Opportunities and Challenges in waste management

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What does zero waste mean?

- Sending **nothing** to be disposed to landfill
- Sending **nothing** to incineration
- It does **not** mean **more recycling**
- Avoiding material that has to be recycled
- Do not consume

The goal should therefore be to **reduce overall waste generation** and to **keep resources in circulation** for as long as possible.
Circular Economy

(Ellen MacArthur Foundation, 2015)
Status of waste in Africa
Municipal solid waste generation

125 million tonnes in 2012

244 million tonnes in 2025
Municipal solid waste composition

96% is disposed of mostly at unsanitary landfills or open burning
57% organic
30% mainline recyclables

Source: Hoornweg and Bhada-Tata (2012)
Collection rate

Average 44% ranging between 18-80%

Average 69%
Cost of illegal dumping

- Waste collection tariffs varies between R17 and R124 per household per month in South Africa

<table>
<thead>
<tr>
<th>Municipality</th>
<th>Spending on clearing illegal dumping (R per annum)</th>
</tr>
</thead>
<tbody>
<tr>
<td>City of Johannesburg</td>
<td>R 80 million</td>
</tr>
<tr>
<td>Durban Solid Waste</td>
<td>R 180 million</td>
</tr>
<tr>
<td>Cape Town</td>
<td>R 200 million</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>R 460 million</strong></td>
</tr>
</tbody>
</table>

R460 million can provide collection services
309 140 households @ R124/month
547 619 households @ R70/month
## Value of waste in Africa

<table>
<thead>
<tr>
<th></th>
<th>Generated Tonne/Annun</th>
<th>Unit Values, US$ per Tonne</th>
<th>Status Quo (4% Recovery)</th>
<th>100% Recovery</th>
</tr>
</thead>
<tbody>
<tr>
<td>Organics</td>
<td>71 246 580.00</td>
<td>16.28</td>
<td>46 395 772.90</td>
<td>1 159 894 322.40</td>
</tr>
<tr>
<td>Paper</td>
<td>11 249 460.00</td>
<td>64.26</td>
<td>28 915 611.98</td>
<td>722 890 299.60</td>
</tr>
<tr>
<td>Glass</td>
<td>4 999 760.00</td>
<td>42.30</td>
<td>8 459 593.92</td>
<td>211 489 848.00</td>
</tr>
<tr>
<td>Plastic</td>
<td>16 249 220.00</td>
<td>269.28</td>
<td>175 023 598.46</td>
<td>4 375 589 961.60</td>
</tr>
<tr>
<td>Metals</td>
<td>4 999 760.00</td>
<td>195.95</td>
<td>39 188 118.88</td>
<td>979 702 972.00</td>
</tr>
<tr>
<td>Other</td>
<td>16 249 220.00</td>
<td>31.71</td>
<td>20 610 510.65</td>
<td>515 262 766.20</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>124 994 000.00</strong></td>
<td></td>
<td><strong>318 593 206.79</strong></td>
<td><strong>7 964 830 169.80</strong></td>
</tr>
<tr>
<td>Increase relative to Status quo</td>
<td></td>
<td></td>
<td></td>
<td><strong>7 646 236 963.01</strong></td>
</tr>
</tbody>
</table>

US$ 7.6 billion worth of resources is lost to the economy
Resource value of waste South Africa

Calculated based on 13 waste streams

• ~R25.2 billion per annum - Resource value of waste in SA (2014)
• ~R8.2 billion per annum in value is already being recovered
• ~R17 billion per annum in resources lost to the economy

R17 billion can pay a monthly living wage to 137 540 families
R10 300 is the monthly living wage for a family in SA
Challenges
Challenges in developing countries

- Communication between all stakeholders is required to get a well functioning waste management system going.
- Solid waste management is a multi-dimensional issue:
  - Technological
  - Environmental
  - Socio cultural
  - Legal
  - Institutional
  - Economic

  Linkages to all are needed for a well functioning system.

- Solid waste services have a cost that is often not recovered.
- Reliable data is required for planning and management purposes.
- Capacity and skills are required to manage waste responsibly.

(Guerro et al., 2013)
Challenges in South Africa

- Four broad themes of challenges face municipalities:
  - Financial management
  - Equipment management
  - Labour (staff) management
  - Institutional behaviour (management and planning)
- Services provided are not responsive to the needs of the communities
- Non-enforcement by-laws
  - Waste management
  - Health
  - Emergency services
  - Informal trading
  - Problem properties
  - Municipal planning
Opportunities
Bridging the service and value chains

Service Chain: (Typically) Municipal activities
- Generator
  - Uncontrolled dumping
  - Collection
  - Disposal

Value Chain: (Typically) Private activities
- Junk shops / Buy-back Centres
- Recyclers
- Exporters
- End-users, e.g. manufacturing

Informal waste pickers
Small businesses e.g. co-ops
Waste and recycling businesses

Increasing Voluntary EPR Programmes

Source: Adapted from OECD (2015)
Economic opportunities

• Realising the value of waste
  - Encourage recycling
  - Creating processing capacity for secondary materials
  - Creating markets for recycled products
Social opportunities

• **Job creation**
  - Landfill disposal creates <1 job per 1000 tonnes of waste
  - Recycling creates 6-13 jobs direct jobs per 1000 tonne of waste plus indirect jobs in downstream recycling

• **Poverty alleviation**
  - In Zimbabwe 61.5% of people involved in resource recovery improved their living conditions

• **Enterprise development**
  - With proper support SME’s can play an important role in waste management in Africa

• **Entrepreneurship – throughout the value chain**

• **Integration of the informal sector**
  - No one-size-fits-all solution
  - EPR can threaten livelihoods of informal pickers
Global waste management system

• Global trade
  - Secondary resources economy is a global business
  - Cross border trade is driven by demand
  - Creating local markets will create resilience to global shocks in secondary resources markets

• Regional approach
  - Countries generate too little waste to warrant investment in technologies
  - Creating regional economies i.e. waste oil, batteries, e-waste will deliver economies of scale for attracting investment in regional treatment facilities
Conclusions
Conclusions

• Waste management in Africa is characterised by backlogs in waste collection coverage, open dumps and unsanitary landfills
• Opportunities in Africa to develop a secondary resources economy is largely unexploited
• At least US$7.6 billion per year in secondary resources are currently lost to the economy
• Exporting secondary resources essentially means exporting of job opportunities that are much needed in Africa
• A Africa regional approach is needed to realise the benefits of a secondary resources economy in Africa
• Development of an Africa regional strategy for secondary materials management is recommended
1. Bring waste under control

2. Harness the opportunities of waste as resource

- CAPACITY & AWARENESS: Improved awareness, strengthened capacity and active partnerships to solve waste challenges
- SERVICES & TECHNOLOGIES: Appropriate, inclusive waste services and technologies that attract investment
- EVIDENCE: More, better quality evidence to inform decision-making and implementation of solutions
- LEGISLATION & ENFORCEMENT: Strong institutions and strengthened policies that are harmonized, monitored and enforced for action
Thank You

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