Information on the implementation of resolution 2/7 on sound management of chemicals and waste and resolution 4/7 on environmentally sound management of waste

Note by the secretariat


2. The Global Waste Management Outlook 2024 was requested in Resolution 2/7 from the second session of the United Nations Environment Assembly (UNEA) and reaffirmed in Resolution 4/7 from its fourth session, the GWMO 2024 offers an updated assessment of global waste management and an analysis of data concerning municipal solid waste management worldwide. Jointly published with the International Solid Waste Association (ISWA), the report evaluates three potential scenarios of municipal waste generation and management, examining their impacts on society, the environment, and the global economy. Furthermore, it presents potential strategies for waste reduction and enhanced management, following the waste hierarchy, with the aim of treating all waste materials as valuable resources.
Municipal solid waste (MSW) is generated wherever there are human settlements. More of it is being created every year, contributing to the triple planetary crisis of climate change, pollution and biodiversity loss. The amount of this waste that is produced, and whether it becomes pollution, depends on three factors:

**Box: Waste's contribution to the triple planetary crisis pollution, climate crisis, biodiversity loss**

<table>
<thead>
<tr>
<th>Climate crisis</th>
<th>Pollution</th>
<th>Biodiversity loss</th>
</tr>
</thead>
<tbody>
<tr>
<td>The collection, processing and disposal of solid waste generates carbon dioxide (CO₂) and other greenhouse gases and air pollutants, including methane (CH₄) released from waste disposal sites and black carbon emitted from open waste burning.</td>
<td>Long-term pollution by waste, one of the main drivers of biodiversity loss, puts the integrity of ecosystems at risk. For example, waste disposed of on land can cause long-term pollution of freshwater sources by pathogens, heavy metals, endocrine-disrupting chemicals and other hazardous compounds.</td>
<td>Open burning of waste releases Unintentional Persistent Organic Pollutants (UPOS), “forever chemicals” that can be transported long distances in the air, concentrate in the food chain, and have significant negative effects on wildlife and human health including cancer and infertility.</td>
</tr>
</tbody>
</table>
The Global Waste Management Outlook 2024 provides an overview of the amount of municipal solid waste being generated, how it is being managed, and the impacts of current practices on planetary and human health. Three scenarios of MSW generation and management to 2050 were developed for this report:

- **Waste Management as Usual (WMU)**: Practices continue as today, with waste generation projected to grow fastest in regions without adequate waste management capacity.
- **Waste Under Control (WUC)**: A midway point, with some progress made towards preventing waste and improving its management.
- **Circular Economy (CE)**: Waste generation decoupled from economic growth, with the global MSW recycling rate reaching 60 per cent and the remainder managed safely.

The costs and benefits of each scenario have been analysed to improve our understanding of how choices made across the life cycle of products in the coming decades could impact climate change, ecosystem quality and human health, as well as the global economy.

This report reveals the true costs of waste and proposes actionable steps towards a zero waste future. It serves as a call to governments and the international community to take immediate action to prevent waste and improve its management, particularly where waste growth is outpacing the capacity to manage it.

**Waste generation, dumping and burning are growing every year**

More waste is produced every year as a result of economic growth and unsustainable consumption and production patterns. Between 2020 and 2050 municipal solid waste generation per year is projected to grow from 2.1 billion tonnes to 3.8 billion tonnes, a 56 per cent increase within a generation or less (Figure 1).

**Figure 1: Projected global municipal solid waste destinations in 2030, 2040 and 2050 compared with 2020**

![Figure 1: Projected global municipal solid waste destinations](image-url)
In 2020, 38 per cent of all municipal solid waste (810 million tonnes) was uncontrolled: that is, it was dumped in the environment or openly burned. If waste management practices remain the same as today, by 2050 this figure will almost double to 1.6 billion tonnes of MSW dumped or burned every year, contributing to climate change, marine plastic pollution, and adverse health effects. Since pollution from waste knows no borders, this is of international concern.

The largest growth in MSW generation is expected to take place in fast-growing economies, where waste generation is already outpacing the capacity to manage it (Figure 2).
The true costs of waste

In 2020 the amount spent on municipal solid waste management globally, including collection, recycling, energy recovery and disposal, was US$252 billion. This figure does not include indirect costs incurred through the impacts of uncontrolled waste. According to the analysis carried out for this report, these indirect costs amount to US$243 billion per year. However, savings of US$135 billion per year were obtained through recycling because of avoided primary resource use and the associated emissions. If the direct and hidden costs of waste and the benefits of recycling are considered together, the true global annual cost of municipal solid waste in 2020 was US$361 billion (Figure 3).

Waste reduction and improved waste management are imperative

Without urgent changes in the ways we produce, consume and dispose of products and materials, the negative impacts of municipal solid waste on the climate, biodiversity and human health will almost double by 2050 (Waste Management as Usual scenario, Figure 4).

In comparison, under the Circular Economy scenario there would be a vast improvement on current practices, with significant reductions in greenhouse gas emissions and pollution, helping to ensure a more liveable environment for future generations.
A circular economy approach is the only way to make waste management affordable

By 2050, municipal solid waste management under the Waste Management as Usual scenario is projected to cost US$640.3 billion globally, including US$443 billion in externalities. Only the Circular Economy approach would generate a projected annual full net gain of US$108 billion through waste avoidance, sustainable business practices, and full waste management (Figure 5).

**Figure 5: Overall costs of global municipal waste management under the three scenarios (USD 2020).**

<table>
<thead>
<tr>
<th>Scenario</th>
<th>Full net cost:</th>
<th>Full net gain:</th>
</tr>
</thead>
<tbody>
<tr>
<td>2020 baseline</td>
<td>US$361.0 billion</td>
<td></td>
</tr>
<tr>
<td>2050 Waste Management as Usual</td>
<td>US$640.3 billion</td>
<td>US$108.1 billion</td>
</tr>
<tr>
<td>2050 Waste Under Control</td>
<td>US$270.2 billion</td>
<td></td>
</tr>
</tbody>
</table>

Pathways to progress

Moving towards a circular economy and taking a zero waste approach is the only route to a safe, affordable and sustainable future. Since national contexts vary significantly, there is no one-size-fits-all approach or formula for systemic change. The tools a government uses, and the pace of change, will be determined by national circumstances.

**Key recommended pathways include:**

- using data and digitalisation to prioritise waste prevention and management;
- banning problematic materials and implementing mandatory schemes to ensure that polluters pay;
- adopting inclusive approaches and behavioural science to engage citizens in waste avoidance and waste segregation for recycling;
- integrating the principles of a just transition into decision-making, ensuring that the informal sector is valued and that programmes are gender sensitive;
- building national expertise to develop context-appropriate policies that maximise the benefits, for each country, of waste reduction and management.
Municipalities can adopt inclusive approaches to reducing waste and making waste management affordable, for example by harnessing the expertise of informal waste workers and recognising women’s influence on waste generation and management.

Producers and retailers can reduce the costs of waste to society by taking due responsibility and pursuing zero waste business models. Businesses ought to avoid greenwashing and are encouraged to support government regulation, recognising the benefits of a level playing field.

Everyone can prevent unnecessary waste through reuse and refill, waste segregation and home composting, as well as using consumer power to support zero waste enterprises.

Three waste management priorities

01
To prevent runaway negative impacts from municipal solid waste, actions must be taken urgently to halt waste growth and to shift towards zero waste and circular economy models.

02
Municipal solid waste management must be prioritised, in order to provide all communities with affordable services and end the harmful and widespread practice of open dumping and waste burning.

03
Producers and retailers need to be motivated to provide goods and services in ways that avoid waste generation, while the most problematic and polluting materials should be phased out.
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