

Urgent Climate Action to Tackle Methane Emissions from Organic Waste



Cutting methane emissions is one of **the fastest** and **most effective** opportunity to slow near-term global warming.

Methane Creation Process from Organic Waste

Why does it matter?



Methane (CH_4) has a **strong short term** global warming impact

80¹ times greater than CO_2 over a 20 year period

Where does it come from?



Food waste, green waste, papers, wastewater biosolids



Accumulate at waste disposal sites



Lack of oxygen. Waste decomposes under anaerobic conditions



CH_4 is produced and released to the atmosphere



Climate change

When organic waste is dumped and buried, it breaks down under very low-oxygen conditions and releases methane gas.

What Are the Solutions?

Prevent systemic Food Loss and Waste (FLW)

Recognizing that reducing methane emissions from unavoided FLW and other organic waste depends on downstream sound waste management

Phase out open dumping and uncontrolled landfills

Capture methane from engineered landfills

Build circular, low-methane urban waste systems²



Delivering multiple benefits across a range of sectors : clean air, improved public health, clean cities, healthy soils, preserved water resources, reduced toxic pollution, economic gains.

¹ United Nations Environment Programme. (2024). *Global Waste Management Outlook 2024: Beyond an age of waste – Turning rubbish into a resource*. UNEP. wedocs.unep.org/20.500.11822/44939

² Refer to the 2026 call to action on methane from the UN Secretary General.



Prevent Food Loss and Waste



8-10%

of global GHG emissions⁴



ACTIONS NEEDED

- **Food loss:** optimize forecasting and production · shorten supply chains · cold-chain · storage and processing
- **Food waste:** redistribute surplus · clear date labels · meal planning · behavior-change campaigns

Phase out Open Dumping and Uncontrolled Landfills

The stock already decomposing in uncontrolled landfills and dumpsites is the waste management sector's largest methane source.

30%

of global municipal waste is mismanaged or uncontrolled⁶

Consequences

Global warming, drinking water sources polluted, ecosystems damaged, human health hazards, poor living conditions



ACTIONS NEEDED

- **Set a clear timeline** to phase out their use,
- **Invest** in engineered closure solutions (e.g.: biocovers and reclaiming the land for public use),
- **Provide an alternative:** low-methane safe final disposal; diversion of waste through source separation.

Capture Methane from Engineered Landfills

Recognizing that existing waste becomes legacy, the moment it reaches a landfill.



ACTIONS NEEDED

- **Upgrade** to engineered landfills with high-performance gas capture system,
- **State-of-the-art operational practices** to prevent methane leakage.



State-of-the-art practices

- Obligations and incentives to phase down organic waste in landfills
- High-performance methane capture⁷
- Operate as bioreactor⁸
- Maintain and monitor
- Cap with impermeable cover & biocover to oxidize methane leaks
- Closure and after-care monitoring

³ Not yet generated.

⁴ Including all emissions related to production, beyond methane. Source : *Food Waste Index Report 2024*, UNEP. wedocs.unep.org/items/dbe2cd4c-8384-4636-8359-5847f42b9711

⁵ Already deposited in dumpsites and landfills.

⁶ Cook, E., Ionkova, K., Bhada-Tata, P., Yadav, S., & Van Woerden, F. (2026). *What a Waste 3.0: Global Snapshot of Solid Waste Management toward Circularity until 2050*. Urban Development Series. World Bank. hdl.handle.net/10986/44141

⁷ Reported capture rate estimates vary widely depending on factors such as landfill cover, waste methanogenic potential data, maintenance, and whether the rate is assessed during active collection or over the landfill's full lifetime. Facilities report capture rates up to 80% over the lifetime, and 20% to 90% during active collection depending on design and operational practices.

⁸ Where appropriate and under controlled conditions, enhanced moisture and leachate management as bioreactor can accelerate waste stabilization and methane generation, enabling earlier gas recovery and reducing residual methane during aftercare. It is recommended only if a high performance methane capture system is in place.

Build Circular, Low-Methane Urban Waste Systems

Prevent

Prevent organic waste beyond food loss and waste.



Non-food domestic waste (diapers, garden waste)



- Switch to reusables (washable diapers)
- Producer responsibility, eco-design (e.g.: hygiene products)
- Grass cycle, mulch and home compost

Largely unavoidable → priority shifts to diversion



Natural fibers (textile, cardboard, furniture, wood)

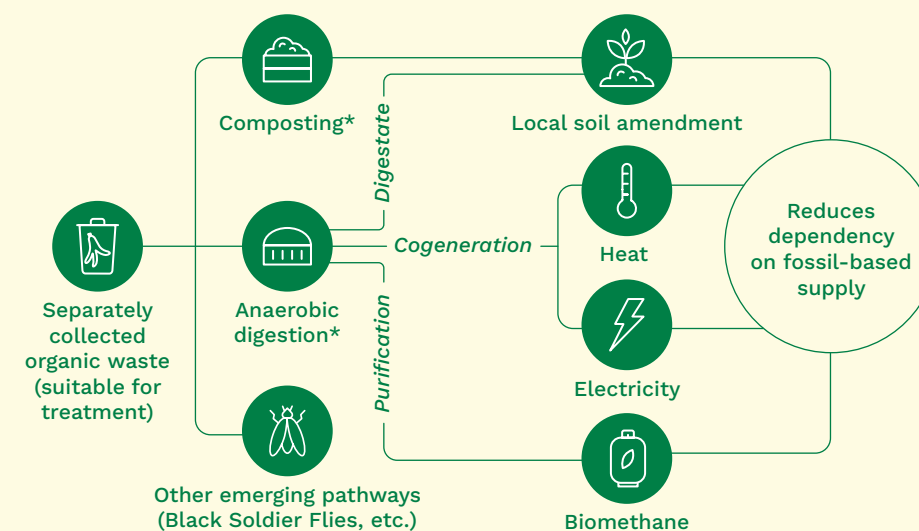


- Design for durability and repairability
- Reuse, resale, rental and sharing models
- Reduce and reuse packaging (right-size, refill)
- Take-back and refurbishment schemes

Separate, Collect & Valorize



Implement source-separation collection schemes to reduce contamination. This action enables diversion from final disposal and makes quality product recovery feasible.



“Small scale, community based facilities require a new type of funding mechanism.”

**State-of-the-art design and operational practices reduce methane leakage*

Recover Energy

When all other valorization options have already been explored, in accordance with the best available techniques and best environmental practices.



Thermal Treatment

with flue gas purification, stringent monitoring, enforced control of toxic emissions and residues management



“Where the preconditions¹⁰ are met, thermal treatment can prevent landfill methane formation from the fraction it treats – never displacing achievable prevention, separate collection and biological treatment.”

Safely Dispose

When all other valorization options have been explored, in accordance with the best available techniques and best environmental practices, AND as a safeguard to a safe circular system.



Engineered landfill with state-of-the-art design and operational practices

⁹ Existing waste is generated and managed today, it becomes legacy the moment it reaches a landfill - Infrastructure has to be planned for future waste.

¹⁰ A mature, well-functioning waste management system with high collection coverage; authorities with the capacity and resources to license, permit, control, monitor and enforce operational standards; waste inputs with an average lower calorific value of at least 7 MJ/kg and a low moisture content; a stable market for the recovered energy; and a community both able and willing to bear the costs involved.

Methane mitigation from waste



Prevent future emissions

By avoiding food waste and separately collecting and treating unavoidable organic waste



Cut emissions occurring today

By phasing out dumpsites and controlling methane emissions from waste deposited in landfills

The waste hierarchy is the foundation that determines the preferred order of treatment options. The urgency-based methane mitigation lens complements it, identifying where methane action is most needed and where it works fastest.

The Main Actions Governments Can Take

- 1 Set a national plan and measurable targets.** Identify the main sources of methane emissions from waste. Assign responsibilities and track emissions reductions.
- 2 Prevent food waste and separate organics at source.** Introduce separate collection from households, markets and businesses.
- 3 Give municipalities the means to deliver.** Provide the mechanisms for, and facilitate access to, stable long-term funding for collection and well-managed composting and anaerobic digestion, including suitable community-scale systems.
- 4 Tackle existing dumpsites and landfills.** Phase out uncontrolled dumping while establishing reliable collection and safe treatment alternatives; control methane emissions from waste already deposited; implement regulatory incentives and restrictions to phase down organic waste incineration and landfilling.
- 5 Protect health while cutting methane.** End open burning and require treatment facilities to control pollution and manage residues safely.



Yet, beyond methane emissions, holistic waste management integrated with a circular economy can deliver on broad climate mitigation benefits, and on the whole of the Sustainable Development Goals (SDGs). We strive to unite the waste prevention and management community to transition toward:



- **All waste safely managed** in accordance with the Basel Convention, its framework for environmentally sound management and the waste hierarchy.
- The whole array of **circular economy actions** implemented.

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