ISWA
International Solid Waste Association

Presenter: **Aditi Ramola, 18 November 2024**

Tackling methane emissions and the waste crisis through data, evidence-based policy and finance

COP29 Side Event at the SDG Pavilion

International Solid Waste Association (ISWA)

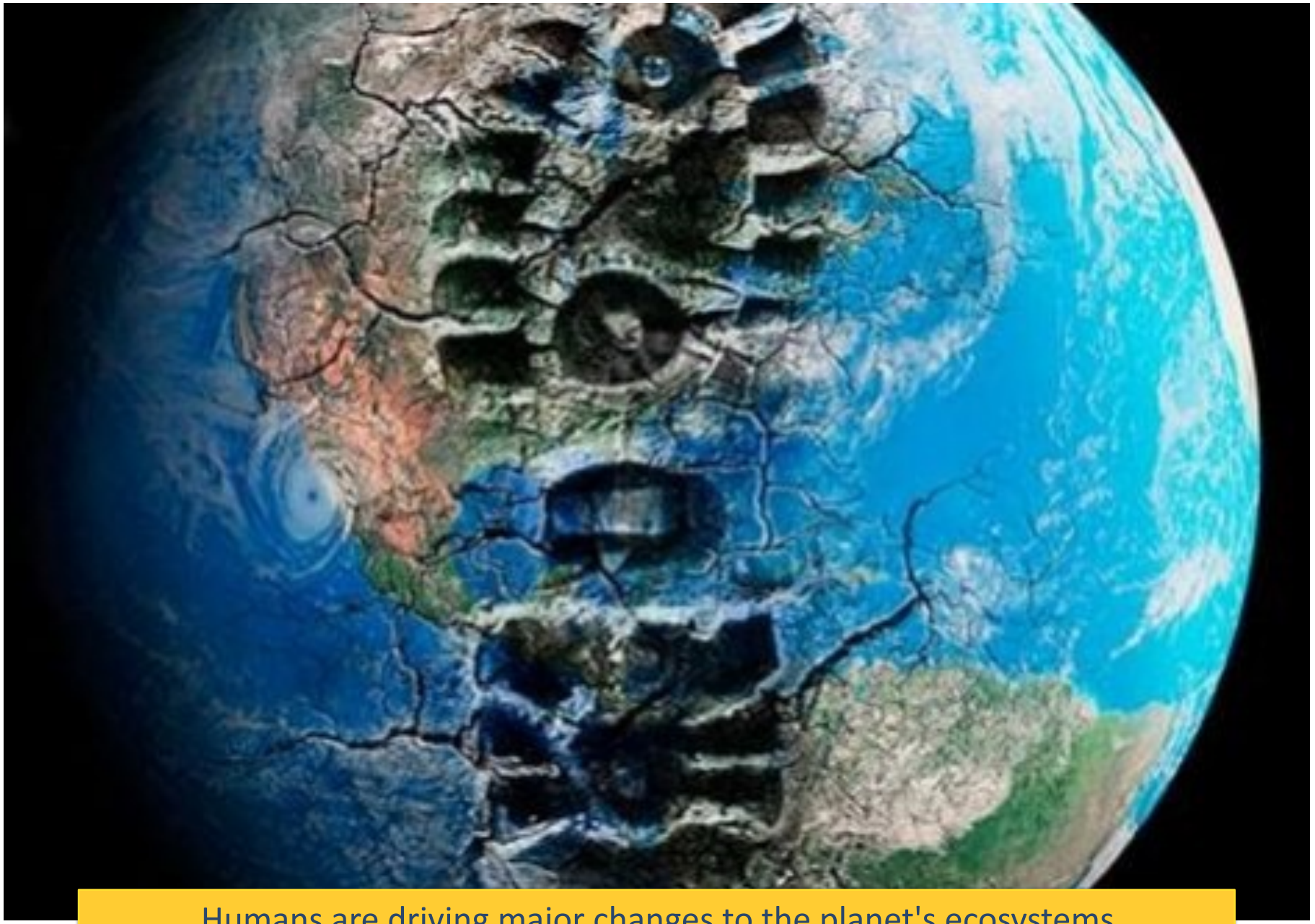
ISWA is the world's leading network promoting professional and sustainable waste- and resource management.

ISWA represents all aspects and stakeholders within the waste management sector: the public, the private and the academic.

With more than 1,300 Members in 109 countries, ISWA has a unique global network.

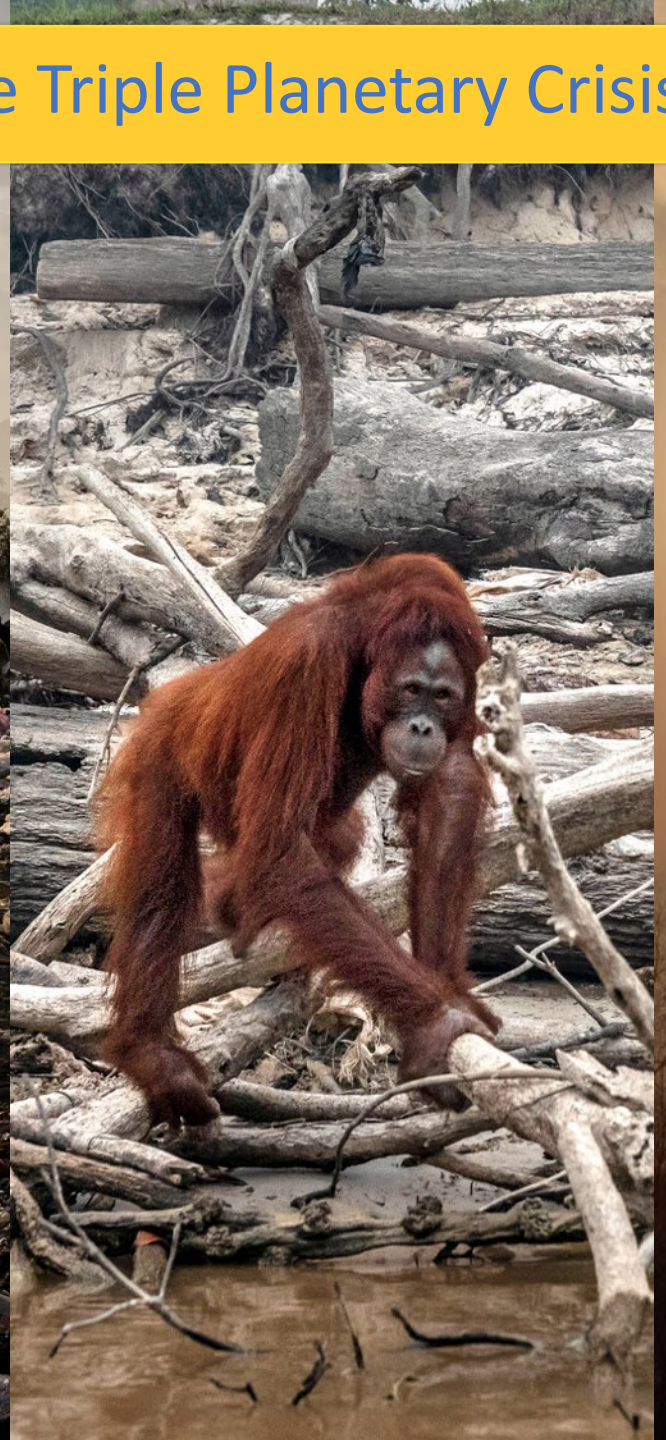
To Promote and Develop Sustainable and Professional Waste Management Worldwide and the transition to a Circular Economy

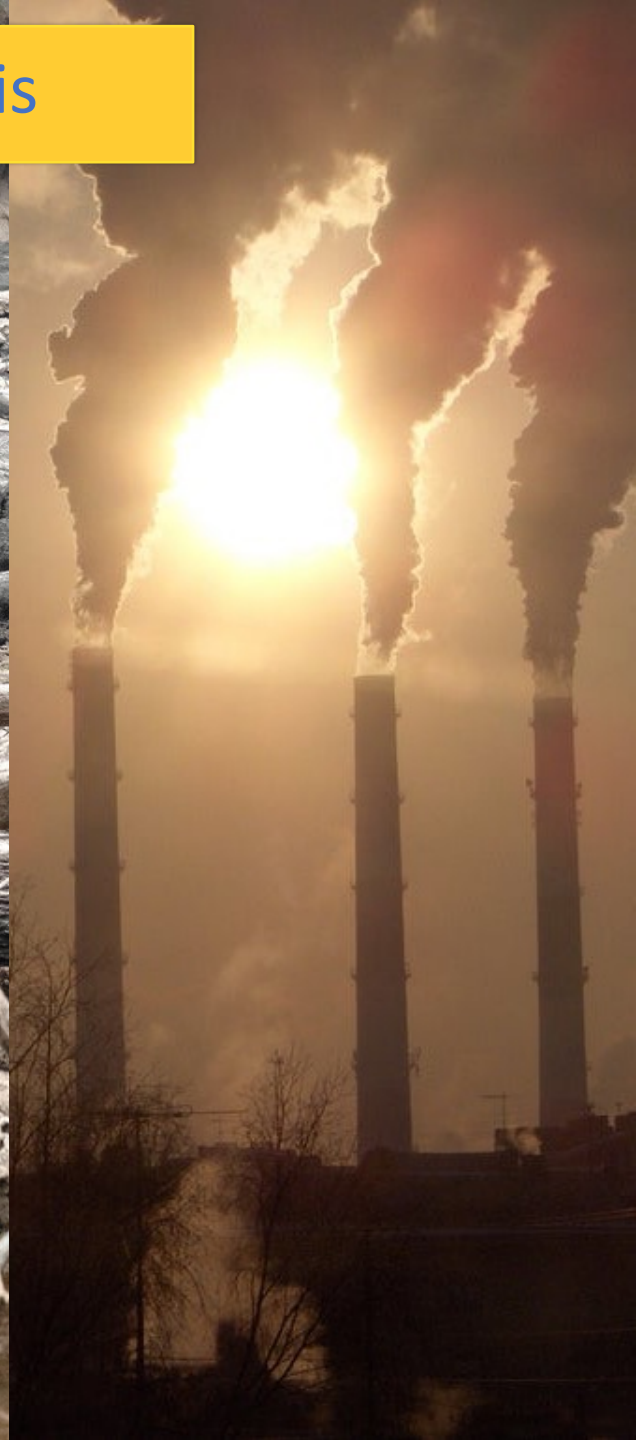
- Our mission



Humans are driving major changes to the planet's ecosystems

The Triple Planetary Crisis

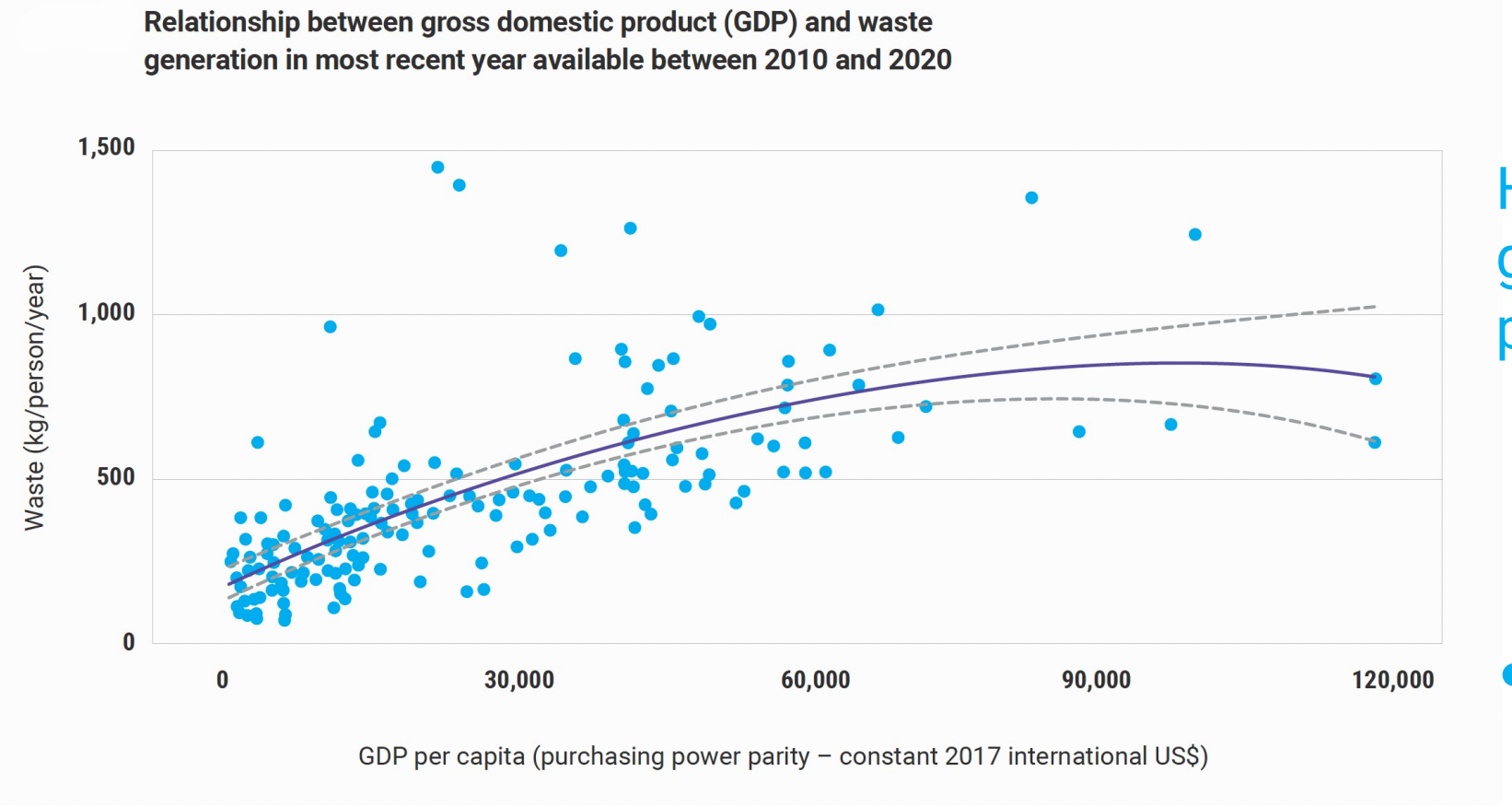




...is also a humanitarian crisis


UN environment programme
Beyond an age of waste
Turning rubbish into a resource
ISWA
Global Waste Management Outlook 2024

Economic growth and waste generation remain closely linked



Higher income countries generate more waste per person

= individual country

Waste sector: Setting the scene

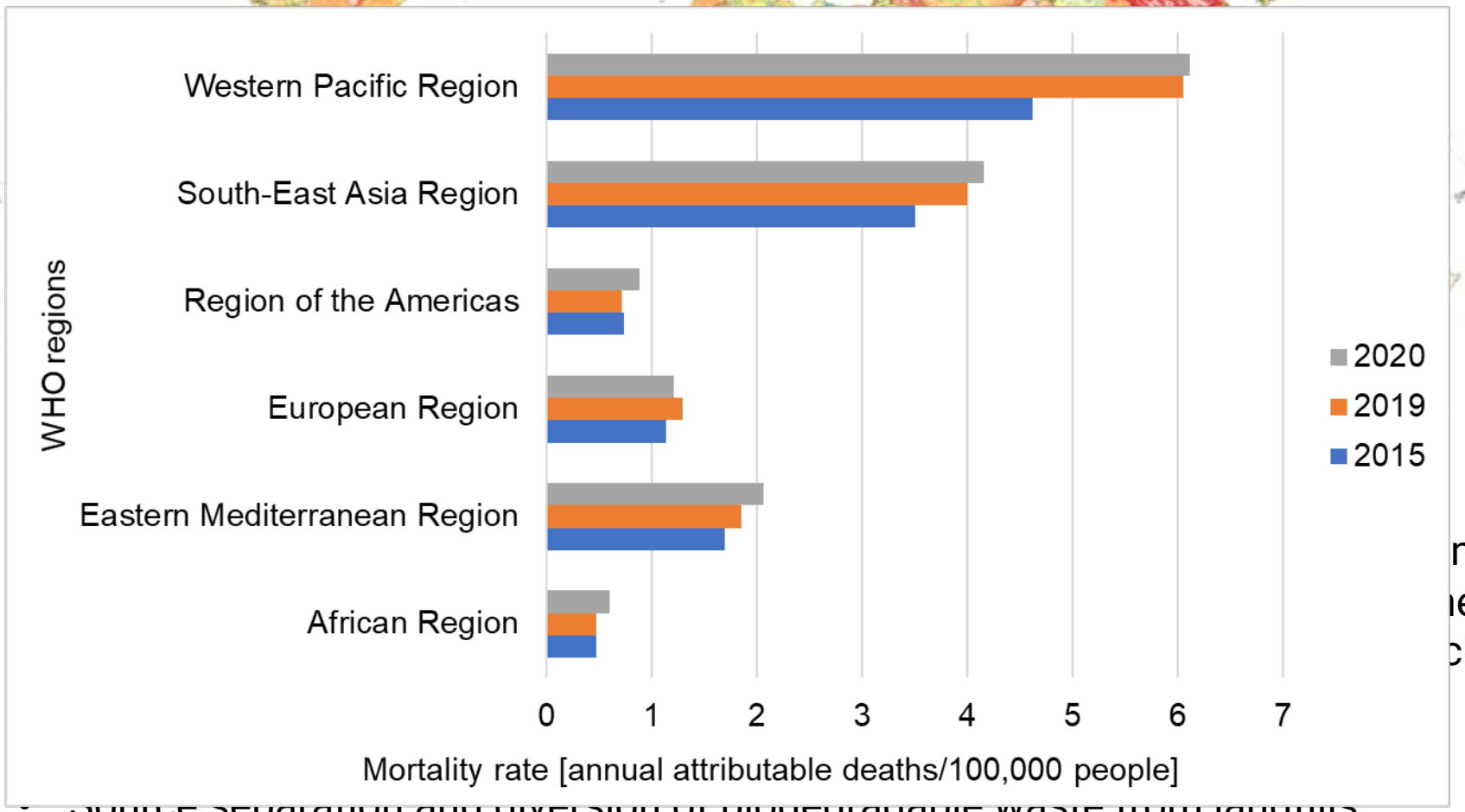
Climate

Exposure to chemicals and particles during waste collection, transportation, and treatment), ecosystem damages (due to emissions of heavy metals into air, soil, and surface water), and resource depletion (due to inefficient recycling of key minerals or metals) (Laurent et al. 2014a)

Air pollution

Water pollution

Health Impact



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- Source separation and diversion of biodegradable waste from landfills

Source: Romanello et al., 2022

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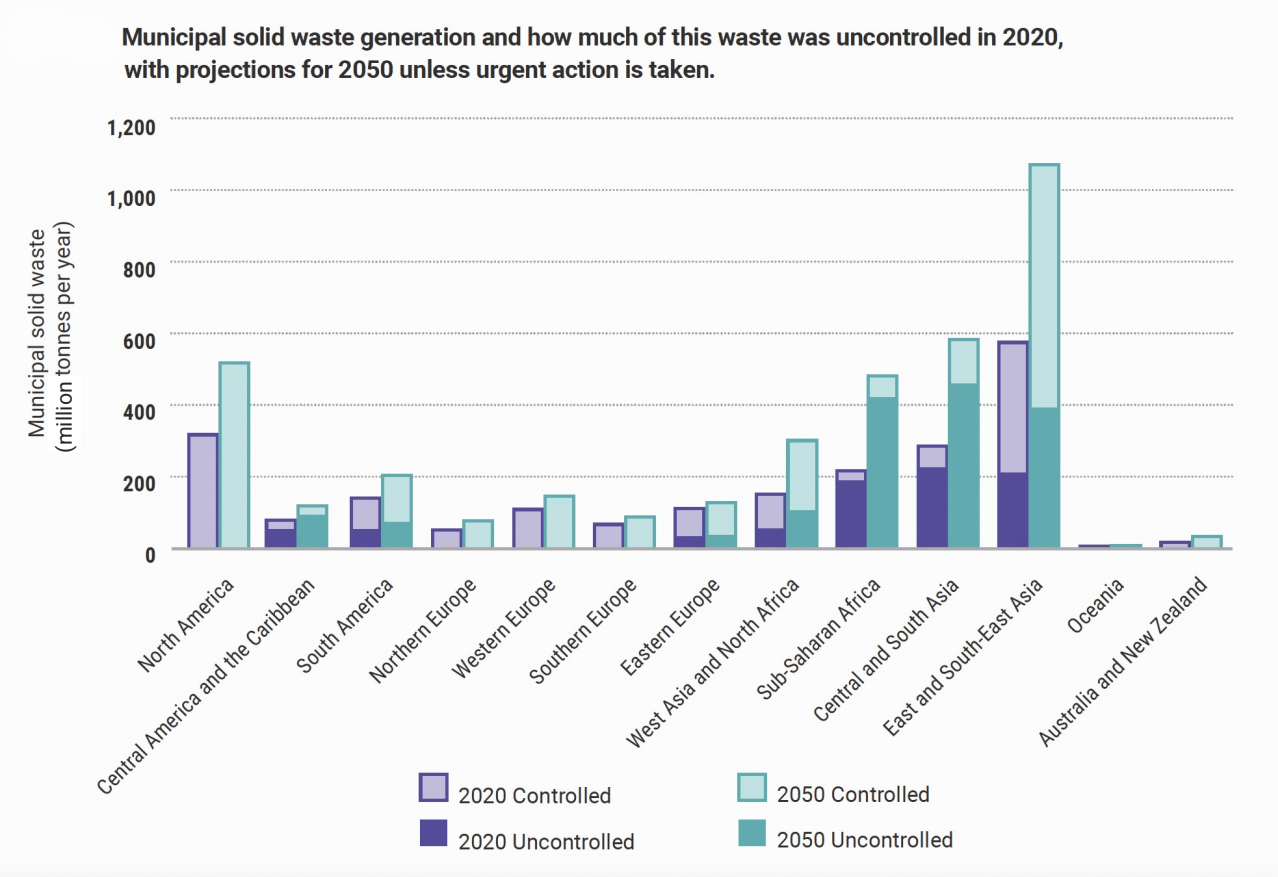
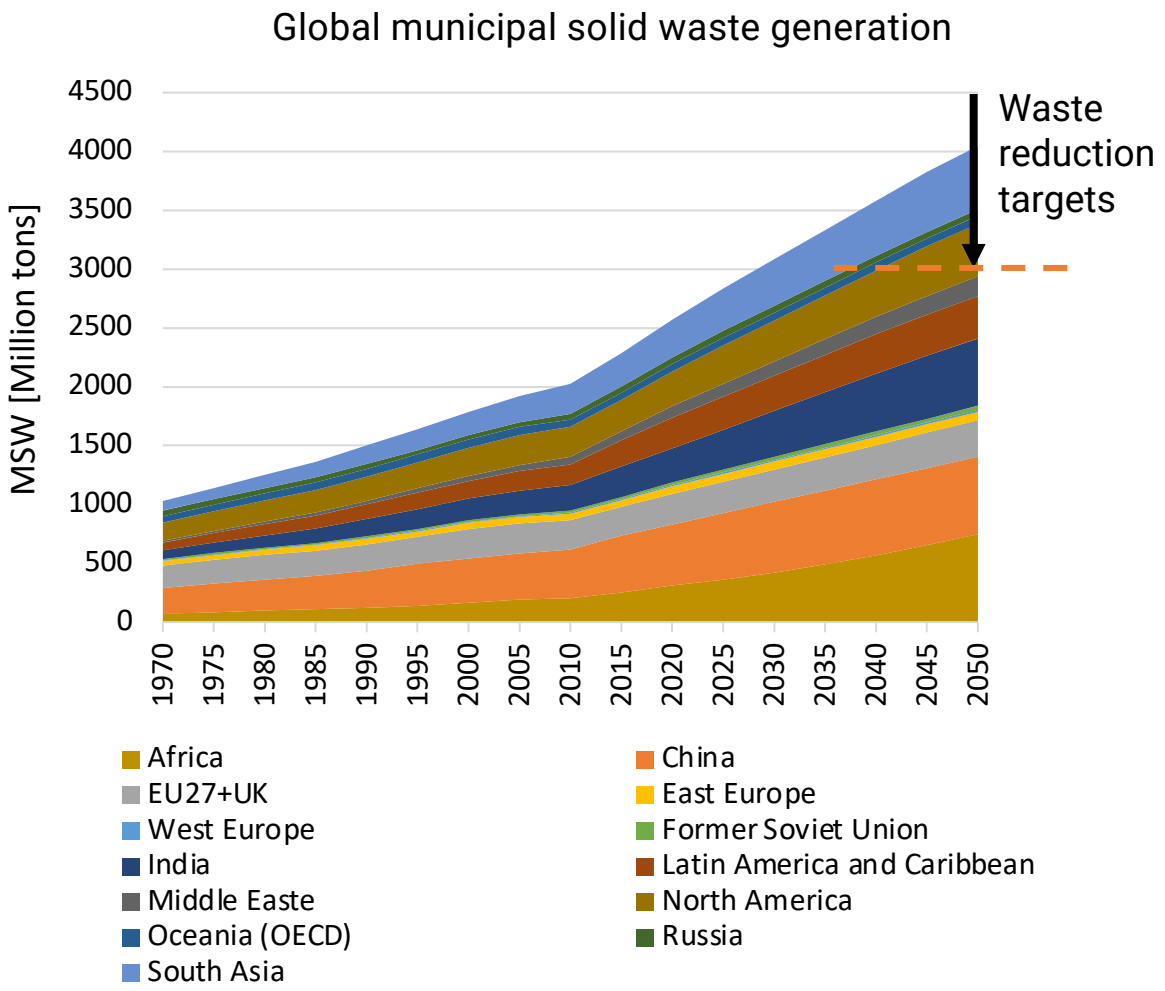
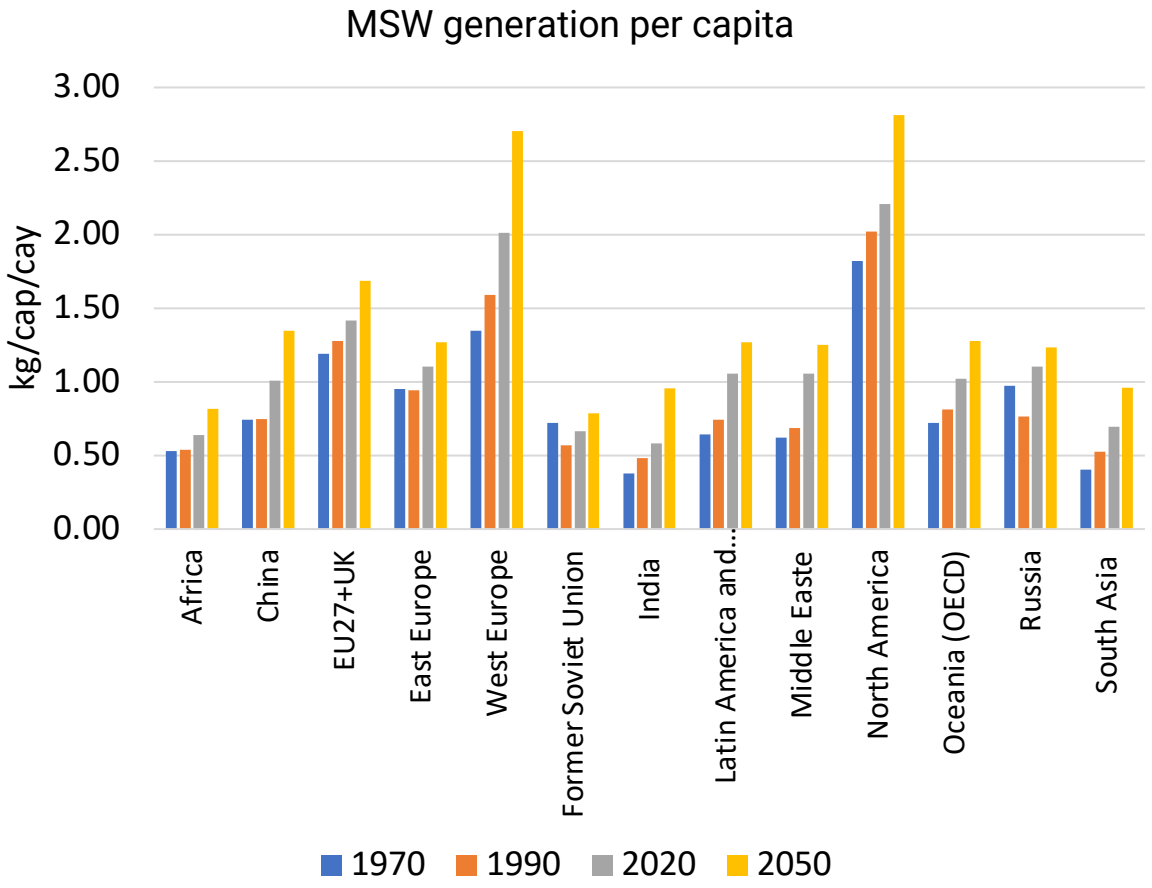
Large projected increase in dumping and burning by 2050



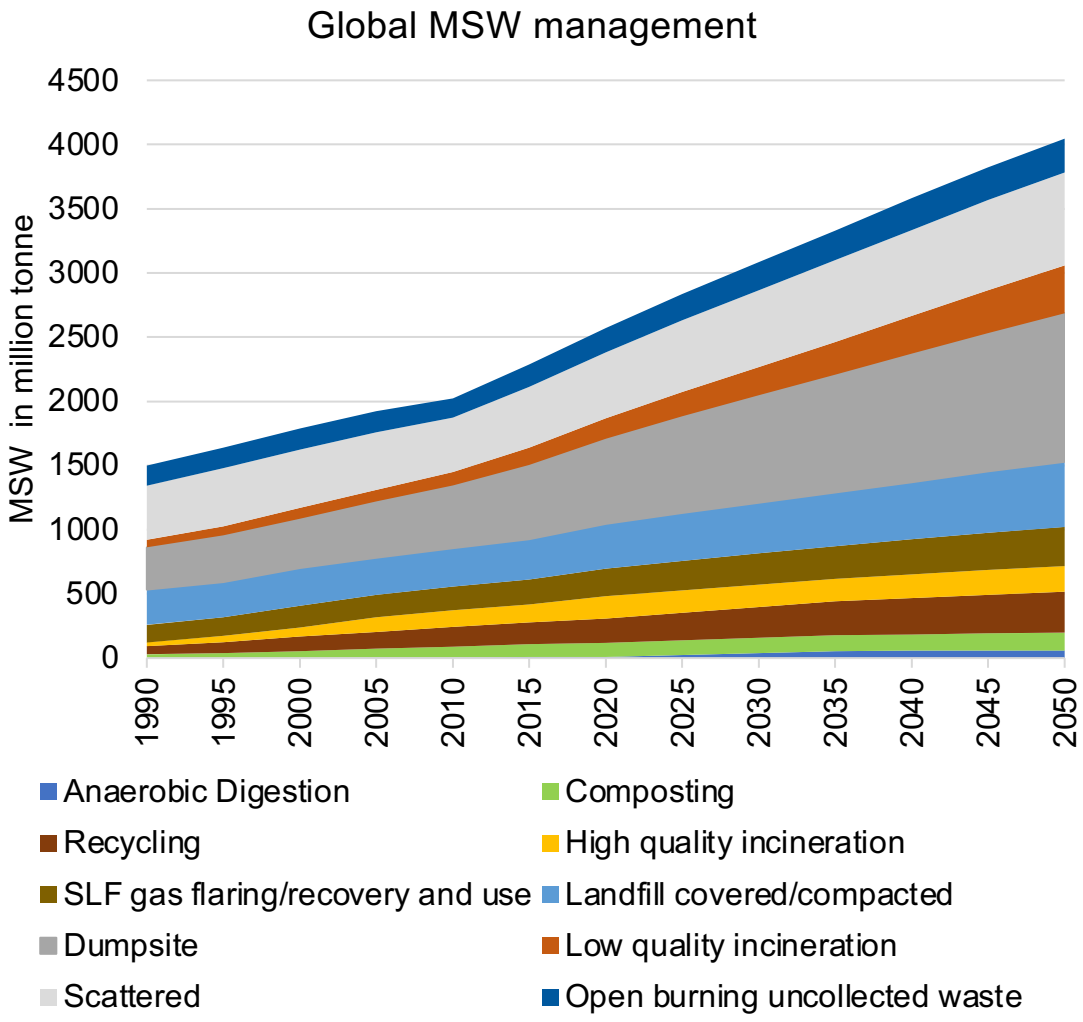
Fast-growing economies that still rely on open burning and dumping have the largest projected waste growth **– unsustainable levels of leakage and pollution.**

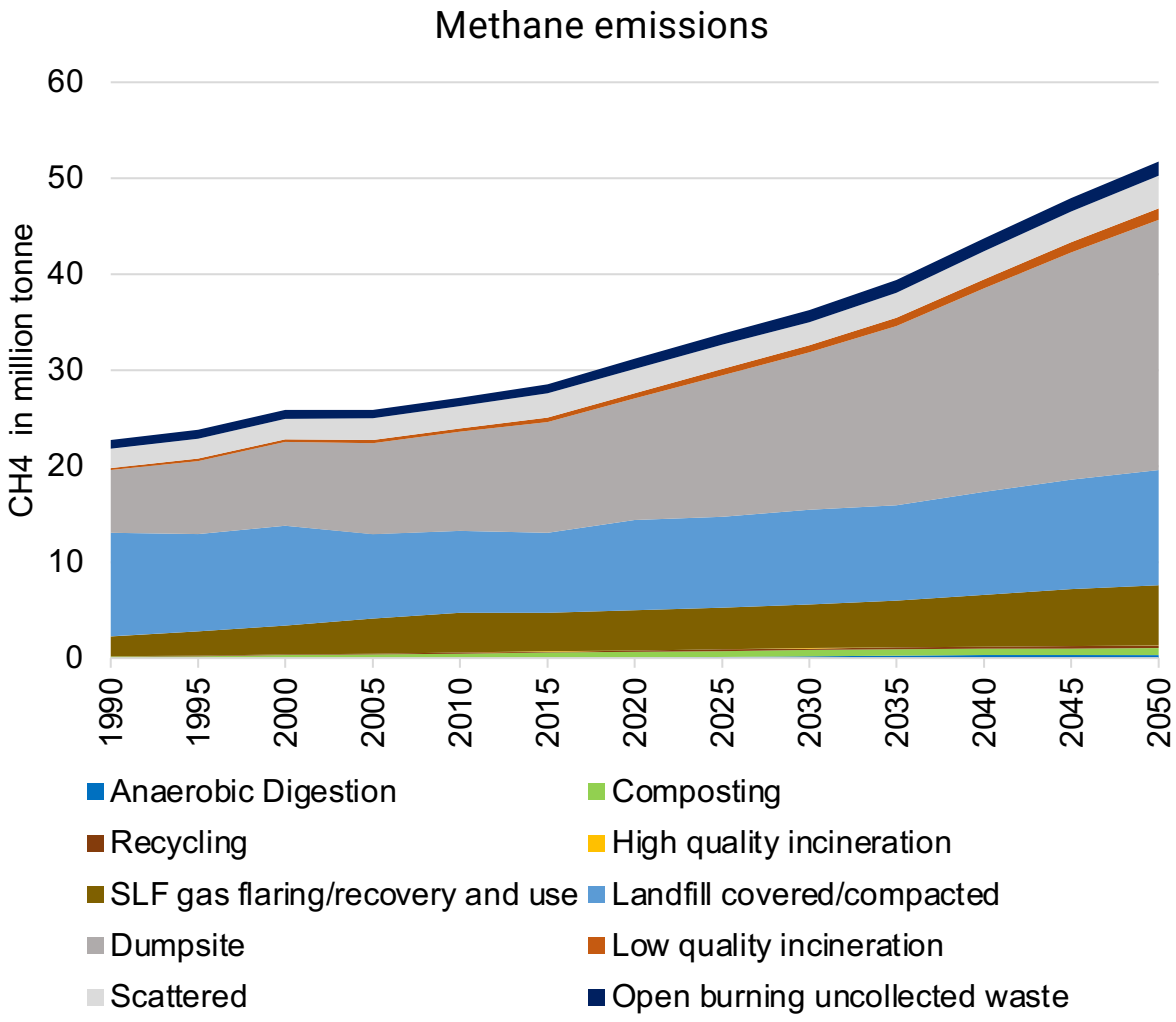
Looking at waste generation





Looking at waste management and emissions





Source: IIASA_GAINS model

The Waste Sector

The waste sector is often underestimated, responsible for around 3% of global GHG emissions according to IPCC.

The sector contributes both direct emissions (*methane from organic waste in landfills and dumpsites*) and indirect emissions (*via waste prevention, recycling, and energy recovery*). Recent paper* explores both **direct** and **indirect** GHG reductions.

Focus: How better waste management, particularly in the Global South, can contribute significantly to climate mitigation.

Unlocking the significant worldwide potential of better waste and resource management for climate mitigation: with particular focus on the Global South,

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The Methane Challenge

Methane's Global Warming Potential (GWP):
Methane has a GWP of 28 over 100 years, but **86 over 20 years**, making it a significant short-term climate threat.

90% of waste sector's methane emissions come from organic waste in landfills and dumpsites.

Global Methane Pledge:
Launched at COP26 in 2021 to reduce methane emissions by 30% by 2030. 155 countries have signed the pledge.

Direct emissions from the waste sector

Direct emissions:

- Methane from anaerobic decomposition of organic waste in unmanaged landfills and dumps is the primary source.

- In early part of this century most methane emissions from landfills were from high-income countries, but significant efforts have reduced these through gas capture and diversion of organics.

A focus on the Global South:

- A large portion of waste still ends up in uncontrolled dumpsites, generating methane without any form of gas capture or control.

Potential contribution of better waste and resource management to mitigation of global GHG emissions

Direct emissions from waste management

Methane from decomposition of organic wastes

Around 10% of national GHG emissions prior to control measures

- Uncontrolled disposal
- Controlled landfill without gas collection
- *Landfill with gas collection and flaring or recovery*
- *Divert biodegradable wastes from landfills*

Other direct emissions

Small % of global GHG emissions

- Black carbon from open burning by the waste generator – *extend waste collection*
- Black carbon from open dumps on fire - *upgrade to controlled landfill*
- Nitrous oxide (N_2O) and CO_2 from composting or incineration

High confidence that overall potential contribution to mitigation of global GHG emissions is **SIGNIFICANT!**

Indirect emissions and the 3Rs

Indirect emissions:

- Waste management practices, including the 3Rs (Reduce, Reuse, Recycle), create indirect GHG savings by reducing the need for virgin materials and energy.

- IPCC accounting credits these emissions savings to other sectors (e.g., manufacturing or energy), leading to an underestimation of waste management's contribution.

Circular Economy:

- Recycling alone can cut emissions significantly—recycling metals like aluminium reduces emissions by 40 times compared to primary production.

Indirect savings from the circular economy

- *Avoid food waste – reduce waste from food production, distribution and consumption*
- *Extend product life, repair, refurbish, reuse – clothes, electronic products, etc.*
- *(Excludes significant additional circular savings from the building and transport sectors)*

5-10% of global GHG emissions

Waste prevention

Makes no difference whether overall estimate is 15%, 20%, 25%

We need ACTION NOW!

- *Substitution of virgin materials – metals, glass, paper, plastics, textiles, etc.*
- *Organics recycling displacing e.g. fertiliser*
- *Energy recovery, including landfill gas and anaerobic digestion*

5-10% of global GHG emissions

Recycling and energy recovery

How to overcome implementation barriers?

Accelerate the adoption of mitigation strategies by:

- Build capacity: Develop partnerships with international organizations to train local experts in data collection methodologies and monitoring technologies. Involve stakeholders and community from the beginning.
- Decentralized systems to treat e.g., food waste: community composting units or compact biodigesters (Z. Xuan Hoy et al., 2024) Invest in pilot/demonstration projects e.g., Black Soldier Fly to treat food waste.
- Leverage technology: Deploy affordable, scalable technologies like satellite monitoring, drones, and IoT sensors tailored for resource-limited settings.
- Financial investment: International obligation to deliver sustainable finance in the Global South where low- income countries are expected to receive more financial investment but investment on waste facilities has been distributed as follows: 18% US and UK, 27% in other high-income countries, 38% China, 16% other middle-income countries and 1% low-income countries (Wilson DC., 2023*)
- Improve institutional arrangements: key to develop and implement effective policies as well to access finance. Introduce policies that encourage private-sector involvement in data collection while mandating transparent reporting.
- Data-sharing platforms: Establish open-access regional or global methane emissions databases to facilitate transparency and benchmarking.

*Wilson DC. Learning from the past to plan for the future: An historical review of the evolution of waste and resource management 1970–2020 and reflections on priorities 2020–2030 – The perspective of an involved witness. Waste Management & Research. 2023;41(12):1754-1813. doi:10.1177/0734242X231178025

Thank You!

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