

OPTIMIZING WASTE MANAGEMENT SERVICES IN BANGLADESH: A SERVICE LEVEL AGREEMENT APPROACH

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ABSTRACT

This abstract presents the development of a Service Level Agreement (SLA) model for providing waste management services in municipalities across Bangladesh. The research aimed to address the challenges of waste management in urban areas by establishing clear expectations, standards, and accountability mechanisms between service providers and local authorities.

Using a mixed-methods approach, data were collected through literature review, case studies, stakeholder consultations, and expert interviews to identify best practices and key components for designing an effective SLA model tailored to the context of Bangladesh.

The findings underscored the importance of defining service levels, performance indicators, and responsibilities to ensure efficient and reliable waste management services. A well-designed SLA can serve as a contractual framework to guide service delivery, monitor performance, and incentivize continuous improvement. Based on the findings, a comprehensive SLA model was developed finally, outlining the key obstacles observed.

By adopting the SLA model, municipalities in Bangladesh can enhance accountability, transparency, and efficiency in waste management services, leading to improved public health, environmental sustainability, and quality of life for residents. The model provides a practical framework for local authorities, service providers, and stakeholders to establish clear expectations and standards for waste management service delivery.

INTRODUCTION

Developing an effective Service Level Agreement (SLA) model for Integrated Waste Management Services (IWMS) in the municipalities of Bangladesh is crucial to addressing the significant challenges posed by urbanization and industrialization. This review examines existing literature and previous studies that focus on SLAs within waste management frameworks, particularly in the context of Bangladeshi municipalities.

Current State of Waste Management in Bangladesh

Challenges and Issues

Existing literature highlights numerous challenges faced by waste management systems in Bangladeshi municipalities, including inadequate infrastructure, insufficient funding, poor waste segregation, and lack of public awareness (Ahsan et al., 2014; Hoque et al., 2018). Municipalities often struggle with inefficient waste collection and disposal methods, leading to environmental pollution and health risks (Alam et al., 2020).

Government Policies and Initiatives

The National Waste Management Policy (2020) and the 3R Strategy (Reduce, Reuse, Recycle) by the Government of Bangladesh emphasize sustainable waste management practices but face implementation challenges (Hasan et al., 2019). The policies advocate for public-private partnerships and community involvement to enhance waste management services.

Service Level Agreements in Waste Management

Concept and Benefits of SLAs

Service Level Agreements are formal contracts that define the expected level of service between service providers and clients. SLAs in waste management can standardize service delivery, ensure accountability, and improve stakeholder collaboration (Gupta et al., 2017). They help in setting clear performance metrics, monitoring mechanisms, and penalty/incentive structures (Joshi & Ahmed, 2016).

Global Case Studies and Best Practices

Several countries have successfully implemented SLAs in their waste management systems:

Singapore: SLAs regulate waste collection and recycling services, ensuring high standards and compliance through performance-based incentives (Tan et al., 2014).

Germany: Municipalities use SLAs to manage waste treatment and disposal services, focusing on sustainability and resource efficiency (Kranert et al., 2012).

Integrated Waste Management (IWM) and SLA Models

Components of IWM

Integrated Waste Management (IWM) involves a holistic approach that includes waste generation, collection, transportation, treatment, and disposal. Effective IWM requires coordinated efforts among all stakeholders (Glawe et al., 2020).

Implementation of SLA Models in IWM

SLA models in IWM aim to standardize service delivery and improve efficiency. Performance metrics include waste collection frequency, recycling rates, and environmental impact indicators (Hoornweg & Bhada-Tata, 2012). The implementation of SLAs can lead to significant improvements in service quality and stakeholder satisfaction (Zhu et al., 2008).

Previous Studies on SLA Models in Bangladeshi Context

Local Studies and Pilot Projects

Previous studies have explored the potential of SLAs in improving waste management services in Bangladesh. For example:

Dhaka North City Corporation: A pilot project implemented SLAs to manage waste collection and recycling services, demonstrating improvements in service delivery and accountability (World Bank, 2018).

Chattogram City Corporation: An SLA-based approach for waste treatment and disposal was tested, focusing on environmental sustainability and resource recovery (Islam et al., 2019).

Research Findings and Recommendations

Studies recommend the adoption of SLAs to standardize waste management practices, improve stakeholder collaboration, and enhance transparency and accountability (Rahman et al., 2016). Key recommendations include the need for capacity building, public awareness campaigns, and technology integration (Khan et al., 2020).

The primary aim of this research paper is to develop a comprehensive Service Level Agreement (SLA) model tailored for Integrated Waste Management Services (IWMS) in the municipalities of Bangladesh.

The specific objectives are as follows:

- (i) Develop a Comprehensive SLA Model for IWMS;
- (ii) Identify Key Stakeholders and Their Roles in Waste Management;
- (iii) Propose Implementation Strategies and Policy Recommendations.

This research result can be further extended with Reviewing Global Best Practices in SLA-Based Waste Management, Evaluate the Potential Impact of the SLA Model, Identify Barriers to Implementation and Propose Solutions, which are not included in this study, by conducting Pilot studies and case analysis.

RESEARCH METHODOLOGY

The methodology for developing a Service Level Agreement (SLA) model for Integrated Waste Management Services (IWMS) in Bangladeshi municipalities involves a multi-phase approach.

Stakeholder Identification and Engagement

The research adopts a qualitative approach, including:

1. **Stakeholder Analysis:** Identifying key stakeholders involved in waste management in Bangladeshi municipalities.
2. **Needs Assessment:** Conducting semi structured interviews to understand the needs and expectations of stakeholders.
3. **SLA Framework Development:** Designing the SLA framework based on insights from stakeholder analysis and needs assessment.
4. **Validation:** Consulting experts and stakeholders to validate the proposed SLA model.

Primary Data Collection

Semi-structured interviews have been conducted with key stakeholders, including municipal officials, waste management service providers, and community representatives. The interviews aimed to gather insights into the current challenges, expectations, and potential components of an effective SLA.

Secondary Data Collection

Analysis of existing SLAs, contracts, and performance reports from municipalities within Bangladesh and comparable regions will be conducted to understand current practices and performance standards.

Development of the SLA Model

By analyzing the data from interviews and existing SLA Models as well as current practice, the key components of the SLA model have been developed. This SLA Model will consist definition of service levels, performance metrics, roles, and responsibilities, including monitoring and evaluation mechanisms, reporting requirements and feedback loops.

RESULT

Stakeholders Mapping and Consultation

The researchers visited the Kalaroa Municipality under Satkhira District to conduct semi-structured interview with the Municipality personnel. They consulted with the Honorable Mayor, Assistant Engineer (In Charge of Executive Engineer) and Conservancy Inspector to gather existing situation. Also the researchers visited the Co-Operative members of Waste Workers' of the municipality. The collected information on Current situation, gaps and expectation as well as challenges in O & M of SWM service in a written format.

Collecting Existing SLA

The researchers collected existing SLA FROM Practical Action- Satkhira Office, who are working closely with Kalaroa Municipality and Waster Workers' Cooperative and there also discussed the problems, challenges and scopes of work in the existing SLA with the In-Charge of Practical Action Office.

Draft SLA

Public-Private Partnership Agreement for providing domestic waste collection and management services

1st party,

Mayor/Conservancy Inspector,
X Municipality,
District: Y

2nd party,

Van Driver/ Garbage Collector,
Cleaners Cooperative Society Ltd:
X Municipality, Y.

Public Private Partnership Agreement (PPA) for proper implementation of the functions of Local Government (Municipal) Act- 50(2) of 2009 for the proper management of household waste collection and management activities, between X Municipality and Van Driver/ Garbage Collectors/Cleaners Laborers.

General Conditions:

01. Through this agreement, the 1st party entrusts the 2nd party (specified person as Van Driver/ Garbage Collectors/ Cleaners Laborers) with the responsibility of collecting and disposing of solid and hazardous waste from various households in a specified place as per the list provided by the Municipality of X;
02. For this, 1 motorized van of the municipality will be given to the above specified person to provide garbage collection and management services;
03. In case of appointment of van driver/garbage collector, experienced and competent person should be appointed, in this case the decision of the municipality will be taken unanimously on the recommendation of the cleaners labor cooperative society;
04. In addition to all the vans, the municipality will employ manpower on monthly contracts for monitoring the activities of the van operators, collecting monthly bills and maintaining accounts, taking initiatives to increase new customer additions and ensuring service quality at the customer level. The post responsible for this work will be called "**Supervisor***".

*** According to the Organizational Organogram of Municipality, The Supervisor can be appointed on contract basis. It should be noted that each Paurashava can fix actual number of its manpower within the manpower limit set in the organogram on the basis of necessity and can recruit accordingly.**

(Source: Section 72 of Paurashava Act 2009).

Responsibilities of a Supervisor:

- a) The supervisor shall regularly supervise the work of the garbage collectors;
 - b) The Supervisor shall be accountable to the 1st Party/Municipal Responsible Person;
 - c) Supervisor Garbage Collection and Management shall be obliged to collect 'Service Fee' from the service recipient house/house within 10th (tenth) of every month;
 - d) The supervisor will coordinate with the responsible person of the municipality to take necessary steps to ensure monthly bill collection, service man and explain all the accounts to the responsible person of the municipality every month.
 - e) A certain percentage of the withdrawn amount (given in the income statement below) will be admissible towards monthly allowance and traveling expenses and mobile bills.
05. For providing garbage collection and management services, the municipality will levy a fixed fee to the serviced households which will be considered as '**service delivery fee**'. The **Multi-Stakeholder Coordination Committee** will determine the service fee by considering the practical utility of waste collection and management services and the economic capacity and demand.
 06. Provision of garbage collection and management services at a reduced rate for low-income households or a single fee to community groups as a unit and the cost of that service, will also be determined by the committee;
 07. Subject to the review of the Multi-Stakeholder Coordination Committee, the duration of the contract is initially set at 02 (two) years; after the contract expires, it can be renewed with the consent of both parties as per the guidelines of the multi-stakeholder steering committee. The steering committee will make financial decisions during contract renewal.

1st Party Responsibilities:

01. The 1st party shall pay the accumulated amount of each month to the 2nd party / Van Manager / Garbage Collector by check / mobile banking along with appropriate receipt documents in monthly installments by 05th of the following month;
02. 1st Party shall take necessary institutional steps to introduce 2nd Party/ Van Driver/ Garbage Collector to the service sector and arrange regular programs for skill development;
03. Necessary publicity campaign, mobilization and strict action will be taken in the specific area/wards until the specified target (minimum 200 houses) for each garbage collection vehicle is ensured and other measures including ensuring quality of service will be taken to ensure regular service to the listed houses.
04. Also the 1st party will organize campaigns aimed at extending the service to the entire municipal areas;
05. The 1st party will ensure the satisfaction of the service recipient and whether the specified instructions of the services are being followed or not through regular monitoring (eg: interviewing the service users, taking regular inquiries from the councilor of the ward concerned about the waste management of that ward);

06. 1st Party shall carefully preserve all documents (whether original or photocopies) provided by 2nd Party/ Van Driver/ Garbage Collector;
07. 1st party, 2nd party/ van Driver/ waste collector shall undertake to supervise safety equipment required for this, supply as necessary and ensure regular management of waste collection materials and waste collection vehicles;
08. The municipality will keep the mobile service center (designated mobile number, 08 hours a day) open for all service confirmation, complaints and suggestions of the waste management service. The Municipality/Responsible Person shall be bound to protect the confidentiality of the complainant in case of any complaint.

2nd Party Responsibilities:

01. The van Driver/garbage collector will be engaged in full-time garbage collection and will collect garbage from 100 (one hundred houses) and drop it at the designated place of the municipality as per two schedules, morning and afternoon. The van Driver/garbage collector will collect the garbage from 100 (one hundred houses) and drop it at the designated place of the municipality on the second day, morning and afternoon alike. This will periodically collect garbage from a particular area/house in a two-day cycle one day at a time.
Van Driver/ Garbage Collector will be engaged to collect garbage from two hundred houses per month in two day cycle.
02. However, the van operator/garbage collector shall be obliged to collect at least 180 household wastes per month, otherwise the rate of monthly allowance shall be changed at the rate mentioned in the *financial statement*.*
03. If for any reason the existing van operator/garbage collector wants to withdraw from the said contract and withdraw himself from this work of garbage collection or the municipality wants to terminate a van operator/garbage collector for specific reasons, at least one month's notice must be given to the mutual side and it is to be approved by the majority of the members of the multi-Stakeholder Coordination Committee.
04. The municipality shall issue a monthly bill payment card to each household (with the name of each month for at least one year), which shall be stored in the service recipient's residence, and the supervisor engaged in bill collection shall give his signature in the month box of the card during each month's bill collection;
05. Ensure proper time of delivery of service at customer level, pre-determined fixed days for waste collection from home and proper sanitation and safety of waste collection equipment;
06. Any damage to materials due to vandalism or careless accident shall be borne by the 2nd party as per the decision of the Multi-Stakeholder Coordination Committee subject to proper investigation and repair of the same.
07. The 2nd party undertakes to render the service by following the directions of the 1st party and the multi-stakeholder coordination committee with utmost seriousness.

The details of income of both parties under this agreement are as follows:

01. The money earned by providing garbage collection and management services will be shared between the two parties, where the 2nd party/van manager/garbage collector will get 60% and the 1st party/Municipality will get 30%, 10% for the supervisor (monthly allowance, travel expenses and mobile Bills) shall be allocated money, all money shall be credited to the Municipality through the Supervisor and the Municipality shall pay the percentage due of each share from the collected amount in monthly installments by check/mobile banking every month with proper receipt documents;
02. 2nd Party/Van Operator/Garbage Collector will be obliged to collect at least 180 (Target 200) household garbage monthly. However, until the municipality is able to ensure collection of at least 180 houses per vehicle, 20% will be applicable instead of 30% due to the municipality and in such a case the supervisor will receive a minimum of Tk. 4000 (four thousand) (monthly per van) and the garbage collector/van operator a maximum of Tk.10800. (Ten Thousand Eight Hundred).

Regarding maintenance of garbage collection vans:

- a) The 2nd party/van operator/garbage collector shall be responsible for the maintenance cost of BDT 100 (One Hundred) or below;
- b) The 1st party/Municipality shall be responsible for the maintenance cost of money required above 100 (One Hundred) Rupees.
- c) Garbage collection service may be stopped due to urgent maintenance, in which case the 2nd party/van operator/garbage collector will collect the entire amount of the bill from the municipality through correct bill subject to review with the supervisor and responsible person of the municipality.
- d) 1st party/Municipality 30% of the money due 10% money for maintenance of garbage collection vehicle, 5% money 2nd party/Van manager/garbage collector medical facilities or insurance for

them (2nd party), 5% money for providing household garbage collection and management services will be kept in savings for SELF expenses (eg: running call center services, undertaking campaign initiatives in municipal areas, etc.) and the remaining 10% to fund future emergencies and purchase of new garbage collection vehicles.

20% amount due to 1st party/Municipality in initial condition will also be apportioned on pro rata basis.

- e) To ensure transparency and accountability in financial matters, the municipality should deposit its money into its own bank account every month.
- f) The 'service fee' levied on the households will be formulated by the X Municipality on the recommendation of the Multi-Stakeholder Coordination Committee. It should be noted here that currently this rate is fixed at the rate of 100 taka for houses. This 'Service Fee' will be increased/decreased in line with the rate of inflation at the beginning of July every year (with the start of New Financial Year).
- g) However, the monthly 'Service Fee' for super/poor families or communities will be determined with the approval of the Municipal Responsible Person and Supervisor.
- h) If any dispute arises between the two parties during the term of the agreement, the Multi-Stakeholder Coordination Committee will take steps to mediate through bilateral agreement.
- i) The municipality of Colorado may change the location of the collection point for household waste;
- j) 2nd party/van manager/garbage collector shall clearly write logo of 1st party/municipality and mobile number for contacting and complaining on all materials;
- k) Either party reserves the right to terminate this Agreement with one month's notice.

General Calculation of Income of Each Party:

Total Motorized Van: 05 Nos (Calculation for each 05 nos of vans)

Beneficiaries HH Cover: 200 Nos/Van (Maximum Target, collection schedule: 1 day after each HH, Daily target: 100 Nos Max., 200 Nos for a single Van within a two days collection cycle; Total Month days: 26 Days, Friday Off-day)

Tentative Collection of Money/Van: $200 \times 100 \text{ BDT} = 20000 \text{ BDT/Month/Van}$

Van Operator or Waste Collector Part (for each van separately) = 60% = 12000 BDT

Supervisor Part (10% from each van) = 2000 BDT/van = 2000 BDT X 5 Vans = 10000 BDT

Municipality Part: 30%/van = 6000 BDT/Van = 6000 X 5 BDT = 30000 BDT

Validation & Pilot Testing

After developing this SLA, this was primarily shared with the Cooperative members and Municipality officials of Kalaroa Municipality under Satkhira District. They have given positive feedback and are very eager to establish this SLA in their Municipality. But no Pilot testing has been conducted with this SLA, which can be tested in broad areas.

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CONCLUSION AND RECOMMENDATIONS

The implementation of an SLA model in Bangladeshi municipalities has the potential to significantly improve the delivery of integrated waste management services. By clearly defining performance expectations, responsibilities, and penalties for non-compliance, the SLA model can enhance transparency, accountability, and service quality.

The success of this model will depend on the commitment of both municipalities and service providers to adhere to the agreed standards and the active involvement of the community in monitoring and feedback. Further research could explore the scalability of this model to different municipalities and its adaptability to other public services.

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