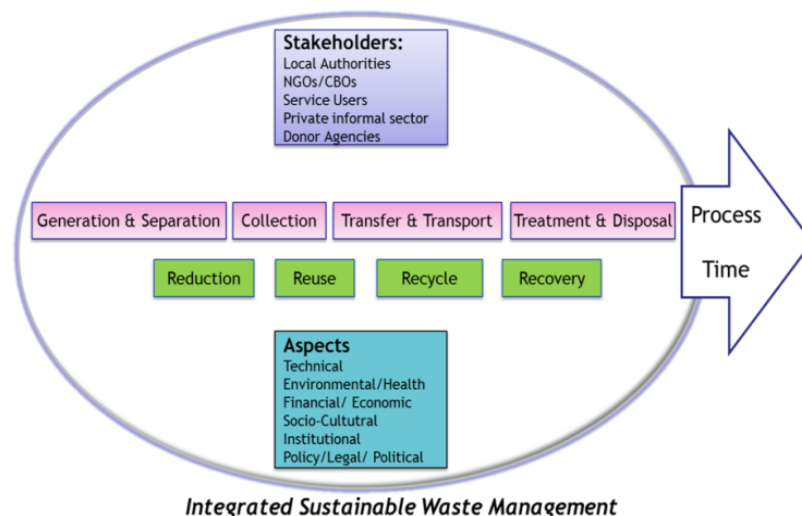


Figure: 2.1 ISWM Frame work

3.0 Background of PPP:

WORD NGO who is the member of a coalition of 13 NGOs in Faridpur called Society for the Urban Poor – SUP was selected by the Waste Steering Committee of Faridpur municipality to assist for the implementation of a pilot project on ISMW. Following roles were identified and agreed by all three parties i.e Faridpur municipality, WORD and Practical Action, Bangladesh and subsequently signed an agreement.

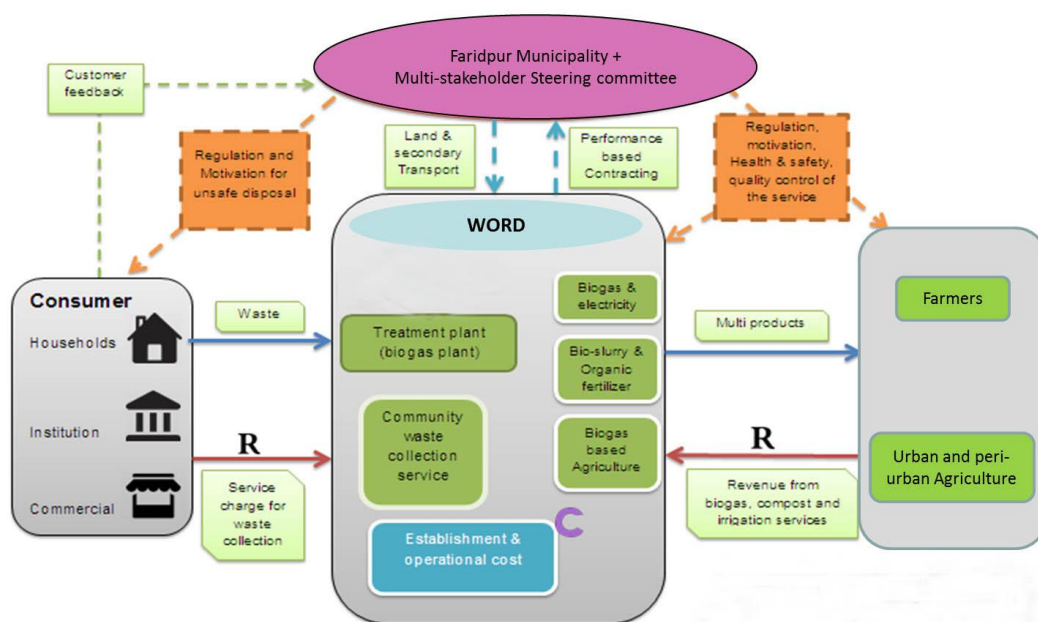


Figure: 3.1 ISWM Business Model

Table: 3.1 Roles of stakeholder's

Role of WORD	Role of Faridpur Municipality	Role of Practical Action, Bangladesh
Organize awareness raising campaigns on safe disposal of wastes and to promote the uses of organic fertilizers	Form and undertake regular meeting of waste management steering committee	Provide technical assistance to Faridpur municipality and WORD for designing, manufacturing and construction of equipment, vehicles and physical facilities
Introduce and manage the quality of door step waste collection services with users satisfaction	Provide land and for construction of waste recycling plants and facilities for secondary transfer of wastes to treatment plants	Technical and Management training for Human Resources involved in waste management
Manage the operations of waste recycling plants to produce standard and marketable fertilizers and biogas	Supervise the quality of services and products promoted by WORD	Advise WORD for standardization, quality control and certification of waste recycled products
Ensure occupation health, safety, hygiene, decent environment and wages of waste workers	Launch vigilance actions to stop unauthorized waste disposal	Capturing evidences and external communications for learning exchanges and policy advocacy
Establish and maintain transparent record of financial		

transection of business and submit reports

The pilot project introduced primary waste collection services from houses/institutions and recycling to produce compost.

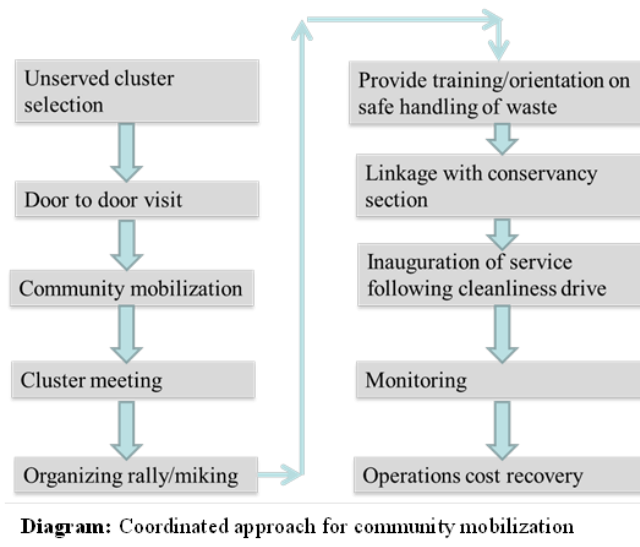
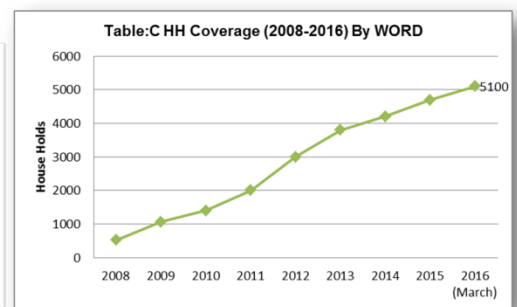
4.0 Methodology

Waste management is a raising concern for country like Bangladesh. The upward trend of urbanization is threatening the situation. The paper depicted the situation of Faridpur Municipality of Bangladesh. All the data has been collected from Bangladesh Bureau of Statistics. Information are collected from the conservancy section of Faridpur Municipality and from WORD – a local NGO involved in waste management process with Faridpur Municipality under PPP.

5.0 Waste Collection Service:

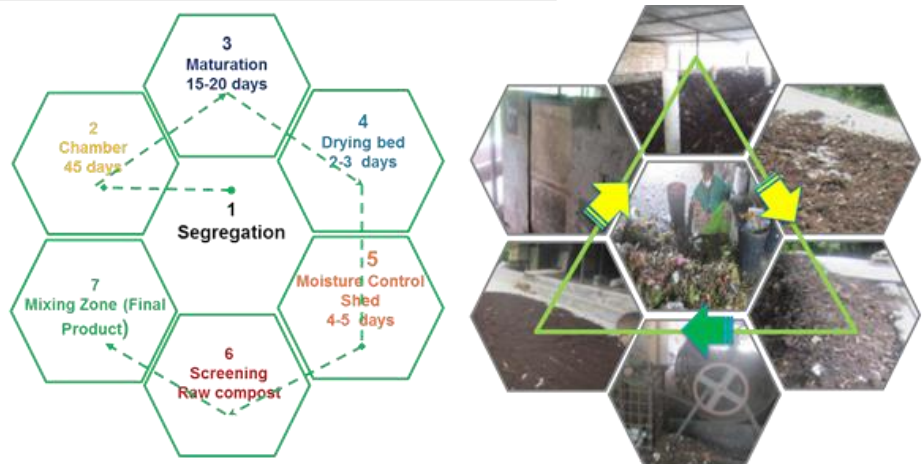
Practical Action, Bangladesh assisted WORD NGO to introduce door step waste collection services in 2007 and currently serve 5100 HH which is only 19% of total 25941 HHs. The collectors with protective dress, musk and gloves use 17 tri-cycle vans and collect 3 tons wastes daily and transfer 0.5 tons to treatment plant and the rest they dump to nearby secondary transfer station set by municipality. Prior to introduction of the service, WORD NGO adopt below steps

Year	HH
2008	525
2009	1065
2010	1400
2011	2000
2012	3000
2013	3800
2014	4200
2015	4700
2016 (March)	5100



6.0 Waste Recycling:

6.1 Waste to Compost: A significant portion of collected wastes are transferred to a recycling plant by motorized three wheelers. The recycling plant has both aerobic and anaerobic treatment



facility to produce organic fertilizer (2 tons/month). The composting facility consists of 12 chambers of 4.53 cubic meters each made of perforated hollow sand blocks. A number of PVC pipes perforated around the periphery are placed in chambers to circulate the necessary oxygen in all layers of wastes. The mixed wastes are segregated by workers with adequate safety measures in sorting station and place the organic portion in composting chambers and keep days for decomposition when the box is filled with wastes. During the maturation period, waste workers record the temperature and spray water in case of above 20 degree Celsius. The matured wastes are taking out after 56 days and place one corner of the plant for further maturation. Matured compost are then dried and screened and tested in laboratory before final packaging. Below figure and diagram will show the processes and steps to produce nutritive and marketable organic fertilizers

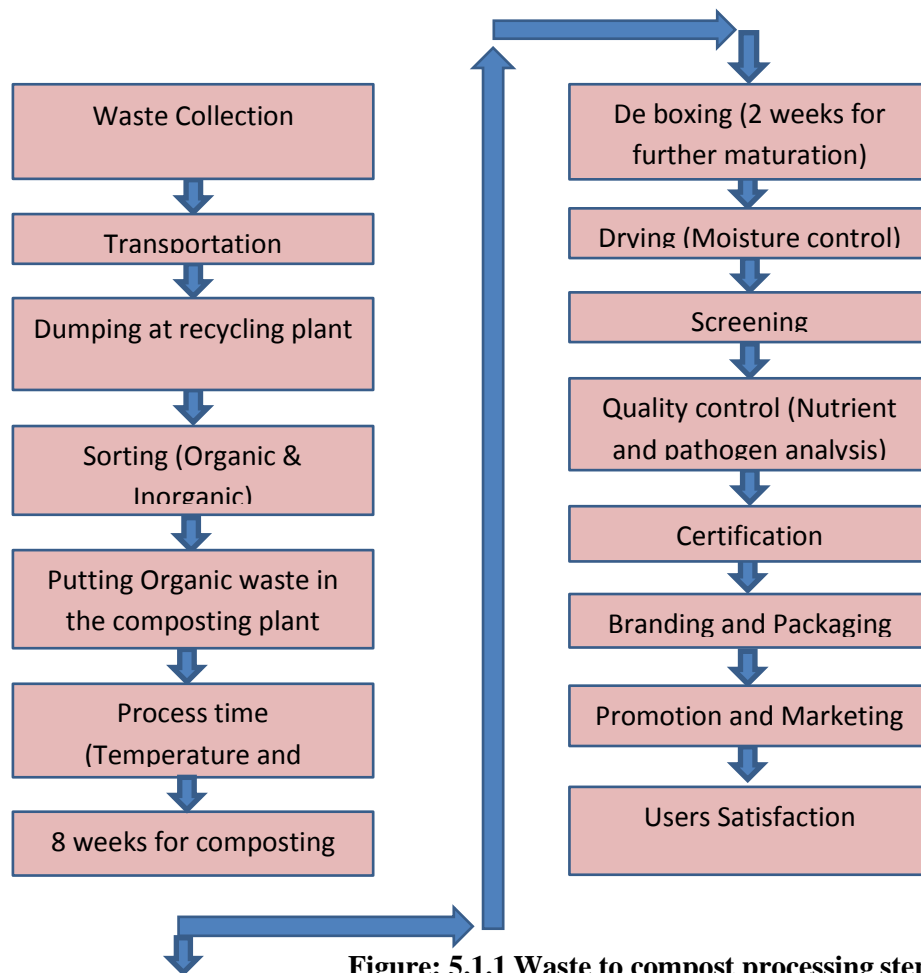


Figure: 5.1.1 Waste to compost processing steps

6.2 Compost Marketing Development:

WORD was assisted to assess the local markets of organic fertilizer including traders from retailers to wholesalers, suppliers, distribution channels, demand, product price supporting services, business environment. WORD has developed linkage with Department of Agriculture and seeks assistance for agriculture officers/assistants to undertake learning sessions with farmers and demonstrations at farmer's field for the demand generation. Following the assessment of markets, WORD adopted below strategies

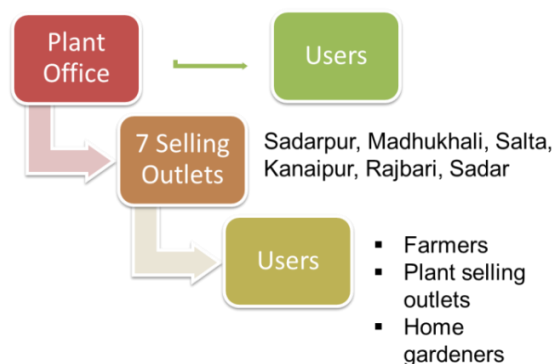


Figure: 6.2.1 Marketing Mix- Product

WORD NGO has developed local market to sell average 2 ton/month.

7.0 Monitoring and Coordination:

WORD established a system to register complains both from waste collection and compost users. The executive who receive the call and pass it to respective staffs for necessary actions. The Conservancy section of municipality also monitors the presence of any unauthorized disposal of wastes in pilot areas. The Waste Management Steering Committee of Faridpur municipality coordinates the attempts initiated by multi stakeholders for tackling wastes problems. In addition, Practical Action, Bangladesh also support municipality to assess satisfaction of the service users by survey and participatory focus group discussions.

8.0 Impacts:

The pilot project introduced waste collection and recycling to produce organic fertilizer. This has created visible and tangible impacts in cleanliness of different clusters, created green jobs and employment for unemployed adult male and female for poverty reduction from this waste value chain, increasing soil fertility from the uses of organic fertilizers, reduced pollution form safe disposal of wastes. The demand for waste collection services drastically increased after the pilot and WORD extended their business coverage.

9.0 Result

Under PPP Faridpur Municipality is covering 5100 HHs which is 19% of its total HHs. Producing waste to compost 1 ton every month and earning BDT 15000 by selling compost and contributing to the green environment. More than 20 poor people are employed in the whole management. 4 HHs are using waste to bio-gas saving BDT 500/hh/month. The success of Faridpur has been replicated in Jessore municipality who has a large population of 40000 HHs.

10.0 Challenges: The pilot project faced a number of challenges from different stakeholders

Community: Lack of awareness on segregation and safe disposal of wastes, less willingness to pay for door step waste collection services. Similarly lack of willingness of farmers to use organic fertilizers

Municipality: Traditional mind set of conservancy department, lack of coordination among departments, lack of competent human resources, in adequate infrastructures, logistics and budgets, lack of institutional capacity to design and manage public private partnerships.

Private Service Provider: lack of willingness to share business transactions, tendency to exclude poor customers and less attention on occupational health and safety of waste workers

Legal: The certification of organic fertilizer is complex and lengthy which restrict the commercial marketing of organic fertilizers.

11.0 Learning: The key learning form the pilot projects is

- Effective participation of service users, and actors involved in waste service and value chain is needed towards achieving long term financial sustainability of ISWM attempt
- Role of Media needs be promoted to inform people and raise mass awareness towards safe disposal of wastes.
- Organizing informal workers and mobilizing to formalize and cab be engaged to deliver improve waste services.

- Municipality – NGO/private partnership worked well delivering improved waste management services
- Built the confidence of stakeholders and received policy attention
- Found potential to scale up for nationwide scaling

12.0 Recommendations for realization of potentials

Level	Actions
Household and Community Level	<ul style="list-style-type: none"> • Awareness on Source Segregation of Wastes • Safe storage and disposal/delivery of wastes • Train and follow up the house assistant for safe disposal • Willingness to pay for service fee for door step collection services
Municipal Level	<ul style="list-style-type: none"> • Development of waste management plan • Mobilize Resources locally from private sector participation • Capacity building of conservancy department – monitoring and supervision to assess citizens satisfaction • Promoting local champions and introduction the concept of declaration of zero waste/healthy clusters • Introduction of vigilance and legal actions against polluters
National Level	<ul style="list-style-type: none"> • National Action Plan with milestones for operationalize the 3R strategy • More research & Development for diversified Waste Recycling options with business model • Media engagement for National Awareness Raising on safe handling of wastes • Development of Institutional and Regulatory framework for waste management • National Market development for organic compost • Development of National Network (i.e Waste Management Experts Associations) for knowledge and learning exchanges

13.0 Conclusion:

Under Public Private Partnership Faridpur Municipality is covering 19% of its total HHs. Producing waste to compost and contributing to the green environment. More than 20 poor people are employed in the whole management. 4 HHs are using waste to bio-gas saving BDT 500/hh/month. The Waste Management Steering Committee of Faridpur municipality coordinates the attempts initiated by multi stakeholders for tackling wastes problems. In addition, Practical Action, Bangladesh also support municipality to assess satisfaction of the service users by survey and participatory focus group discussions. The success of Faridpur has been replicated in Jessore municipality and other big cities indicating the necessity and prospects of PPP to solve the issues.

14.0 Acknowledgement:

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