

Methane, Waste, and Climate

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Did you know?

1/3

of food produced every year goes to waste.

86x

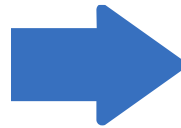
When food decomposes, it generates methane—a greenhouse gas 86x more powerful than CO₂.

58%

of global methane emissions are generated by the food system.

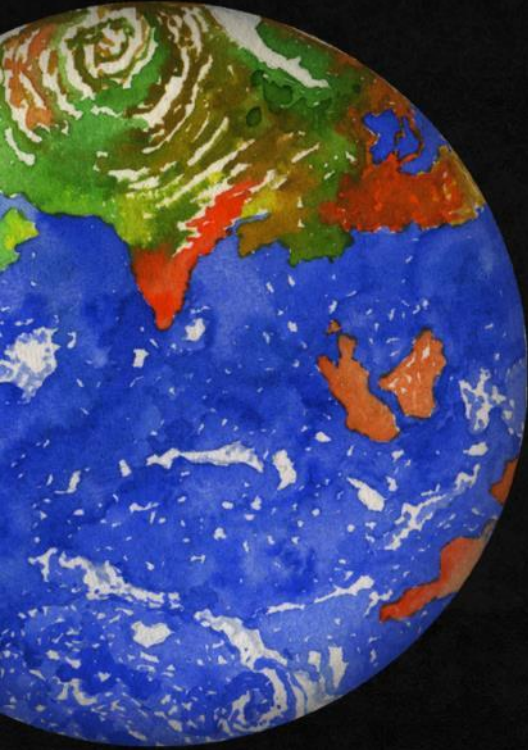


An average household throws away **280 kg** of food per year



That produces as many emissions as burning **490 kg** of coal!





The Global Methane Hub

- 330 million dollar philanthropic effort to align funding on methane mitigation
- Focus on oil & gas, agriculture and waste
- Supporting Global Methane Pledge signatories and potential signatories in meeting the pledge and go beyond.
- Drive coordination and collaboration on methane advocacy
- Granting areas with the highest impact, cutting across sectors.
- Offices based in Santiago, Chile.

The Team

 Members of the Executive Committee



December 2022

Reducing methane emissions is key to keeping 1.5 alive

Methane emissions are skyrocketing

Methane concentrations have grown faster than other greenhouse gases and have **contributed to nearly half of the global warming** we experience now.

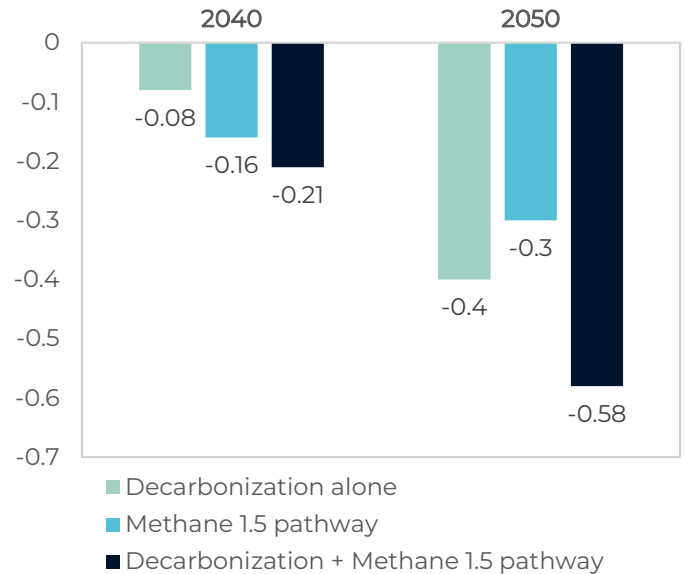
It is **86 times more potent a greenhouse gas vs CO₂** on a 20-year time frame

Decarbonization alone will likely reduce cooling from coal sulfur emissions and **bring increased short-term warming**.

Decarbonization with a methane mitigation focus can prevent twice as much warming than CO₂ mitigation alone and is our best bet to keep under the 1.5°C guardrail.

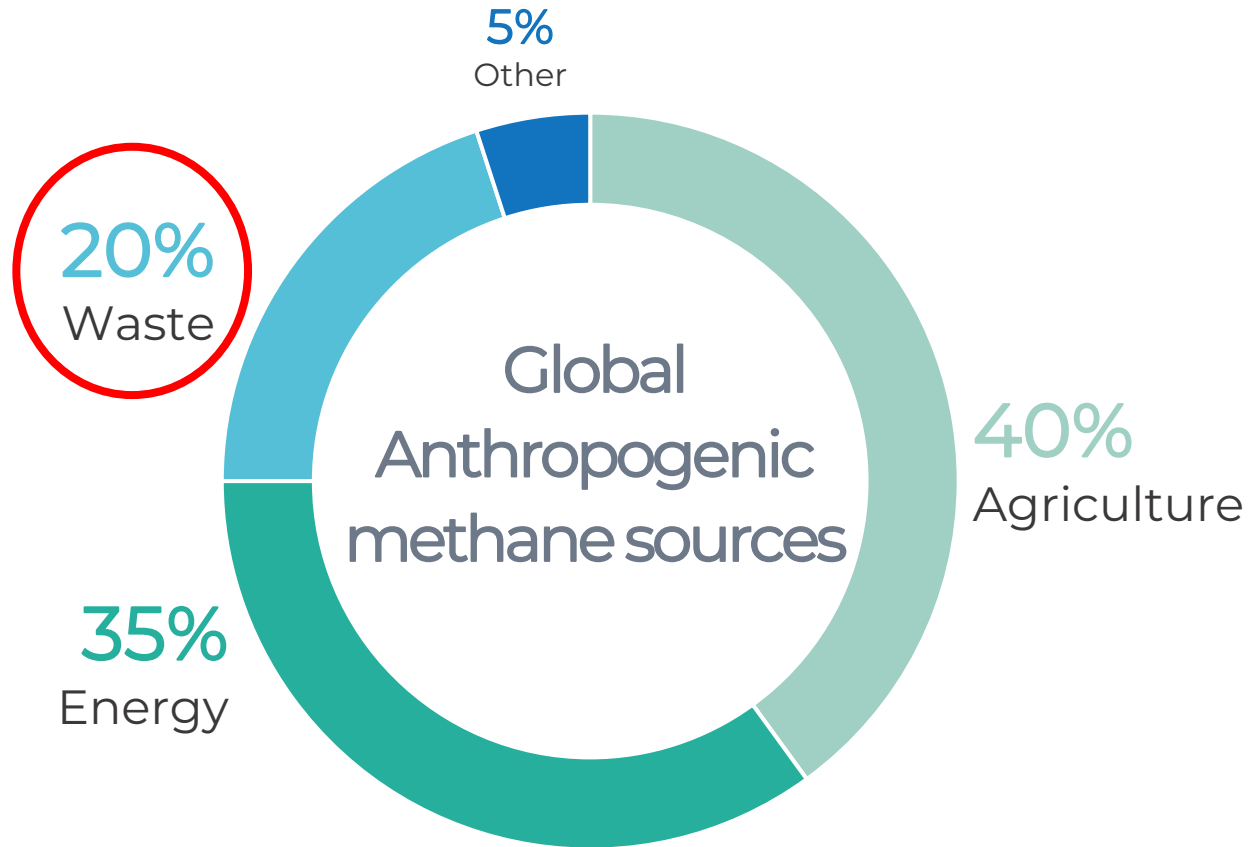
Exceeding 1.5°C will likely lead to irreversible tipping points, such as abrupt melting of ice sheets, widespread thawing of permafrost, and die-off of coral reefs in low latitudes (McKay et al., 2022).

Global temperature response to mitigation pathways



Data from CCAC Global Methane Assessment 2030 Baseline Report (2022)

Anthropogenic methane is emitted in three sectors



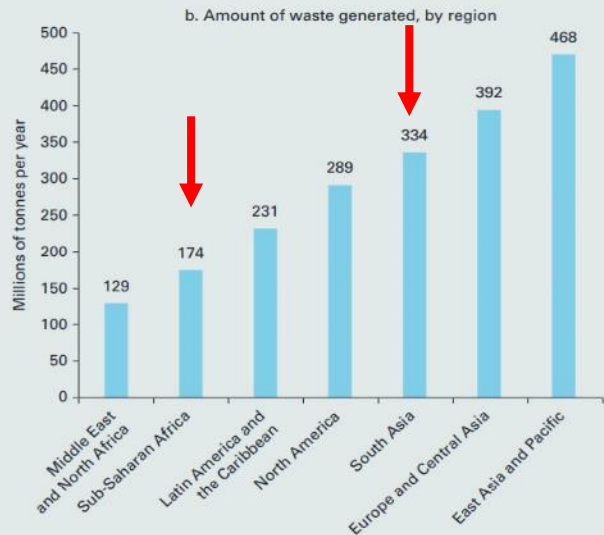
Source: Global Methane Assessment, 2021

Methane emissions from waste come from the organic fraction.

Food Loss, Food Waste, and Green waste.

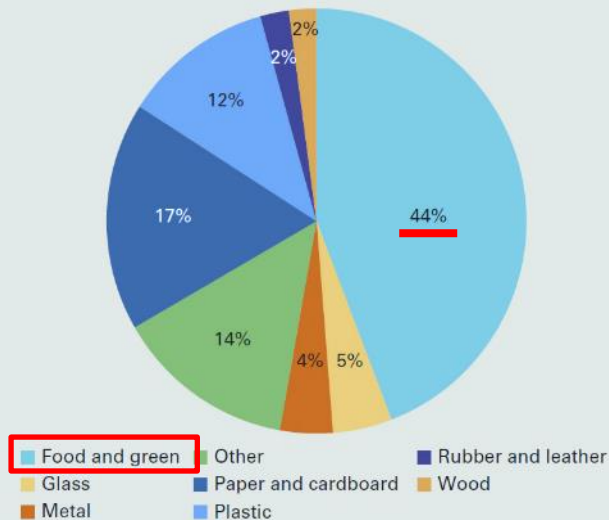
30% of the world's food is lost or wasted every year.

Figure 2.1 Waste Generation by Region (continued)



Note: Data adjusted to 2016.

Figure 2.8 Global Waste Composition percent



Organic Waste accounts for the largest share of Municipal Solid Waste. Especially in the Global South / Developing nations. Invert correlation with Income country or municipality level.

It is possible to drastically reduce methane emissions by 2030

Research shows reductions of 41-47% in methane emissions are technically feasible by 2030 (CCAC, 2021)

Significant reductions are possible in all sectors

Limiting warming to 1.5°C at the lowest cost

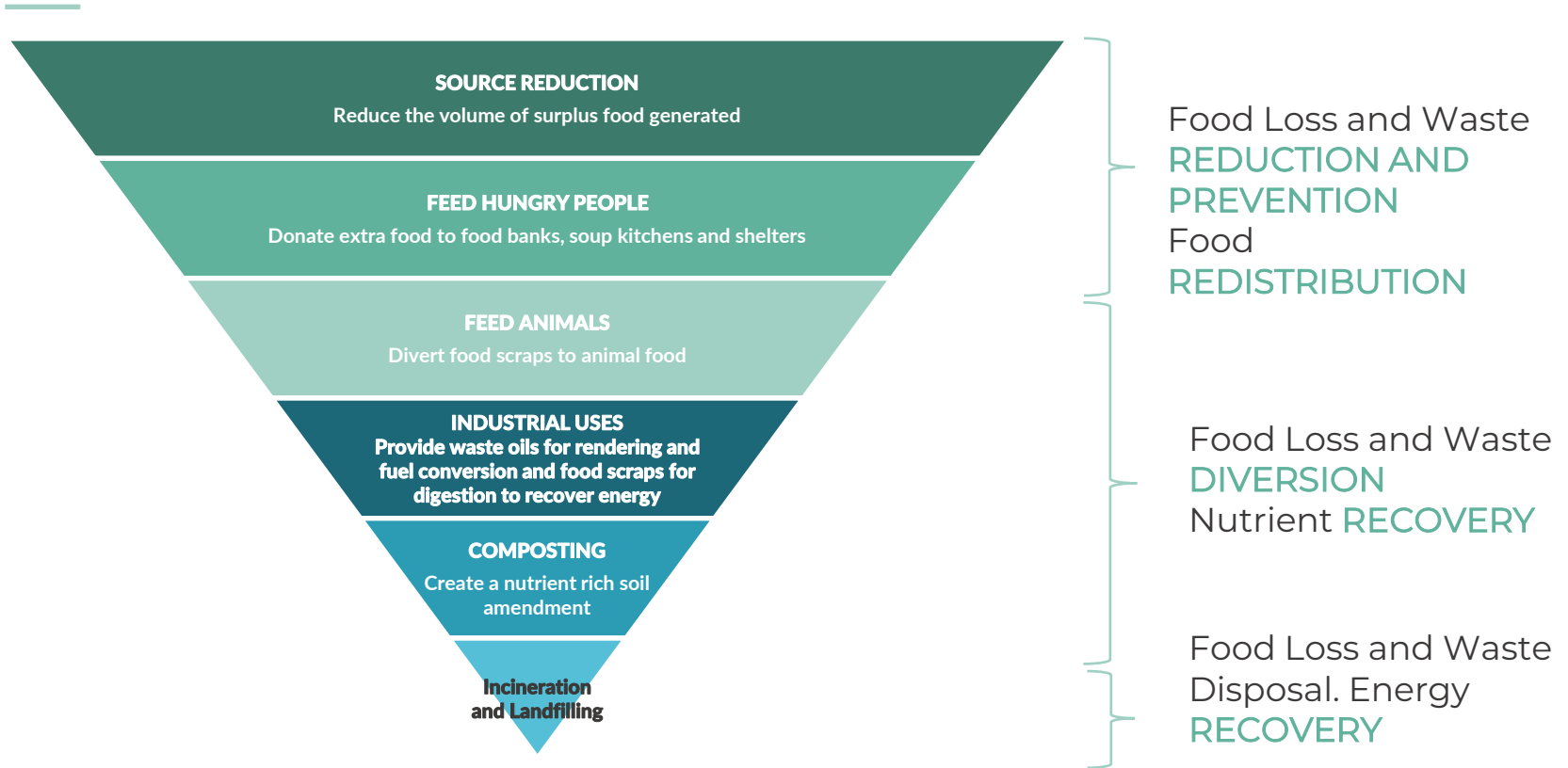
By **2030**

methane emissions need to be reduced in each of the three main emitting sectors:



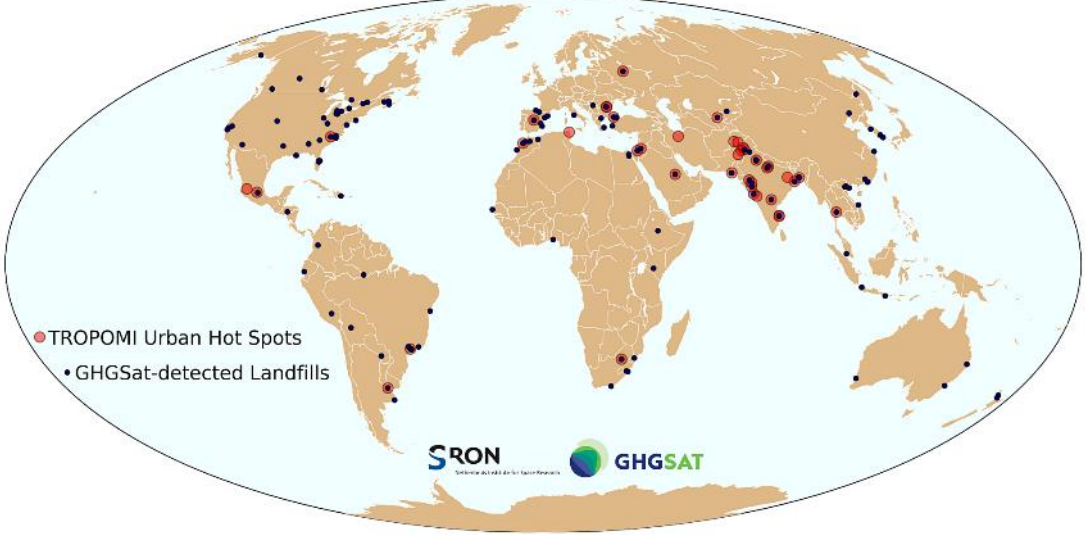
Reductions relative to 2020 emissions

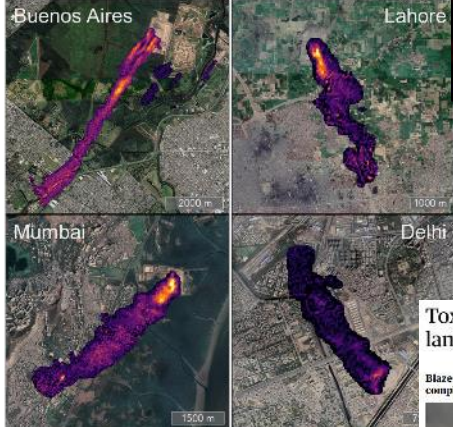
The Organic Waste Hierarchy



Waste Methane are Hot Spots detected by satellite monitoring Landfills are among the largest point sources of methane

Satellite-detected urban and landfill methane emissions






≤ 0 0.02 0.04 0.06 0.08 0.1 0.12 0.14 0.16 0.18 ≥ 0.2
 Methane column enhancement (mol m^{-2})


Half of Buenos Aires's methane emissions may come from one landfill


Around a fifth of global methane emissions come from rotting landfills. Satellite data shows a lot of rotting waste pollution by large cities like...
 @SPAINETOP @GWPACT2022



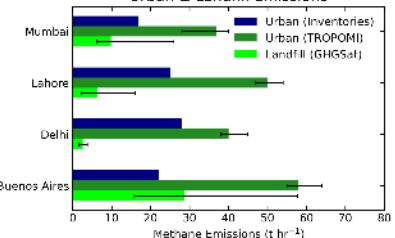
Toxic fumes fill Delhi's skies after vast landfill site catches fire

Blaze at 65-metre high 'mountain of shame' in Ghazipur still not completely put out





Urban & Landfill emissions



City	Urban (Inventories) (t hr^{-1})	Urban (TROPOMI) (t hr^{-1})	Landfill (GHGSat) (t hr^{-1})
Mumbai	~15	~10	~40
Lahore	~25	~5	~50
Delhi	~30	~5	~45
Buenos Aires	~25	~10	~60

Methane Emissions (t hr^{-1})

Addressing waste methane emissions

Enhanced measurement and tracking

Data information (waste & emissions), evidence including co-benefits, monitoring, and transparency for decision-making and environmental community support. Facility scale approach (improving inventories with better activity data and emission factors and improving practices that can reduce landfill emissions, bringing local benefits to communities)

Policy and regulation support

Policy Playbook, design, and pilot implementation regulations, action plans, and/or legislation..

Subnational & Local Governments Support

Capacity building and increased collaboration to build capacity (waste is a global problem with local solution)

Project preparation facilities for project design, to leverage local waste management funding towards methane mitigation.

Partnership with Multi-Development Banks for project design with a methane mitigation focus.

Influence recommendations from policy oriented IGOs, including OECD, so organic waste diversion is promoted over methane generating options.

Advocacy. Can put pressure on facilities due to the environmental justice problems mismanaged waste can cause to communities.

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