

Business Ecosystem

Feed-in tariff system within new policy of the Renewable Energy Bill is favourable on paper, but is still complicated in practice.

Demand and prices for bio-fertilizer are low; chemical fertilizers more popular.

Waste management contracts/ concessions are not very transparent and although officially delegated to the Municipalities, central government is highly involved.

Tipping fees for dumping of waste not commonly accepted or too low for covering cost of processing the waste. Little efforts to stop illegal dumping of waste.

Key Partners

- Waste processing company
- Municipality
- Engineering Firm
- Agric NGO

Key Activities

- Design and construction of waste treatment plant (conversion of faecal sludge and organic waste into electricity and bio-fertilizer)
- Installation of waste separation and collection points and a waste management system for solid waste
- Collection of solid and liquid waste
- Marketing of bio-fertilizer

Value Proposition

For Municipality:
Clean/ hygienic urban environment: access to clean (public) toilets and solid waste collection are improved and (public) toilets emptied hygienic and timely

For Electricity Company:
Renewable energy: power shortages are diminished in a sustainable way

For Agro-Input Companies/ Farmers:
Production of bio-fertilizer: a good quality, affordable bio-fertilizer will be available to farmers

Customer Relationships

Personal contacts with relevant units of municipality and electricity company. With both also formal, contractual relations exists. Relationships maintained through regular face-to-face meetings.

Promotion of bio-fertilizer product among farmers/ cooperatives/ retailers through mass media (news paper, tv & radio advertisements) and occasionally face-to-face (on fairs)

Customers

- Municipality (as mandated authority to keep the city clean)
- Electricity Company (who needs additional energy preferably from renewable sources)
- Farmers Cooperatives/ Agricultural Inputs dealers

Extended Beneficiaries

- General citizens in the municipality (who get a clean, healthier direct environment)
- People/ institutions that are less affected by flooding thanks to cleaner drains
- Farmers of nearby fields whose irrigation water is less polluted
- Farmers and their families that benefit from good quality, affordable fertilizer.

Governance

Waste processing company is leading the partnership

Management team with representatives of all four parties

For each activity one partners is assigned final responsibility; risk for non-achievement also lies with that partner.

Key Resources

- Expertise on waste management, waste treatment & bio-fertilizers
- Human resources
- Land for treatment plant
- Treatment plant including specialised equipment
- Waste collection trucks and sorting machines

Channels

- Municipality: Meetings & joint site visits with municipal team
- Electricity Company: Meetings, direct contact and negotiations
- Farmer Cooperatives: through Agriculture Extension Services, advertisements, trade fairs, mailings, agro-input companies

Cost Structures

Capital costs:

- Construction of plant (civil works) (\$ 3 M; 60% of capex)
- Installation of machinery & equipment (\$ 1.5 M; 30% of capex)
- Procurement of waste collection trucks (\$ 0.5 M; 10% of capex)

Operation & Maintenance costst:

- Staff costs (\$.../year; 40% of Opex)
- Inputs (fertiliser enrichment, fertiliser packaging) (\$.../year; 20% of Opex)
- Supplies/ spare parts for maintenance plant (\$.../ year; 15%)
- Running costs and maintenance of trucks (\$.../ year; 13%)
- Office & marketing (for fertilizer) costs (\$.../ year; 10%)
- Financing costs (\$...; 2%)

Impact

- Improved hygiene, health and quality of life for urban slum communities through improved sanitation services and waste management and less flooding
- Improved environmental sanitation, food security and access to clean energy
- Less pollution of surface water sources
- Macro-economic gains due to less degrading of environmental resources, a.o. positive impact of cleaner environment on tourism
- Change of mindset and proof of concept facilitates scaling up/replication

Revenue Streams

For capital costs:

- Grants from donors and development bank (\$ 3.5 M; 70% of Capital costs)
- Soft Loan (\$2 M)

From products/ services delivered:

- Sales of electricity (\$.../ year)
- Sales of bio-fertilizer (\$.../ year)
- Tipping/ dump fees by waste companies (\$.../ year)
- Waste collection / toilet emptying fees (\$.../ year)
- Management fee paid by Municipality (\$.../ year)