Waste generation is anticipated to increase by 70% by 2050 globally.

Currently, Sub-Saharan Africa’s per capita generation rate is the lowest.
The region generated **174 million tonnes** of waste in 2016. The largest waste generators are middle-income countries or those with significant tourist populations.

**Waste Generation Rates: Sub-Saharan Africa Region**

*Kg / capita / day*

*Data adjusted to 2016*
However, Sub-Saharan Africa is the fastest growing region with waste expected to nearly triple by 2050.

<table>
<thead>
<tr>
<th>Region</th>
<th>2016</th>
<th>2030</th>
<th>2050</th>
</tr>
</thead>
<tbody>
<tr>
<td>Middle East &amp; North Africa</td>
<td>129</td>
<td>177</td>
<td>255</td>
</tr>
<tr>
<td>Sub-Saharan Africa</td>
<td>174</td>
<td>269</td>
<td>516</td>
</tr>
<tr>
<td>Latin America &amp; Caribbean</td>
<td>231</td>
<td>290</td>
<td>369</td>
</tr>
<tr>
<td>North America</td>
<td>289</td>
<td>342</td>
<td>396</td>
</tr>
<tr>
<td>South Asia</td>
<td>334</td>
<td>466</td>
<td>661</td>
</tr>
<tr>
<td>Europe &amp; Central Asia</td>
<td>392</td>
<td>490</td>
<td>468</td>
</tr>
<tr>
<td>East Asia &amp; Pacific</td>
<td>440</td>
<td>602</td>
<td>714</td>
</tr>
</tbody>
</table>

Projected Waste Generation
Millions of tonnes/year
More than 40 percent of the waste in the Sub-Saharan Africa region is organic.

30 percent of waste is typically inert waste such as sand and fine particles.
Less than half of the waste generated in Africa is collected formally.

Waste collection is often nonexistent in rural areas.
Almost every country in the region is at a very early stage in source separation.
69% of waste is openly dumped and often burned.
The number of new disposal facilities is not meeting the need given the growing quantities of waste.
Key challenges

Overuse of facilities

Citizen resistance

Land scarcity

High urbanization and sprawl
Local governments often lack funds, only covering ~50% of investment costs for waste systems. The remainder comes mainly from national government subsidies and the private sector.
In low-income countries waste management consumes ~20% of municipal budgets

High income countries: >$100/tonne
Lower-income countries: ~$35/tonne
### Typical Waste Management Costs by Disposal Type (US$/tonne)

<table>
<thead>
<tr>
<th>Disposal Type</th>
<th>Low-income countries</th>
<th>Lower middle-income countries</th>
<th>Upper middle-income countries</th>
<th>High-income countries</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collection and transfer</td>
<td>20-50</td>
<td>30-75</td>
<td>50-100</td>
<td>90-200</td>
</tr>
<tr>
<td>Controlled landfill to sanitary landfill</td>
<td>10-20</td>
<td>15-40</td>
<td>20-65</td>
<td>40-100</td>
</tr>
<tr>
<td>Open dumping</td>
<td>2-8</td>
<td>3-10</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Recycling</td>
<td>0-25</td>
<td>5-30</td>
<td>5-50</td>
<td>30-80</td>
</tr>
<tr>
<td>Composting</td>
<td>5-30</td>
<td>10-40</td>
<td>20-75</td>
<td>35-90</td>
</tr>
</tbody>
</table>

Source: WB Solid Waste CoP and Climate and Clean Air Coalition

### Region

<table>
<thead>
<tr>
<th>Region</th>
<th>Average user fee in selected cities (US$/year)</th>
</tr>
</thead>
<tbody>
<tr>
<td>East Asia and Pacific</td>
<td>$46</td>
</tr>
<tr>
<td>Europe and Central Asia</td>
<td>$83</td>
</tr>
<tr>
<td>Latin America and the Caribbean</td>
<td>$80</td>
</tr>
<tr>
<td>Middle East and North Africa</td>
<td>$55</td>
</tr>
<tr>
<td>South Asia</td>
<td>$34</td>
</tr>
<tr>
<td>Sub-Saharan Africa</td>
<td>$10-40 (World Bank estimates)</td>
</tr>
</tbody>
</table>
Waste management fee type and billing method

### Household billing method

<table>
<thead>
<tr>
<th>Income Level</th>
<th>Direct solid waste billing</th>
<th>Door-to-door fee collection</th>
<th>Joint property tax billing</th>
<th>Joint utility billing</th>
<th>Delivery of payment to central location</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low income</td>
<td>20%</td>
<td>80%</td>
<td>6%</td>
<td>1%</td>
<td>0%</td>
<td>0%</td>
</tr>
<tr>
<td>Lower-middle income</td>
<td>5%</td>
<td>45%</td>
<td>13%</td>
<td>13%</td>
<td>34%</td>
<td>0%</td>
</tr>
<tr>
<td>Upper-middle income</td>
<td>44%</td>
<td>38%</td>
<td>13%</td>
<td>38%</td>
<td>6%</td>
<td>14%</td>
</tr>
<tr>
<td>High income</td>
<td>43%</td>
<td>14%</td>
<td>29%</td>
<td>14%</td>
<td>60%</td>
<td>14%</td>
</tr>
</tbody>
</table>

### House hold fee type

<table>
<thead>
<tr>
<th>Income Level</th>
<th>Fee per volume of waste</th>
<th>Flat fee per income level</th>
<th>Flat fee per household</th>
<th>Property Value</th>
<th>Property Location</th>
<th>Variable based on cost</th>
<th>Other</th>
</tr>
</thead>
<tbody>
<tr>
<td>Low income</td>
<td>20%</td>
<td>4%</td>
<td>13%</td>
<td>13%</td>
<td>3%</td>
<td>1%</td>
<td>13%</td>
</tr>
<tr>
<td>Lower-middle income</td>
<td>23%</td>
<td>5%</td>
<td>6%</td>
<td>18%</td>
<td>3%</td>
<td>4%</td>
<td>13%</td>
</tr>
<tr>
<td>Upper-middle income</td>
<td>20%</td>
<td>4%</td>
<td>1%</td>
<td>15%</td>
<td>9%</td>
<td>4%</td>
<td>13%</td>
</tr>
<tr>
<td>High income</td>
<td>47%</td>
<td>15%</td>
<td>27%</td>
<td>10%</td>
<td>18%</td>
<td>23%</td>
<td>27%</td>
</tr>
</tbody>
</table>
Can you make money from recycling?

Global Waste Treatment and Disposal

Disposal Methods by Income

- Low-income:
  - Open dump: 93
  - Landfill: 3.7
  - Recycling: 0.07
  - Other advanced methods: 6.4

- Lower-middle income:
  - Open dump: 66
  - Landfill (Unspecified): 18
  - Recycling: 60.07

- Upper-middle income:
  - Open dump: 30
  - Controlled landfill: 54
  - Incineration: 4

- High-income:
  - Open dump: 2
  - Controlled landfill: 29
  - Incineration: 22

Other categories include Compost, Incineration, Controlled Landfill, and Other, each with different percentages.
Financing Sources for SWM in Africa

**Capital Investments**
- Central government transfers
- General local government revenue
- Municipal bonds
- Financing from IFIs
- Private investments

**Operating Costs**
- Fees, user charges and taxes from households and the institutions/businesses
- Transfers from general municipal revenue
- Proceeds from sale of recyclables
- Proceeds from carbon offset (if available)
- Income from Extended Producer Responsibility schemes
In the last 10 years, the World Bank committed at least **$417 million** in lending to solid waste management in Africa across **42 projects**.

On average, the World Bank committed at least **$42 million** in solid waste funding per year.
SWM Lending in Africa: Recycling and Waste Type

Recycling and Plastics Lending  
2014-2019

- Around 7% of lending addresses recycling of waste, and 3% of lending improves management of plastics.
- Recycling funding has increased over time

Key takeaways:

- World Bank lending projects in Africa primarily address the management of Municipal Solid Waste (household and commercial).

Source: 2019 SWM Portfolio Review
Figures reflect lending projects; advisory projects are not included
Study in progress; numbers subject to minor adjustments
In the past 10 years, waste collection projects have been most common, supported by infrastructure for transfer stations and trucks.

Recycling and composting projects comprise about 7% of lending.

Waste-to-energy incineration is not a focus of lending projects in Africa.

Key takeaways:

Source: 2019 SWM Portfolio Review
Figures reflect lending projects; advisory projects are not included.
Study in progress; numbers subject to minor adjustments.
SWM Lending in Africa: Landfills

Landfill Projects 2014-2019

Key takeaways:

- Most recent projects addressing landfills finance landfill infrastructure. Around 40% of waste projects finance new landfill construction, expansion of cells, site studies, or capping of old landfills.

- Landfill operations is also commonly funded through operational lending, which entails training and capacity building for landfill management and improving connectivity to landfills.

- Few landfill operations have implemented landfill gas collection systems.

Source: 2019 SWM Portfolio Review
Figures reflect lending projects; advisory projects are not included.
Study in progress; numbers subject to minor adjustments.
SWM Lending in Africa: Additional Topic Areas

<table>
<thead>
<tr>
<th>Topic Areas</th>
<th>2010-2019</th>
<th>2014-2019</th>
</tr>
</thead>
<tbody>
<tr>
<td>Capacity Building / TA</td>
<td>0%</td>
<td>4%</td>
</tr>
<tr>
<td>SWM Planning</td>
<td>10%</td>
<td>28%</td>
</tr>
<tr>
<td>Private Sector Engagement</td>
<td>26%</td>
<td>16%</td>
</tr>
<tr>
<td>Employment</td>
<td>26%</td>
<td>24%</td>
</tr>
<tr>
<td>Policy Design</td>
<td>26%</td>
<td>4%</td>
</tr>
<tr>
<td>Public Health</td>
<td>10%</td>
<td>4%</td>
</tr>
</tbody>
</table>

Key takeaways:

- Most World Bank lending projects in Africa (62%) also include a capacity building component for national government, local government, or service providers.
- 40% of projects include a national or local planning component.
- About 1/3 of projects address private sector engagement in solid waste management, mainly through waste collection.
- Carbon finance and results-based financing are also becoming common instruments for strengthening service delivery.

Source: 2019 SWM Portfolio Review
Figures reflect lending projects; advisory projects are not included
Study in progress; numbers subject to minor adjustments
Thank you

worldbank.org/what-a-waste