Methane Mitigation

Pulling the Emergency Brake on Climate Change

Methane drives nearly half of today's warming. Cutting emissions offers a winning way to deliver major climate and health benefits within our lifetime.

We face a mounting climate emergency. Rising temperatures are fueling extreme weather, upending ecosystems, and endangering communities worldwide. But there is still a powerful lever we can pull to slow the crisis: cutting methane emissions.

Responsible for nearly half of current warming, methane is a climate super pollutant that traps roughly 80 times more heat than carbon dioxide over a 20-year period. Fortunately, unlike carbon dioxide, it is also short-lived and breaks down in the atmosphere within just a couple of decades. That makes reducing methane emissions one of the fastest, most effective ways to lower global temperatures.

But the benefits of methane mitigation go well beyond slowing climate change. Human-caused methane pollution—mainly from the energy, agriculture, and waste sectors—not only accelerates warming but also worsens air quality, damages ecosystems, threatens food and energy security, and undermines economic growth. Worse still, these impacts disproportionately affect those least equipped to respond, particularly low-income communities and countries in the Global South.

The good news? Solutions to reduce methane exist. By fixing leaks in oil and gas systems, adopting more sustainable livestock and rice production practices, and better managing organic waste, we can cut methane and slow warming while catalyzing broader change: improving public health, building stronger food, energy, and economic systems, and paving the way for a healthier near-term future.

Realizing this potential requires collaborative action and strategic investment to close critical funding and implementation gaps.

This is where the Global Methane Hub (GMH) comes in. As the world's first globally coordinated philanthropic initiative focused solely on methane, GMH mobilizes resources, drives innovation, and helps country leaders and local communities develop the policies, tools, and incentives needed to deliver measurable methane reductions with lasting climate and societal impact.

This overview outlines what methane is, why it matters, and how targeted action can deliver near-term benefits—slowing warming and improving lives around the world.

Global Methane Hub

The Case for Reducing Methane

Slows Warming Within our Lifetime

Because methane is highly potent but breaks down quickly, cutting emissions can advance global climate goals now. These include the Paris Agreement's target to keep warming to 1.5°C and the Global Methane Pledge—a commitment by 159 countries to reduce human-caused methane emissions by at least 30% by 2030. Reducing these emissions could curb projected warming twice as fast as focusing on carbon dioxide alone through 2040.

Improves Public Health

Lowering methane means cleaner air and healthier communities. The gas contributes to ground-level ozone, a major component of smog, and is often released alongside harmful pollutants like volatile organic compounds, nitrogen oxides, and particulate matter. These worsen air quality and cause respiratory and cardiovascular issues, as well as many other adverse health effects. The United Nations Environment Programme (UNEP) estimates that cutting global methane emissions could prevent 260,000 premature deaths, 775,000 asthma-related hospital visits, and 73 billion hours of lost labor due to extreme heat each year.

Delivers Local and Global Benefits

Methane reduction provides immediate benefits, especially where action is taken. In the energy sector, it lowers pollution for frontline communities located near oil and gas infrastructure. In agriculture, it supports more efficient, climate-resilient livestock and rice production, improving farmer incomes. In the waste sector, it reduces fire and explosion risks while boosting resource recovery. Globally, reducing methane emissions lowers ozone pollution, which threatens both human health—and crop yields. According to UNEP, methane cuts could prevent up to 25 million tons of crop losses annually.

Supports Environmental Conservation

Reducing methane emissions helps protect biodiversity, natural resources, and critical ecosystem services by preventing further warming. The more we exceed 1.5°C, the greater the likelihood of triggering irreversible tipping points—such as rapid ice sheet melt, widespread permafrost thaw, and coral reef die-offs—leading to severe ecosystem damage and biodiversity loss. Even worse, thawing permafrost and melting ice could release more methane, creating a dangerous feedback loop that accelerates warming.

Methane at a Glance

1. A colorless, odorless greenhouse gas, methane is responsible for nearly half of today's net global warming.
2. It traps about 80 times more heat than carbon dioxide over a 20-year period but breaks down in the atmosphere within a decade or two.
3. Because of its short lifespan and high warming potential, reducing methane can deliver climate, health, and economic benefits within just a few decades.
4. More than half of global methane emissions come from human activities in three sectors: agriculture (40%), energy (35%), and waste (20%).
5. By 2050, it is estimated that more than 80% of methane emissions will come from the Global South.
6. Using solutions available today, GMH aims to reduce methane emissions by 35% by 2030—keeping the Paris Agreement goal of limiting warming to 1.5°C within reach.

The Big Three: Methane's Main Sources

Methane enters the atmosphere from natural sources, such as wetlands, and human activities. About 95% of anthropogenic methane emissions come from three sectors: agriculture, energy, and waste. Solutions available now could slash many of these emissions today.

Agriculture (40%)

The Source

Agriculture is the fastest-growing source of methane pollution globally. Livestock—particularly beef and dairy cattle—are the primary contributors, emitting the gas through a natural digestive process known as enteric fermentation. Additional emissions come from the breakdown of manure. Rice cultivation is another significant source, with flooded paddies creating environments that promote methane-producing microbes. Because livestock dominates agricultural methane emissions, the countries with the largest herds, such as Brazil, China, India, and the United States, are among the biggest polluters.

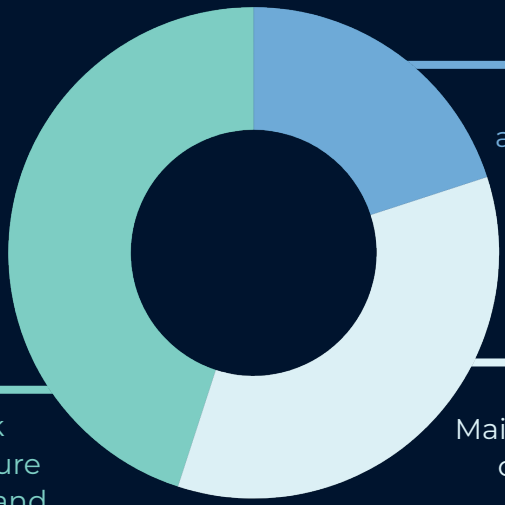
The Solutions

Agricultural innovation can help farmers—particularly in low- and middle-income countries, which produce roughly 80% of agricultural methane—increase yields and incomes while reducing emissions. Proven strategies include methane-reducing feed additives, improved animal breeding, better manure management, and sustainable rice cultivation. GMH is at the forefront of efforts to transform the sector and focuses on:

- Spearheading the largest-ever global investment in livestock methane research through our Enteric Fermentation R&D Accelerator, along with similar investments in rice to make this high-emitting staple a climate-smart crop.
- Scaling solutions through supportive policies, targeted investments, and greater corporate engagement—which is critical: some large agribusinesses, if treated as countries, would rank among the world's top methane emitters.

Sector Emissions at a Glance

Human-caused methane accounts for approximately two-thirds of global methane emissions.



20%
WASTE
Mainly landfills and wastewater

35%
ENERGY
Mainly oil, gas, and coal production

40%
AGRICULTURE
Mainly livestock digestion, manure management, and rice cultivation

Energy (35%)

The Source

Most methane emissions from the energy sector come from oil, natural gas, and coal production. In oil and gas operations, the gas escapes during extraction, processing, and transportation—primarily through leaks, venting, flaring, and poorly maintained infrastructure. Abandoned oil and gas wells, known as orphan wells, are another source; if not properly sealed, they can leak methane for years. In coal production, most emissions happen during mining.

The Solutions

By 2030, an estimated 80% of methane emissions from oil and gas, and up to 98% from coal, could be reduced at low or even negative cost. Proven solutions include leak detection and repair, capturing and using vented gas, and ending unnecessary flaring. GMH aims to scale these and other high-impact interventions, especially in major methane-emitting countries and among key fossil fuel importers. Our work includes:

- Advocating for transformative energy policies, such as the European Union's methane import rules for fossil fuels, which are creating new incentives for global mitigation.
- Supporting breakthroughs in satellite monitoring that enable near real-time detection of methane leaks and give governments, companies, and communities powerful tools for action and accountability.

Methane and Carbon Dioxide: Climate Warming Partners

Human-caused methane emissions are behind nearly half of the 1.04°C rise in global temperatures we have experienced since 1850; carbon dioxide is mostly responsible for the rest.

While cutting carbon dioxide is crucial for long-term climate goals, reducing methane is the fastest way to slow warming now. This is because methane is a "short-lived climate pollutant" that breaks down within 10 to 20 years—faster than carbon dioxide, which can last for centuries.

At the same time, methane is also much more powerful, causing approximately 80 times the warming of carbon dioxide in the short term. Taking action on methane delivers immediate climate benefits and buys valuable time to accelerate decarbonization efforts and secure a stable climate future.

> ***For the first time, we're seeing what was invisible—real, actionable methane data at a global scale that governments and industries can no longer ignore.***
>
> **Chris Konek**
> Lead Scientist, GMH

Waste (20%)

The Source

Often overlooked in climate discussions, methane from the waste sector is a significant and growing threat. It comes largely from decomposing organic materials like food waste, which alone makes up more than 40% of global solid waste by weight, and from wastewater treatment systems. Rapid urbanization and population growth are driving a surge in organic waste, much of which ends up in landfills and poorly managed wastewater systems. This is especially true in the Global South, where infrastructure lags behind demand. Compounding the problem, more than 80% of global waste funding supports outdated systems, such as landfills, incineration, and inefficient infrastructure, that fuel methane pollution and pose public health risks, including toxic air and fire-prone dump sites.

The Solutions

To reverse this trend, investment must focus on scalable approaches that reduce food loss, improve waste collection, promote sustainable disposal, capture methane from landfills, and integrate waste pickers—informal workers who play a vital role in recycling and recovery—in formal waste management systems. GMH is advancing these solutions by:

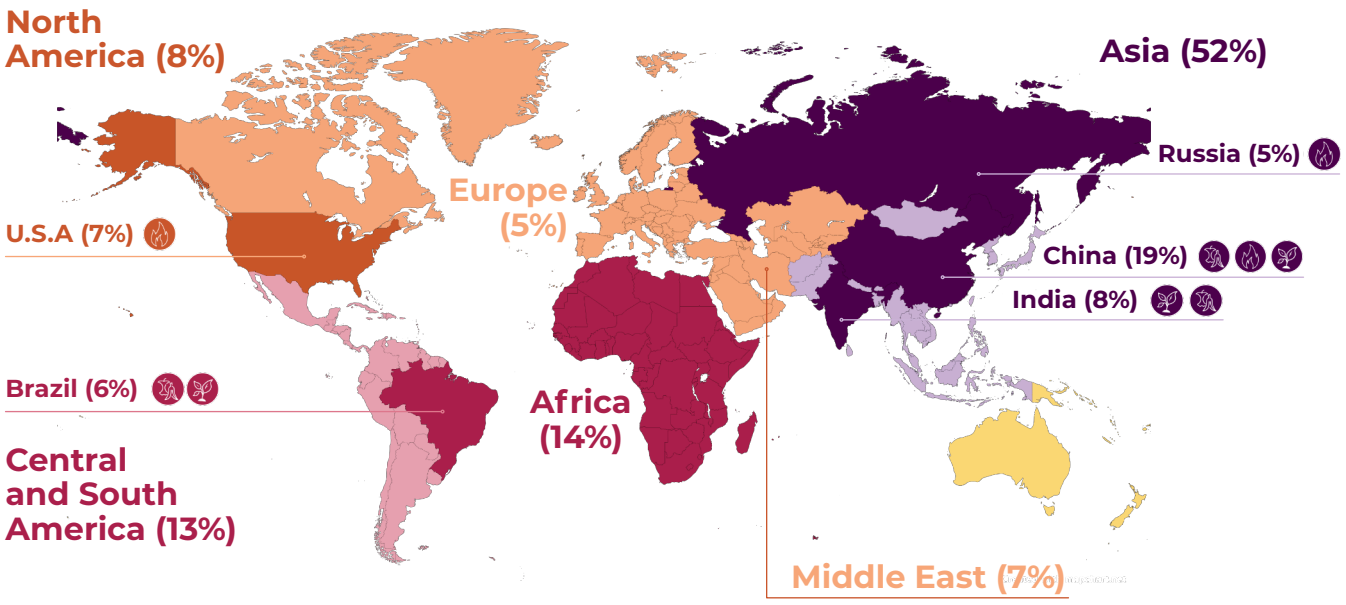
- Promoting food rescue and composting.
- Redirecting multilateral development bank funding from incineration and landfilling toward sustainable waste management.
- Using the GMH-backed WasteMAP platform, which tracks global landfill methane emissions, to hold the largest emitters accountable and support them in mitigation efforts.

Closing the Methane Funding Gap to Accelerate Impact

Despite methane's outsized role in driving climate change, efforts to tackle it have received little funding or attention. The 2021 launch of the Global Methane Pledge marked a turning point, and 159 countries have since committed to cut emissions by 30% by 2030. However, financial support still lags, with only 2% of climate finance going to methane mitigation and just 0.5% to the energy sector, where the greatest immediate impact is possible.

Global Methane Hotspots

Percentages represent contributions to global total



The Growing Role of the Global South

By 2050, the Global South could account for more than 80% of global methane emissions, fueled by rapid population growth, rising incomes, and inefficient supply chains. But this trajectory is not inevitable. We can change course with urgent, targeted action across all sectors, and bold investment now. With this in mind, GMH is mobilizing focused interventions, catalytic capital, and local capacity-building to turn the regions driving emissions into global leaders in methane solutions.

> ***Methane reduction is a win-win-win—for the climate, public health, and economies worldwide. The solutions exist. The funding is mobilizing. And what we do best is deliver resources to reach the people and places that need them most.***

Marcelo Mena
CEO, GMH

The Global Methane Hub (GMH)

Our vision

A world where a dramatic reduction of methane emissions by 2030, coupled with rapidly decreasing carbon dioxide and other greenhouse gas emissions, keeps global warming under 1.5°C, averting climate catastrophe and bringing social, environmental, health, and economic benefits to communities, cities, and countries.

Our mission

Accelerate action by governments, civil society, researchers, investors, and the private sector to develop and implement strategies that will catalyze rapid systemic reductions in methane emissions in the energy, agriculture, and waste sectors.

Our goal

Ensure global methane emissions reduce 35% by 2030 and 50% by 2050, on a baseline of 2010 levels.

Reducing methane is not just the fastest way to cool the planet—it is one of the most effective ways to improve life on it. Let's partner to pull the emergency brake on climate change and create a better world for everyone.

www.globalmethanehub.org

For more information on GMH, contact Kimberly Karol at **kimberly.karol@globalmethanehub.org**.

For more information on methane, see the **Methane Factsheet here**.

Global Methane Hub