Solid Waste Financing

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On behalf of U.S. EPA
Outline

• Solid Waste Management Overview
• Financing Solid Waste Management
• Climate and Clean Air Coalition Municipal Solid Waste Initiative
1 Solid Waste Management Overview
Overview of Solid Waste

• In 2012, the world’s cities generated 1.3 billion tons of solid waste per year, amounting to a footprint of 1.2 kilograms per person per day.
• With rapid population growth and urbanization, municipal waste generation is expected to rise to 2.2 billion tons by 2025.

Source: World Bank
Overview of Solid Waste

MSW generation rates are influenced by: economic development, degree of industrialization, public habits and local climate.
SWM Challenges

In low and middle-income countries, waste is often disposed in unregulated dumps or openly burned.

Health, Safety, and Environmental
- Breeding ground for disease vectors
- Contributes to global climate change through methane generation
- Promotes urban violence

Financial Challenge
- Globally, SWM costs will increase from $205 Bn (2016) to $375 Bn (2025). Cost increases will be most severe in low income countries (5x) and lower-middle income countries (4x).
- Effective waste management is expensive (20-50% of municipal budgets).
- Operating this essential municipal service requires integrated systems that are efficient, sustainable, and socially supported.
Mitigating Emissions from the Waste Sector Results in Numerous Benefits for the Community

**Challenges**
- Black carbon emissions from vehicles and equipment
- Black carbon emissions from open burning and landfill and dump fires
- Methane emissions from landfills and dumps

**Solutions**
- Efficient waste collection, transport, and handling
- Preventing waste burning
- Organic waste management
- Landfill gas capture

**Benefits**

**Environmental**
- Climate change mitigation
- Air quality protection
- Water quality protection
- Litter reduction

**Social**
- Improved public health
- Worker protection
- Improved welfare of the informal sector
- Improved aesthetics

**Economic**
- Job creation
- Resource conservation
- Costs reduction
- Energy generation

Learn how the Climate and Clean Air Coalition is helping cities reduce short-lived climate pollutant emissions from the municipal solid waste sector:

http://www.ccacoalition.org/en/initiatives/waste
2 Financing Solid Waste Management projects
Financing the SWM Value Chain

SWM projects can be financed from value chain for upstream industry/populations to downstream disposal and energy utilization

**Upstream**
- SWM planning & capacity building
- Reduce, reuse, recycling
- Sustainable, EE process optimization

**Midstream**
- Waste collection Transfer station
- Transport – Truck & Rail
- Waste separation Recycling
- Composting Refuse Derived Fuel

**Downstream**
- Landfills Incineration
- Sell/utilize recyclables Compost
- Waste to Energy
- Anaerobic Digestion, Biogas to Energy
- Biomass to energy
Building Efficiency in SWM

• Improving solid waste service delivery and fee collection
  o Appropriate model for lower income countries where service delivery is poor or non-existent and where fee collection to support waste collection and disposal is a major challenge.
  o Helpful model to jump start solid waste services in fragile and post-conflict situations where the private sector may be reluctant to enter.
  o Example cities include in Nepal and the West Bank
Building Efficiency in SWM

- Promoting source separation and recycling
  - In middle income countries where municipal solid waste collection rates are already high, government tends to focus on improving the financial and environmental sustainability of the sector.
  - RBF can be used to design projects that provide incentives to households for waste separation and recycling.
  - Example countries include like China, Malaysia or Indonesia
Building Efficiency in SWM

- Strengthening waste collection and transport in under-served communities
  - This model is applicable to both low and middle income cities but is most relevant where the focus is to improve services in under-served and low income communities.
  - These project designs could be integrated into community and slum upgrading projects.
  - Example cities include Tanzania, Jamaica and Mali.
Financial Readiness

Key considerations to prepare for financial readiness of a waste management project:

• **Infrastructure**: build or upgrade waste sorting and treatment facilities, close dumps, construct or refurbish landfills, and provide bins, dumpsters, trucks, and transfer stations.

• **Legal structures and institutions**:
  - National and or local policies
  - Regulations on proper disposal
    - MSW is often mixed with medical and/or hazardous waste
    - Lack of local capacity to develop proper disposal regulations
  - Regulation enforcement
  - Local capacity or education
  - Funds to enforce regulations
  - Public awareness
  - Behavior change and public participation

• **Social inclusion**: formal jobs for waste picker (safety, social safety nets, child labor restrictions and education)

• **Financial sustainability**: Taxes and fee structures

• **Health and safety**: Improve public health and livelihoods by reducing open burning, mitigating pest and disease vector spread.
Public-Private Partnerships – Shared Responsibility

SWM projects need to engage public and private sectors and civil society for risk sharing, transparency and economically and financially successful structures.

**Lenders**
- **Provide Financing** (Local currency facilities; guarantees and structured financial products)

**Government**
- **Financial support**
  - Assets
  - Subsidies
- **Political support**
  - Legal and regulatory framework

**Private Investors**
- Equity
- Management experience
- Technical experience

**Civil Society**
- Local engagement
- Local work force

SWM Project
Financing alternatives for SWM projects

Public Financing – Four ways of financing local public goods:
1. Local taxes
2. User charges which are levied on various urban services
3. Grants from higher levels of government (Central, State Governments)
4. Raising funds through Capital Market, from Government/Financial Institutions or international agencies

Traditional loans
- Bilateral and multilateral development banks
- ECAs
- International and local government and commercial banks
Financial Alternatives

Results-based financing: payments are tied to results
  o Fee collection and behavior change toward recycling and source separation of organic waste;
  o Access to basic services for the poor and reducing the adverse impact of uncollected or inappropriately disposed waste among low income residents;
  o Transparency and accountability in the use of public funds through an independent verification process.

Development policy financing: technical assistance and loan through PPP mechanism
Climate and Clean Air Coalition
Municipal Solid Waste Initiative

• Focused on addressing SLCPs from waste sector at the local level

• Types of assistance
  o Technical assistance (e.g., waste characterization, landfill gas assessments)
  o Capacity building (e.g., trainings)
  o Networking and information sharing
  o Assistance in identifying and securing financing for projects
# Readiness: Toolkit for Finance

<table>
<thead>
<tr>
<th>Stage</th>
<th>Activities/Outputs</th>
</tr>
</thead>
</table>
| 1 – City Assessment    | • Data collection  
                          • City assessment form                                                              |
| 2 – Technical Work plan| • Technical work plan  
                          • Technical studies (e.g., waste characterization studies)  
                          • Capacity building trainings (e.g., landfill operations)                          |
| 3 – Financial Work plan| • **Evaluation of financial readiness and potential risks**  
                          • Financial work plan  
                          • Studies (e.g., identifying financing opportunities)  
                          • Trainings (e.g., procurement)                                                             |
| 4 – Ready to Launch    | • Preparing proposals  
                          • Reviewing and finalizing contracts                                                  |
## Financial Readiness Evaluation

<table>
<thead>
<tr>
<th>Category</th>
<th>Example Evaluation Question</th>
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<tbody>
<tr>
<td>Political Environment</td>
<td>• How long is the current government’s term? Does the project need to be completed within that timeframe?</td>
</tr>
<tr>
<td>Regulatory Environment</td>
<td>• How does this project align or conflict with existing regulations (e.g., public health regulations)?</td>
</tr>
<tr>
<td>Legal Framework</td>
<td>• Are there laws that determine how a project must be structured?</td>
</tr>
<tr>
<td>Revenue Streams</td>
<td>• Will anticipated revenue streams go to the general fund, or can they be used for other waste projects?</td>
</tr>
<tr>
<td>Financial and Technical Expertise</td>
<td>• Does the city have the in-house capacity it needs (e.g., for modeling project economics)?</td>
</tr>
<tr>
<td>Bidding</td>
<td>• What are the local procurement policies and procedure? How do they apply to this project?</td>
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Objectives of Financial Readiness Evaluation toolkit

- Raises awareness of challenges and potential pitfalls
- Helps cities identify gaps or areas of potential risks
- Goal is to help cities advance to Stage 4, which is focused on actually securing financing
Public Private Partnerships

Poland Poznań WTE PPP and SUEZ

- WTE facility opened in March, 2017
- The facility reduces landfilled and dumped waste into electricity and district heating
  - 30% of the domestic energy is supplied by this facility
- The parties involved included the company SUEZ, the Marguerite Fund, the European Fund for Energy, Climate Change and Infrastructure, and the City of Poznań
  - 84 million Euros was financed from a European subsidy and 96 million euros from a non-recourse loan
  - SUEZ signed a 25 year contract with the City of Poznań

Source: https://pppknowledgelab.org/sectors/waste
Source: Marguerite Fund
Thank you! Questions?

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