

# Methane, Waste, and Climate

International Zero Waste Cities Conference  
January 26<sup>th</sup>, 2023



**Nicolás Díaz, MPA**

Project Manager, Waste & Circular Economy  
Global Methane Hub  
[nicolas.diaz@globalmethanehub.org](mailto:nicolas.diaz@globalmethanehub.org)

# 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 CO<sub>2</sub>.

**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.

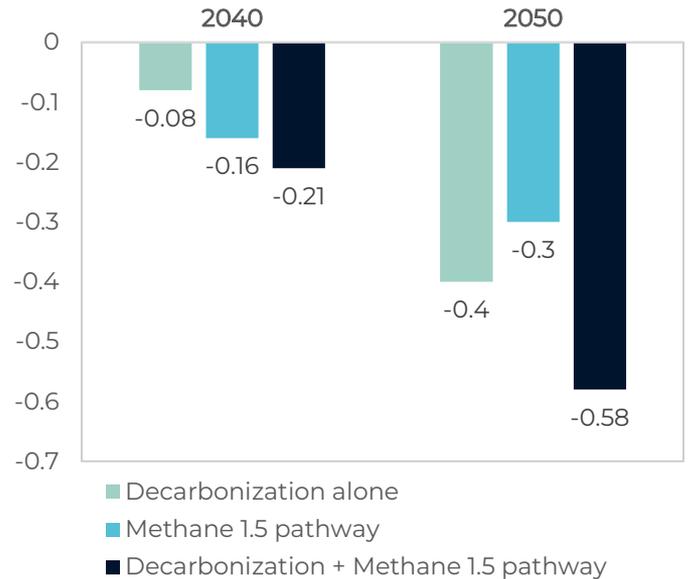
It is **86 times more potent a greenhouse gas vs CO<sub>2</sub>** on a 20-year time frame

**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 CO<sub>2</sub> mitigation alone and is our best bet to keep under the 1.5°C guardrail.

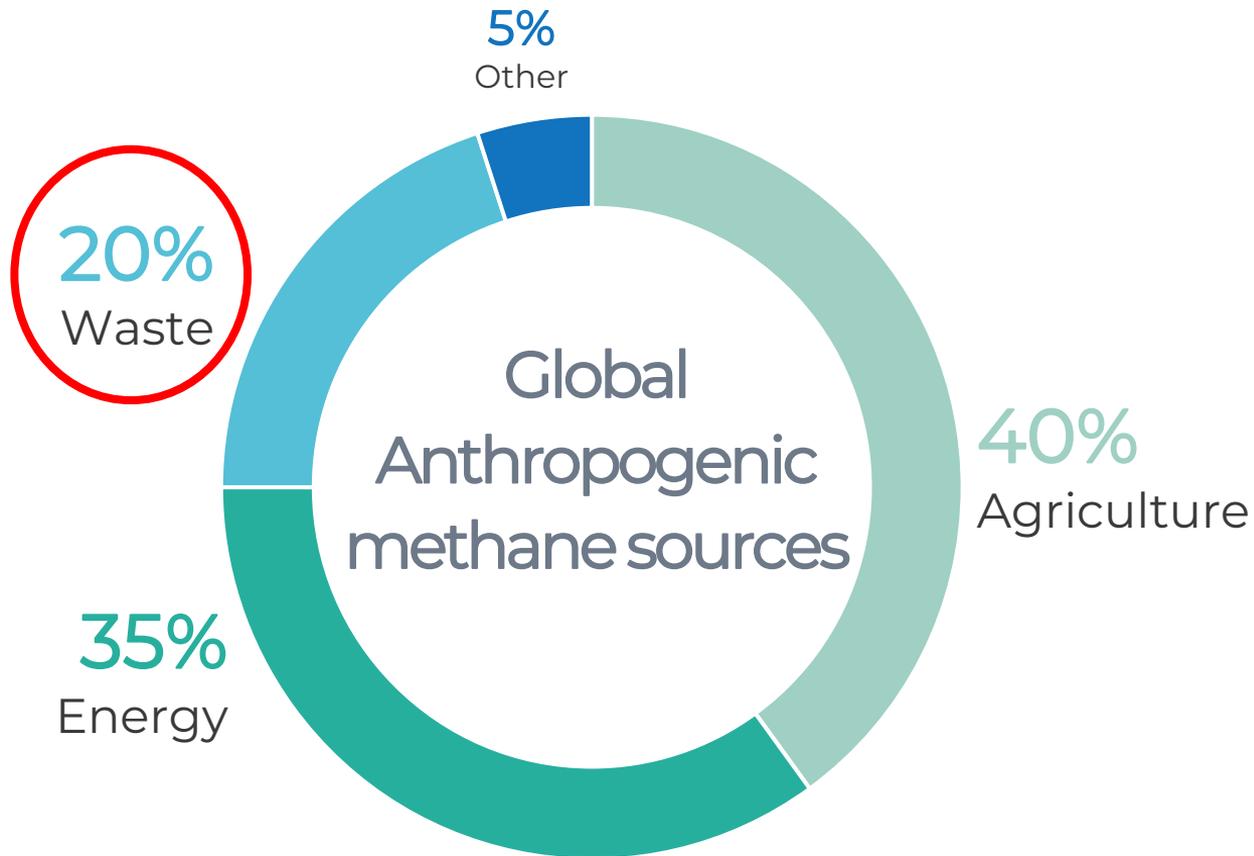
**Exceeding 1.5°C will likely lead to irreversible tipping points**, such as abrupt melting of ice sheets, widespread thawing of permafrost, and die-off of coral reefs in low latitudes (McKay et al., 2022).

## 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.

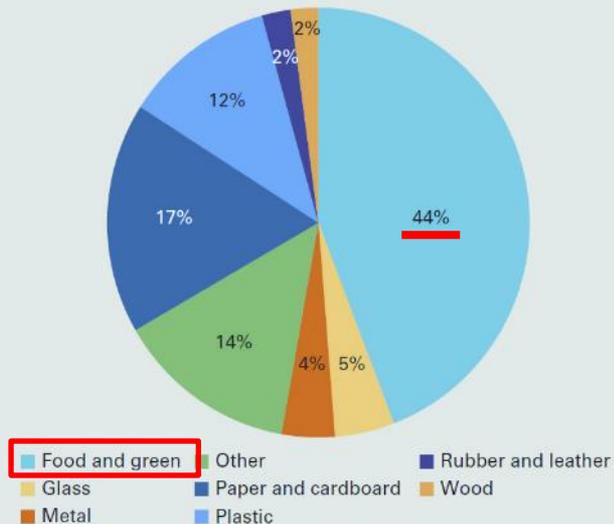
30% of the world's food is lost or wasted every year.

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

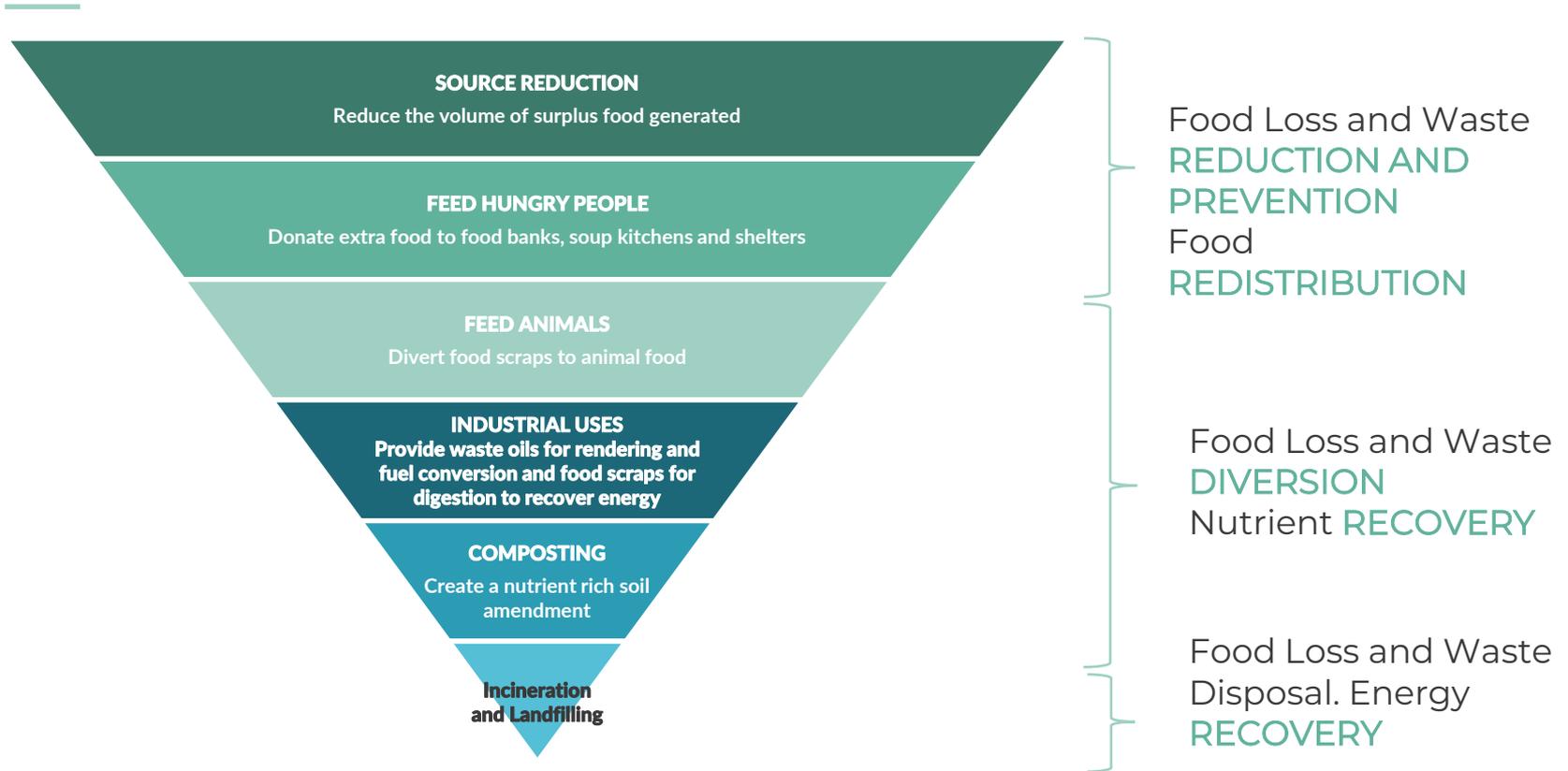
By **2030**

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



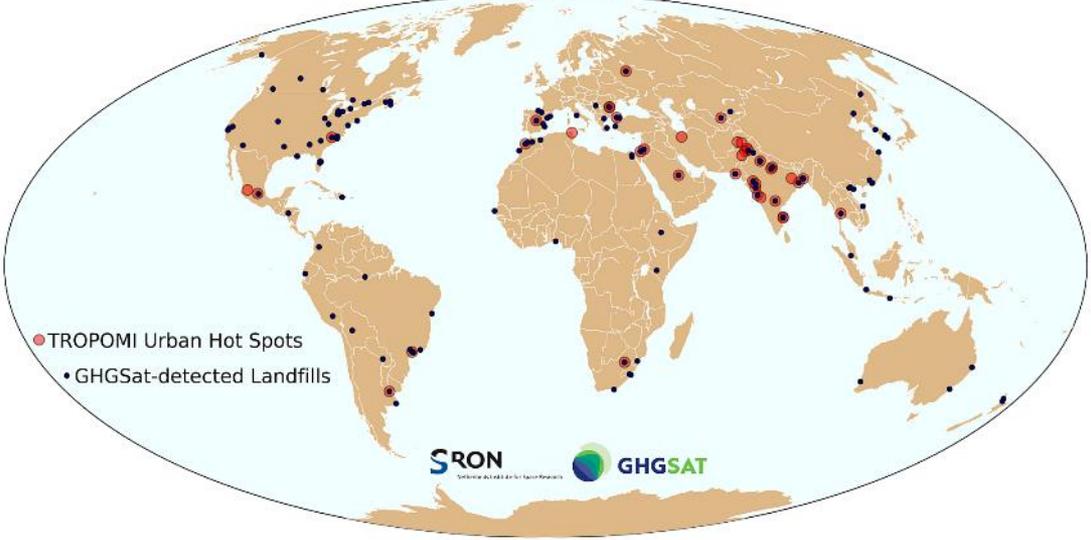
Reductions relative to 2020 emissions

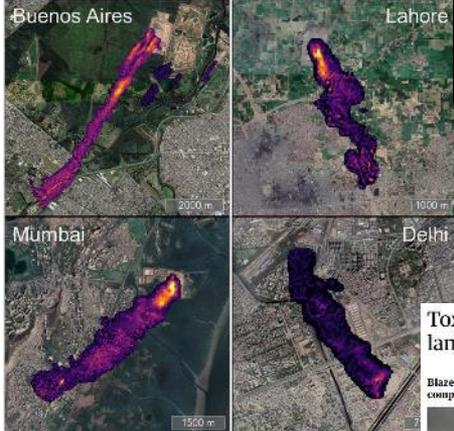
# The Organic Waste Hierarchy



# 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





$\leq 0$  0.02 0.04 0.06 0.08 0.1 0.12 0.14 0.16 0.18  $\geq 0.2$   
 Methane column enhancement ( $\text{mol m}^{-2}$ )

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

Around a fifth of global methane emissions come from rotting landfill. Satellite data shows a lot of artificial methane pollution by large landfills.

THE GUARDIAN | 6 Aug 2022



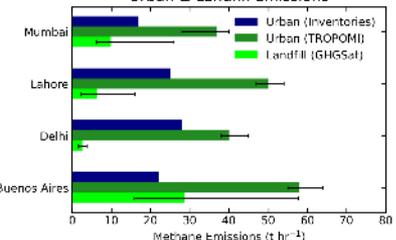
**Toxic fumes fill Delhi's skies after vast landfill site catches fire**

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



**The Guardian**

**Urban & Landfill emissions**



City	Urban (Inventories) ( $\text{t hr}^{-1}$ )	Urban (TROPOMI) ( $\text{t hr}^{-1}$ )	Landfill (GHGSat) ( $\text{t hr}^{-1}$ )
Mumbai	~15	~10	~35
Lahore	~25	~10	~50
Delhi	~30	~5	~40
Buenos Aires	~25	~10	~55

Methane Emissions ( $\text{t hr}^{-1}$ )

# 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.

# Methane, Waste, and Climate

International Zero Waste Cities Conference  
January 26<sup>th</sup>, 2023



Global  
Methane  
Hub

**Nicolás Díaz, MPA**

Project Manager, Waste & Circular Economy  
Global Methane Hub  
[nicolas.diaz@globalmethanehub.org](mailto:nicolas.diaz@globalmethanehub.org)