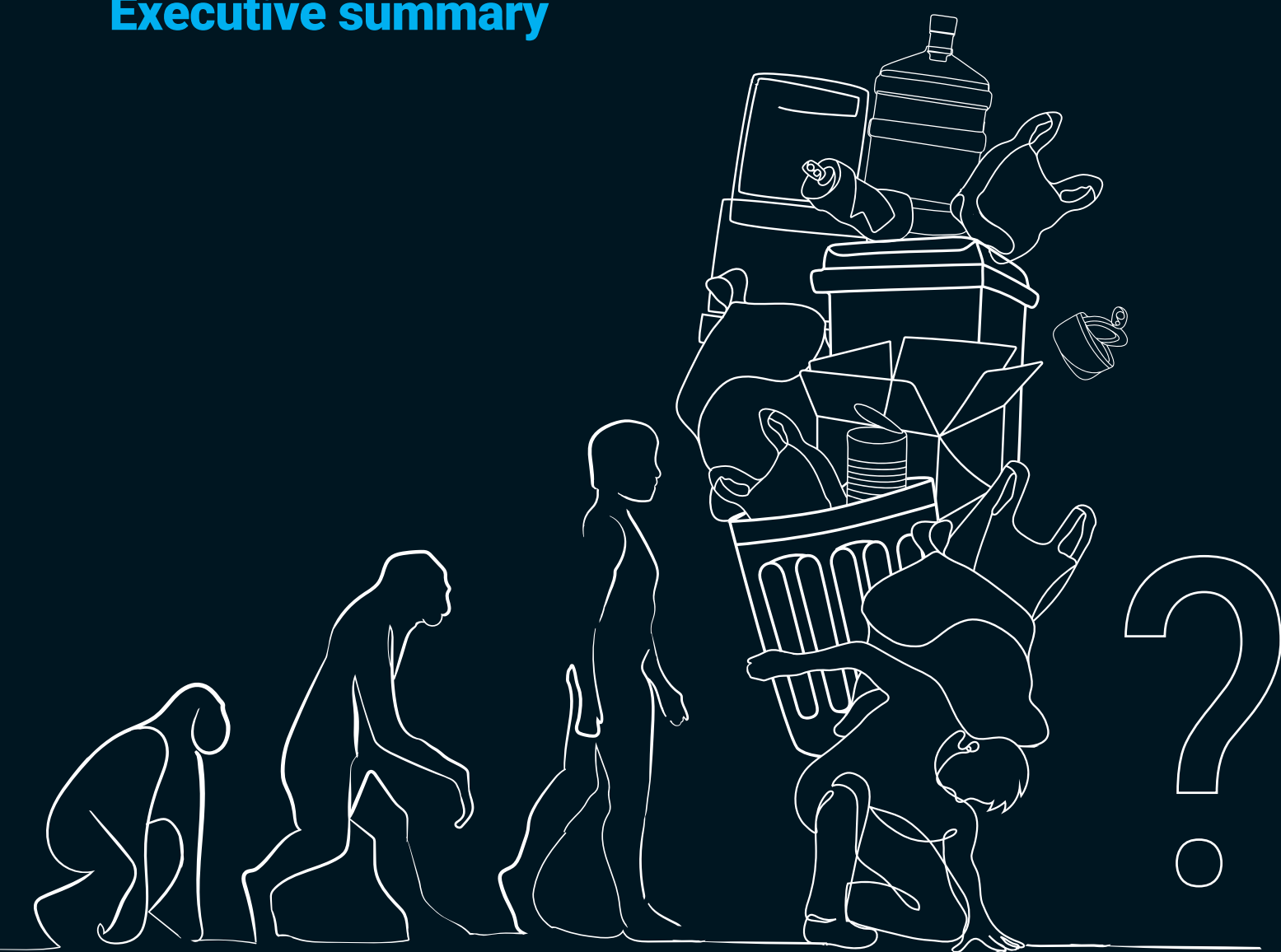


Beyond an age of waste

Turning rubbish into a resource

Executive summary



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The projected increase in global municipal solid waste generation from 2020 to 2050 has been revised from 56% to 81% in this publication (see page 4). Figures presented are subject to change as further data becomes available and modelling methodologies are refined.

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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:

01

The design of products, which determines which materials and how much of these materials are used, as well as whether products can be reused, repaired, or easily recycled at the end of their useful life.

02

Citizens' decisions on how they buy, use and discard products and materials, and whether they choose to reduce, reuse, repair and recycle.

03

The capacity of local waste management systems to collect, sort, and recycle or dispose of waste safely, and the availability of reuse and refill systems that prevent waste.

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

Climate crisis	Pollution	Biodiversity loss
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.	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.	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.

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)	Waste Under Control (WUC)	Circular Economy (CE)
Practices continue as today, with waste generation projected to grow fastest in regions without adequate waste management capacity.	A midway point, with some progress made towards preventing waste and improving its management.	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.

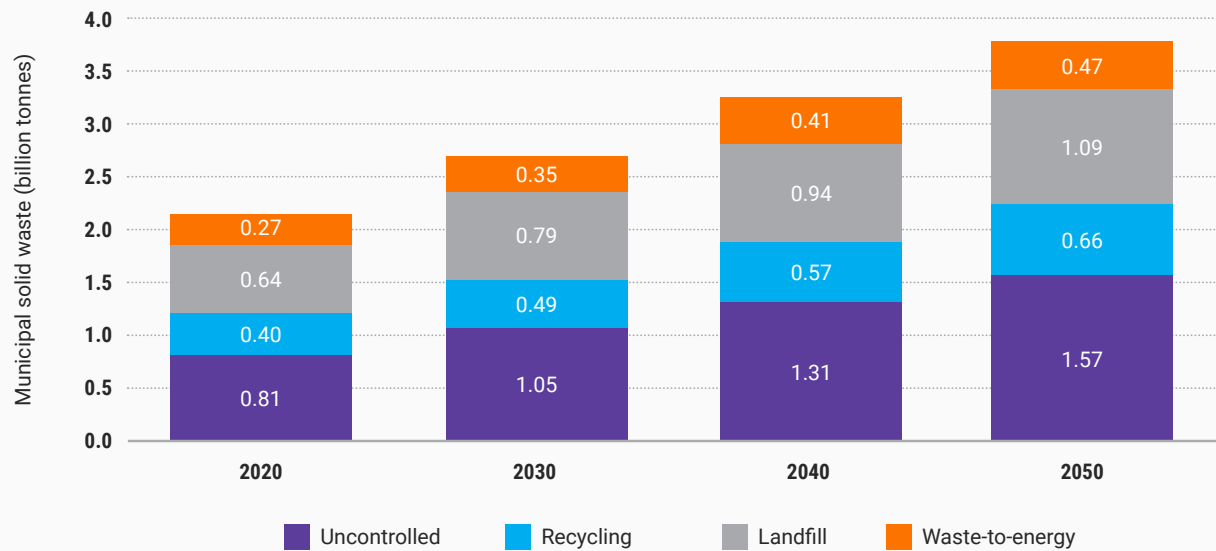
This report reveals the true costs of waste and proposes actionable steps towards a zero waste future. It serves as a call to governments and the international community to take immediate action to prevent waste and improve its management, particularly where waste growth is outpacing the capacity to 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 81 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



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).

Figure 2: Municipal solid waste generation and how much of this waste was uncontrolled in 2020, with projections for 2050 unless urgent action is taken

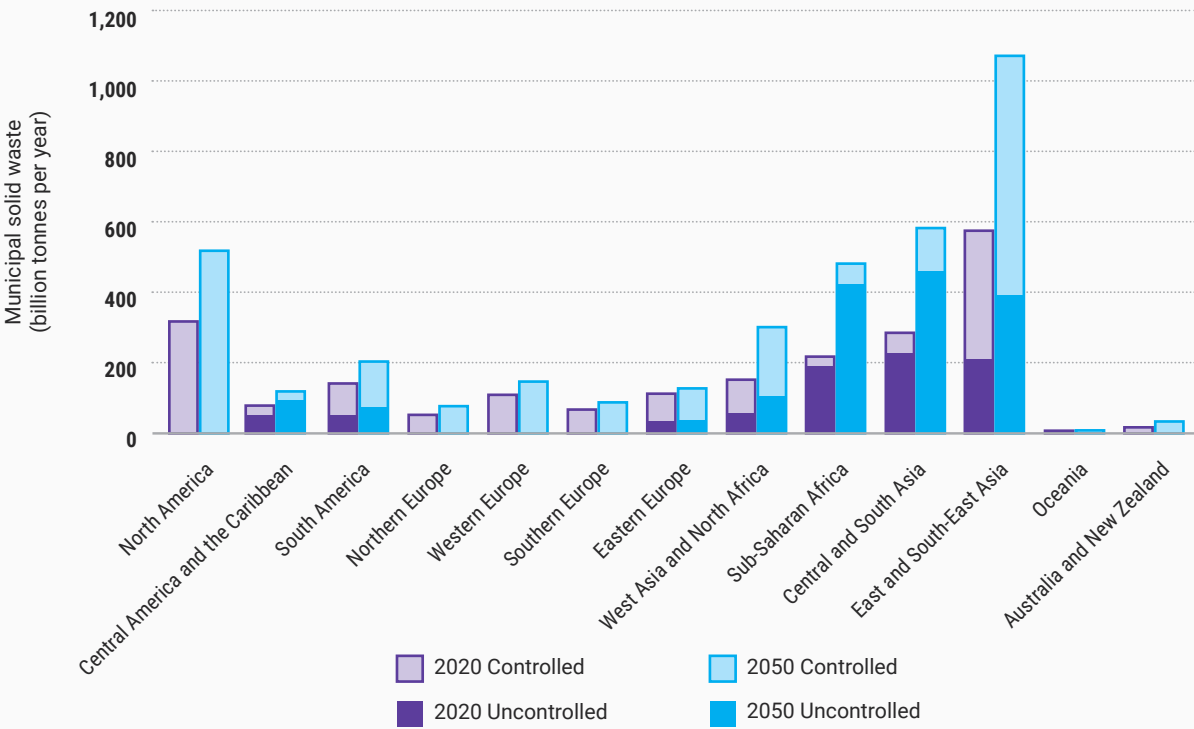


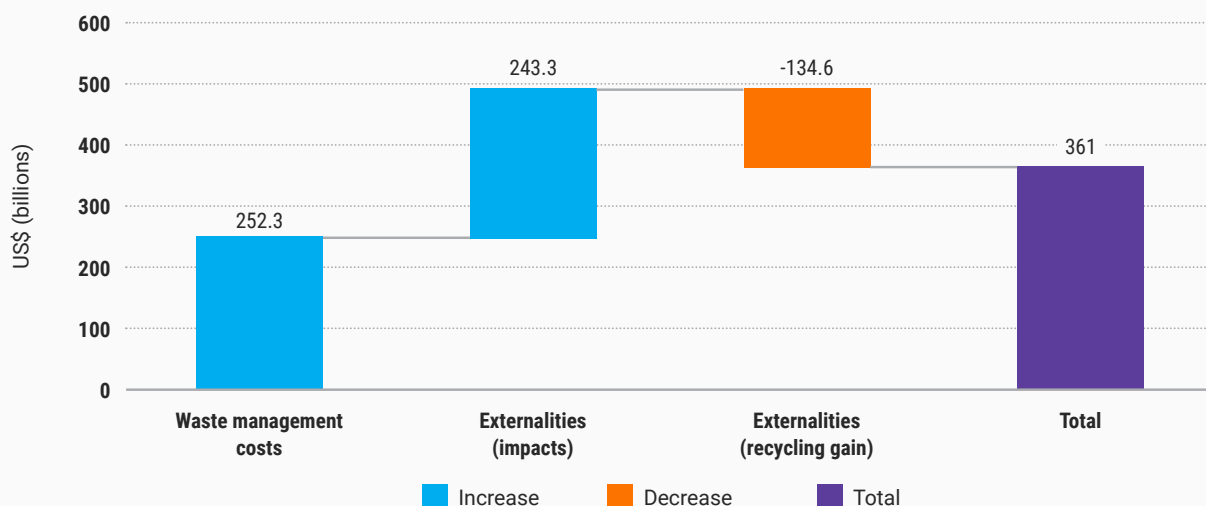
Photo source: venusw / Adobe Stock

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).

Figure 3: Direct costs, externalities, and total overall costs of municipal solid waste and its management (2020) (US\$ 2020)

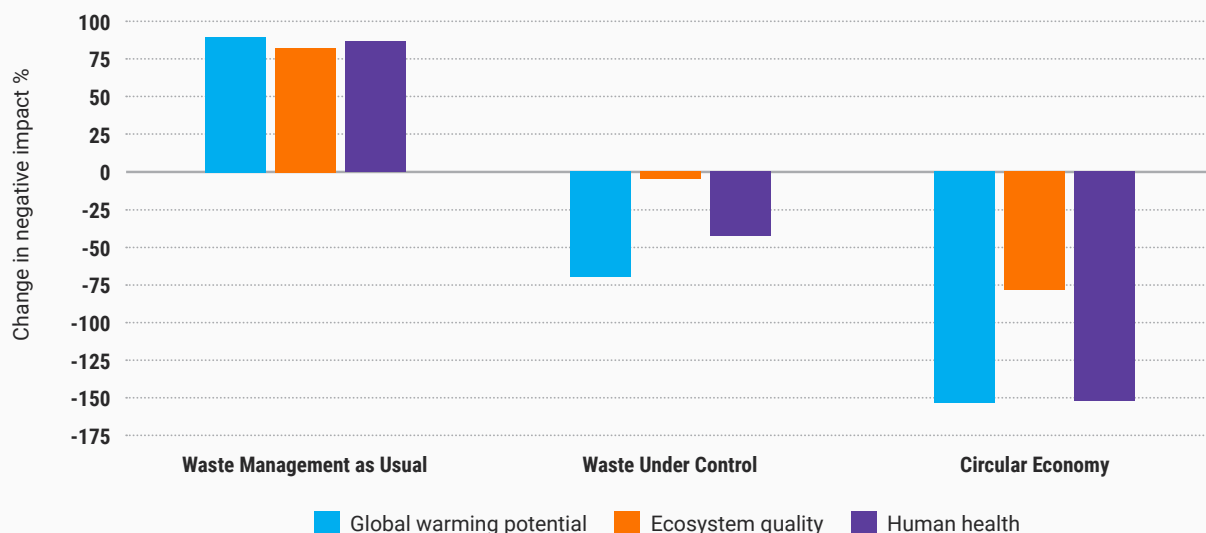


Waste reduction and improved waste management are imperative

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.

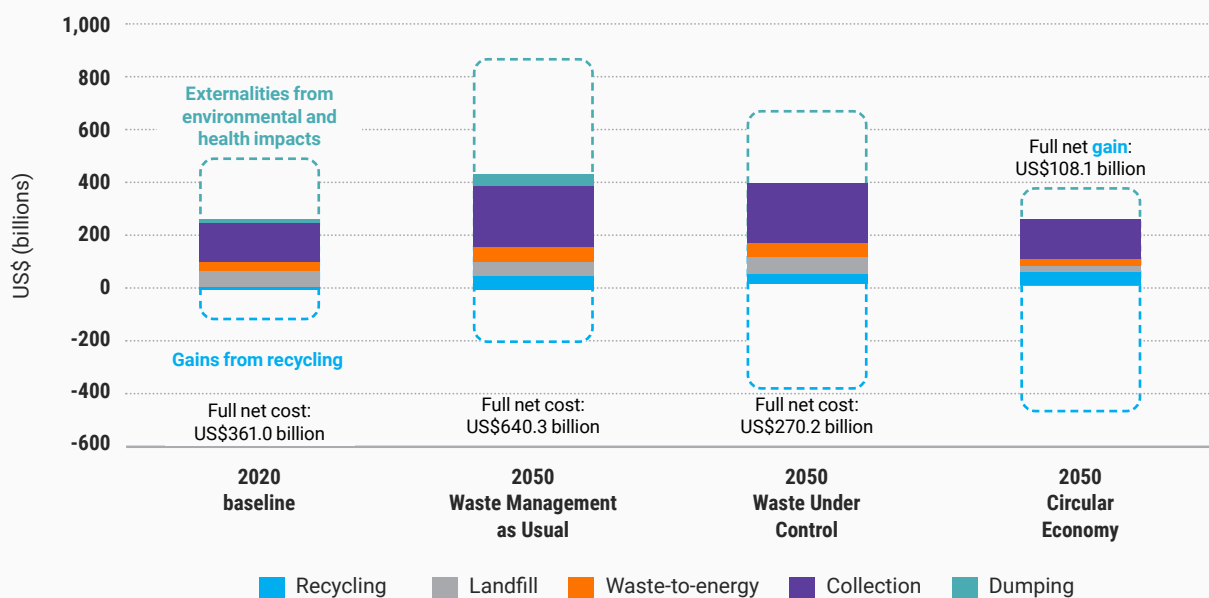
Figure 4: Projected change in negative impacts by 2050 according to the three modelled scenarios.



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).



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.



Photo source: Martin Barraud/KOTO / Adobe Stock

Recommendations

Multinational development banks and donors can have a rapid impact by supporting the replication and scaling up of proven zero waste and circular economy initiatives.

National governments can legislate with a view to the waste hierarchy, incentivise zero waste business models, and apply producer responsibility fees to prioritise waste reduction. Governments can deliver the greatest benefits for their populations and protect natural resources and industries through the use of national expertise. Integrated policies and support for municipalities, small and medium-sized enterprises (SMEs) and the informal sector can maximise resource efficiency. Waste reduction commitments can also be used to attract climate finance.

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. Consumer power can 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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