Pilot Plant Study for Solid waste treatment for IIT Kharagpur

Broad Area

- Planning and Policy
- Design and Development
- Habitation and Maintenance
- Governance

Need for the Study in the context of Future of Cities

Municipal solid waste handling, treatment and disposal facilities are now being setup in most urban centers across the country. Their success in providing the promised end-points, i.e., compost or biofuel, is limited. Most of them have survived through external funding only and are unable to achieve commercial success and provide consistent and high-quality end-products. The aim of this study is to set-up a completely mechanized facility with minimal operator attention or skills that can also provide consistent and high-quality end-products. The financial viability of the treatment strategy will also be tested at the pilot-plant level.

Further, there is general lack of information relevant to the country in the literature regarding the quality of compost being sold in the market. The proposed pilot-plant will provide an opportunity to collect this information and relate it to various aspects of handling and treatment.

Objective and Scope of Work

Objective: Optimization of a solid waste treatment plant for treating urban waste at the pilot-plant level with compost as the useful end-product.

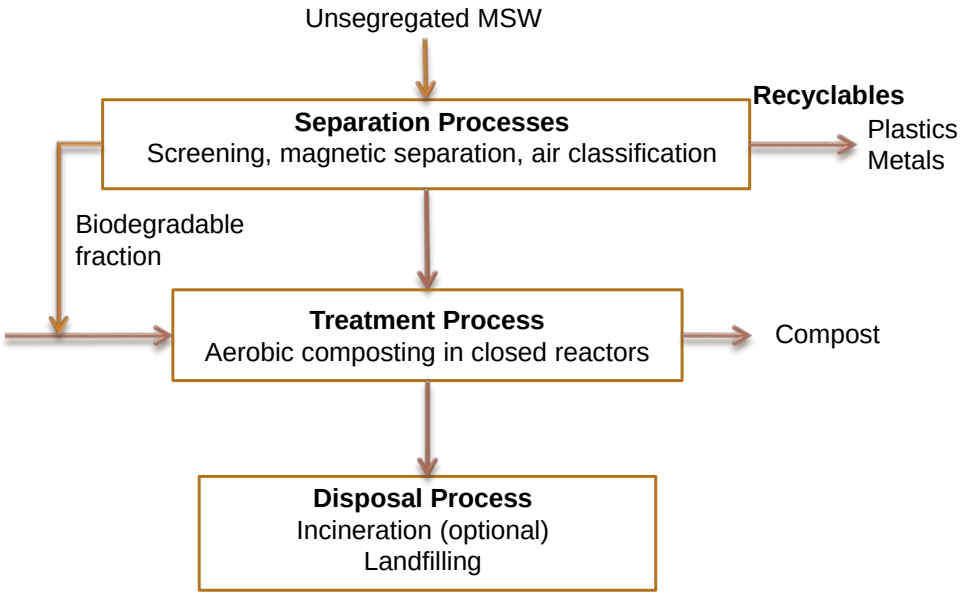
Specifically, the project involves:

1. Setting up a pilot-plant facility with different treatment units prior to aerobic composting in closed reactors. Qualitative and quantitative assessment of pilot-plant units' performance will be done on a continuous-basis.
2. End-product quality evaluation: Compost
3. Cost-benefit analysis

Scope: The project will be restricted to IIT Kharagpur and its municipal solid waste. The waste treatment facility will have materials separation, treatment and disposal processes.

Methodology

Phase 1: Municipal solid waste handling facilities are to be created at the pilot-plant level. ***Land for the project will have to be determined and a single storied structure for housing the pilot-plant will have to be built.*** Equipment for the pilot-plant will have to be purchased and/or fabricated. Data collection methods will be incorporated into the functionality of the plant. A flowchart showing the various processes in the pilot-plant is shown here. Duration: Year 1 and 2



Phase 2: The plant operations and maintenance will be monitored along with the end-products. Cost-benefit analysis and financial viability of the system will be determined. Duration: Year 3 to 5

Phase 3: End-products and feasibility of commercial success/ marketability of compost will be tested. Duration: Year 4 and 5

Outcomes/Deliverables

1. A fully-functional pilot-plant
2. Data collection and analysis of handling and treatment processes and end-product quality
3. Publications for conferences and journals
4. Patents

Team Composition

Principal Investigator	
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