Houston Area Model United Nations

Specialized Committee

UNFCCC - COP28

Chair | Dean Zach

Specialized Committee Background Guide

Topic B: addressing methane emissions

Houston Area Model United Nations 48

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Note to Delegates

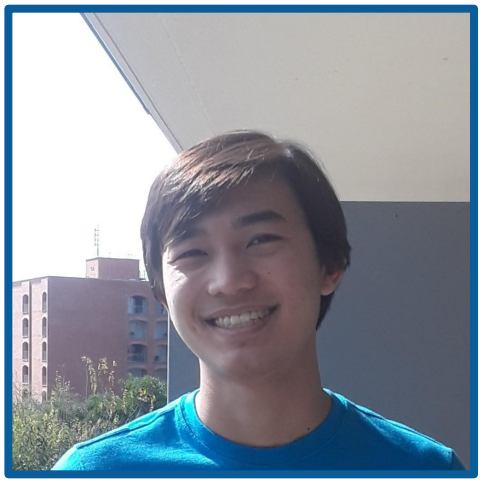
Delegates,

I'm Dean Zach, and I'll be serving as your UNFCCC committee chair for HAMUN 48. Right now, I'm a junior at Trinity University (in San Antonio) majoring in English, minoring in creative writing, and (possibly) double-majoring in political science.

A few important notes about this year's committee: although this committee's name is (technically) UNFCCC, this committee will be structured as the 28th Conference (COP28) of all countries who are Parties to the UNFCCC treaty, which will in reality take place in Dubai in November 2023. As a result, this is not a standard committee, nor a crisis committee, but a specialized committee. All that means is that committee sizes may be a bit smaller and some specialized rules of procedure which are specific to UN climate change conferences may apply. In general we'll operate just like a standard committee though, taking actions through resolutions, using standard procedure, and all that stuff. See more on this below.

As a final note, I'm really excited to see everyone in-person again!

Dean Zach
He/him/his
Chair of UNFCCC- COP28
dzach@trinity.edu



Changes to regular parliamentary procedure

In general, this committee will use the same rules of procedure as a regular standard committee—we will use points and motions to speak, resolutions to get things done, etc. As a specialized committee, however, there will also be a few extra rules of procedure and also a few extra powers which countries will have the opportunity to use to their advantage. (Assuming the countries that can use them to their advantage read this...)

- **European Union (EU) member states, if all choose to do so, can consolidate their voting power (so that they have one vote counting six times).** This is in accordance with how the real conferences work, in which EU member states send their own delegates, but also negotiate bloc-wide emissions goals and vote as a bloc. This choice must be submitted in writing to the dais with the 6 EU states as signatories.
- The **4 member states** who have yet to submit updated NDCs (they know who they are) can do so in writing at any time during the conference using the motion "motion to submit NDC."

See pp. 6-10 of the Topic A background guide for the “What is climate change?” and “What is the UNFCCC?” sections

Topic B: Reduction of methane emissions

In general, policymakers and scientists discuss climate change policies as falling under the general umbrella of one of two accepted categories: policies that deal with **adaptation** to climate change (i.e., dealing with climate change by focusing on making its impacts less severe) and those that deal with the **mitigation** of climate change (i.e., focusing on eliminating or regulating the causes of climate change). Topic A deals with a **climate adaptation issue** (helping developing countries rebuild after natural disasters or other climate effects), and Topic B deals with a **climate mitigation issue (decreasing worldwide methane emissions, and, by extension, reducing the amount by which the atmosphere will heat to a more manageable level.)**

Pollution experts discuss two types of pollution: **point-source pollution**, in which there is a **single identifiable source of pollution that is confined to a particular place and time** (like a leaking oil well or Chernobyl), and **nonpoint-source pollution**, in which there are **a wide variety of pollutant sources which are dispersed (spread) over a wide range of places and times** (like fertilizer runoff or acid drainage, both of which drain to waterways and might come from hundreds of fields and abandoned mines, respectively.) Because they have a single known source, point-source pollution events are generally easier to clean up, whereas, having many known sources, **nonpoint-source pollution events are much harder to address**—imagine trying to plug a pipe leaking from one large hole vs. a pipe leaking from many small holes.

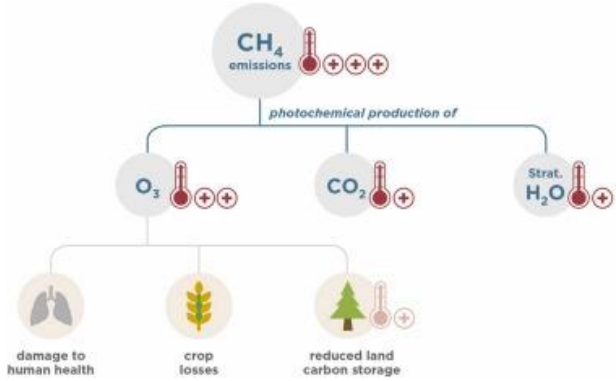
Greenhouse gas emissions in general, and methane emissions in particular, are a good example of **nonpoint-source pollution.** As we will see, methane emissions come from a wide variety of sources, some of which are well-known; others not so much—ranging from coal power plants, to natural gas flare-offs and so-called "fugitive emissions," to livestock in massive industrial farms, to bacteria in tropical rice paddies or in melting Arctic permafrost.

Ultimately, emissions from methane come from developed countries and developing ones; from countries in the Global North and Global South; from historical emitters, rapidly industrializing countries, and even largely subsistence agrarian countries. Carbon dioxide emissions have received more attention in recent years, but emissions of methane, a more potent greenhouse gas than carbon dioxide, deserve just as much focus in the climate equation. **Delegates should take steps toward establishing a multilateral agreement between all nations who emit or are affected by emissions of methane, in order to regulate and moderate emissions of methane and move toward plugging all holes in the pipe.**

Methane: a scientific background

Scientists use a metric called **Global Warming Potential (GWP)** to assess how good a particular greenhouse gas is at absorbing heat and how long said greenhouse gas lasts in the atmosphere. Essentially, GWP is calculated by comparing the potency of a greenhouse gas to that of carbon dioxide (basically, comparing the heating effect of one ton of some greenhouse gas vs. one ton of CO2). CO2 is said to have a GWP of 1. According to the US EPA, **even though methane has a much shorter residence time than CO2, meaning that it drops out of the atmosphere much quicker, methane (CH4) is said to have a GWP of 27-30 over 100 years and 84-86 over 20 years.** This means, in effect, that methane is 27-30 times more effective at heating the atmosphere than CO2 over that time period**, but 84-86 times better at heating the atmosphere over a 20-year period.**

Also, the overall heating impact of methane is actually compounded by atmospheric methane's indirect effects on other GHGs—methane is an ingredient in the forming of ozone, CO2 and stratospheric water vapor (which also absorbs heat), leading to methane's climatic impact being doubled (see Fuglestvedt et al. and the figure from Mar et al.).



There is another perverse reason why methane is such a tricky greenhouse gas when compared to carbon dioxide and other greenhouse gases such as nitrogen oxides (NOx) produced by engines. As a 2021 study showed, **even while emissions of CO2 and N20 decreased in 2020 because of the COVID-19 pandemic, the growth rate of methane actually increased by about 50%**, continuing on their upward trend of recent years.

As the study found, much of the rise in methane could be attributed to a disturbing chemical reaction between NOx and CH4: basically, NOx actually breaks down CH4 in the atmosphere because it produces a molecule called the hydroxyl radical (OH) which breaks down about 85% of annual atmospheric methane emissions (according to WIRED). Therefore, when emissions of the greenhouse gas NOx **decrease**, emissions of the greenhouse gas methane **increase**, and when emissions of NOx (which also creates smog, acid rain, and ground-level ozone) **increase**, atmospheric methane **decreases**. Although methane has a bigger global warming potential (GWP) than NOx, any proposed methane reduction solutions should take this problem into account.

Final note: as we will see, much methane production occurs when chemical reactions happen in an anaerobic (oxygen-poor) environment, whether it be a peat bog, a rice paddy, a coal mine, or a cow's stomach.

Who are the primary emitters of methane?

Emissions of atmospheric methane, to put it one way, have more sources than this Wikipedia article. Both developed and developing countries are responsible for methane emissions (although to varying degrees), and both developed and developing countries feel the effects of methane emissions (to varying extents). **Ultimately, according to the IEA, the five largest methane emitters were responsible for 50% of methane emissions from all sources in 2021 (in order: China, India, the United States, Russia, and Brazil)** followed by Indonesia, Pakistan, Iran, Nigeria, and Mexico in the top 10.

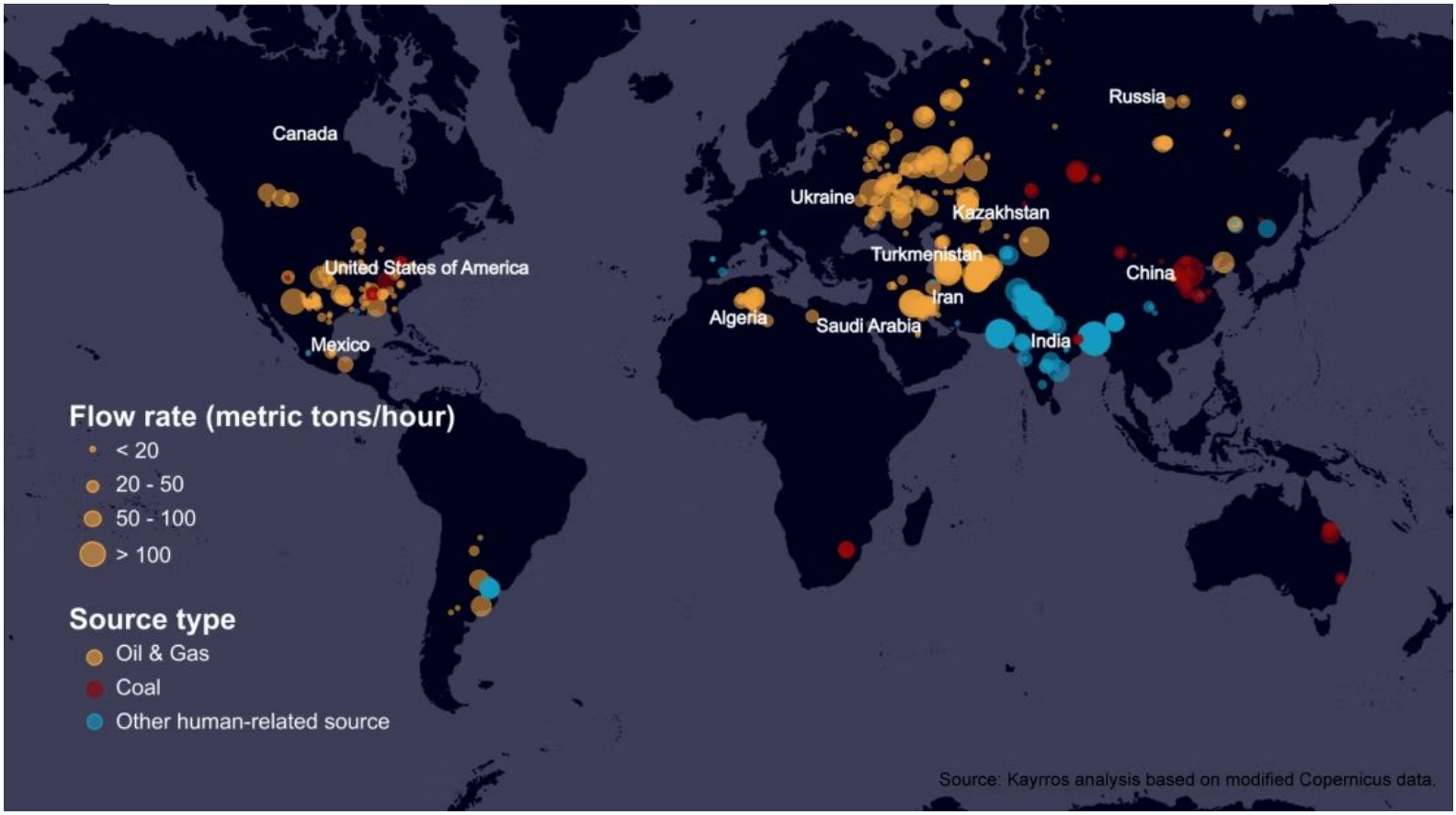
According to 2022 IEA data, **the agriculture sector** accounted for the biggest slice of emissions, (**24%**) followed by **the energy sector** (**22%;** mostly oil, coal, and natural gas), **waste treatment and landfills** (**11%**), and **biomass burning** (**3%**). It should be noted, though, that only 60% of total methane emissions were human-caused, and 40% came from natural sources whose methane releases may also have been triggered by climate change (for example, wetlands and permafrost). We will briefly go through the main sources of methane emissions by sector here. You can see how your country's methane emissions compare to others with the IEA's Global Methane Tracker here.

Methane emissions from agriculture

The vast majority of methane emissions in the agriculture sector— **80% of emissions from the agriculture sector,, or about 32% of overall human-caused methane emissions**, according to UNEP—comes from **livestock**. LIvestock (mainly cows and other ruminants (which are herbivores with stomachs that have microbes which ferment their food before digestion)) are a source for methane in two primary ways—**their manure releases methane when it is broken down by bacteria, and they emit methane from their gastroenteric releases**. In fact, according to one study, a single cow can belch 250 to 500 liters of methane per day. Many of these cows are raised for beef consumption in countries like **Brazil (10% of global agriculture-sector methane emissions in 2022)** or **the US (6%)**. According to a UC Davis researcher, it is not just cows in Western countries grown for beef consumption that release methane—a big contributor to livestock emissions is actually **India (14%)**, which has the world's largest cattle population and where agriculture accounts for over 50% of its emissions **(as shown in in figure 2),** and also countries in the tropics, where it takes longer for cows to get to market.

Proposed solutions include **reducing demand for cows and other livestock by convincing consumers to buy less beef in particular and meat and dairy in general,**

Fig. 2: Satellite-detected methane leaks from human activities, 2021



introducing sustainable grazing practices, and finally changing high-carb bovine diets so that they are easier to digest—by taking steps such as, as Kebreab of UC Davis suggests, decreasing reliance on corn feed, or giving them supplements or additives like seaweed or 3-NOP. More far-fetched solutions include selective breeding or bioengineering of cows to popularize lower-emitting cow types.

Rice agriculture

Another contributor to methane emissions from agriculture are microbes in rice paddies, which accounts for about **20% of agriculture emissions and 8% of overall methane emissions per UNEP, and 1.5% greenhouse gas emissions overall**. As the WRI illustrates, the traditional method of rice cultivation, in which

fields are flooded to kill weeds and allow rice plants to grow, creates the perfect environment in which bacteria can release methane—when fields are flooded, oxygen is blocked from reaching the soil, creating an oxygen-poor environment in which anaerobic bacteria create methane in the process of breaking down organic matter (just like the fermentation in a cow's stomach). As Statista shows, most rice paddies are located in developing East and Southeast Asian nations like China, India, Indonesia, and Bangladesh.

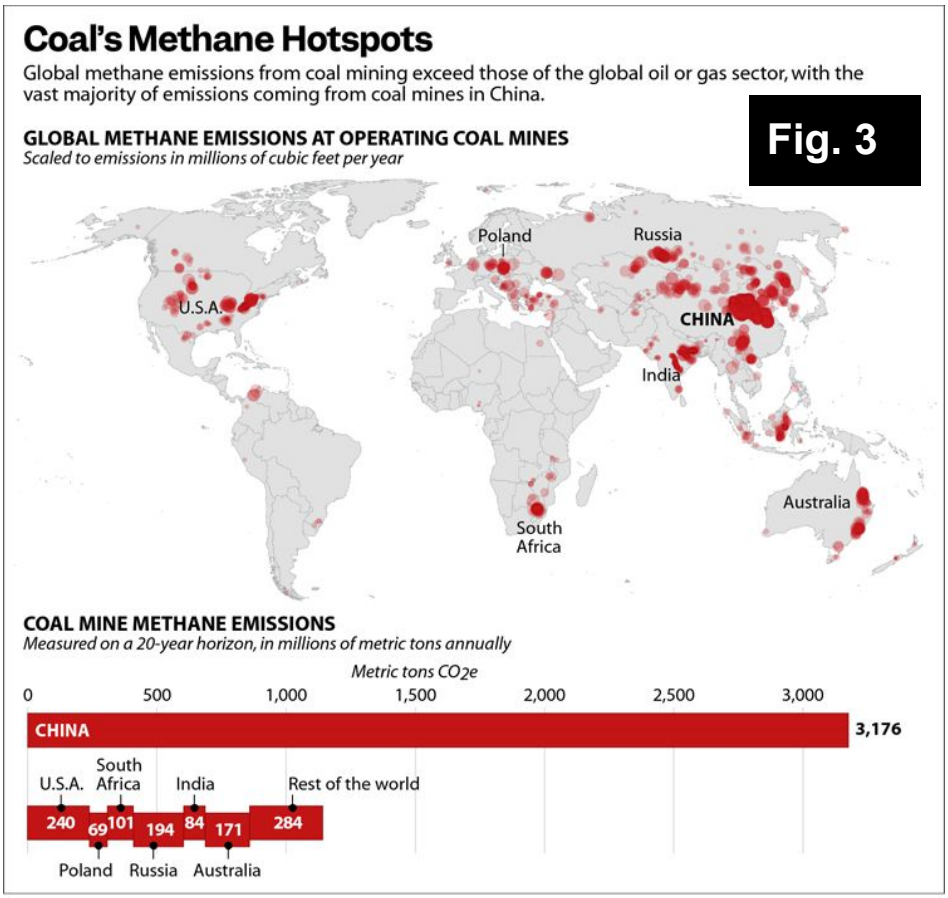
Though not a high-priority source of methane since it is such a small slice of the pie, there are strategies to reduce methane emissions from rice production which developing countries could implement to reduce their methane emissions alongside developed countries. According to the WRI, these include better irrigation practices, so-called "dry field" cultivation, and a more efficient flooding sequence which leaves water on the ground for less time. To make this happen, countries might, for example, incentivize their farmers to use these more sustainable practices by offering a tax credit or some sort of stimulus payment.

Methane emissions from fossil fuels

On the other hand, the fossil fuel industry accounts for **40%** of overall human-caused methane emissions per the IEA (although estimates differ), and its emissions largely occur in **developed countries** or developing economies with large energy industries such as Russia and China—**in fact, China accounts for more coal mine emissions than the rest of the world combined (as fig. 3 shows)**. It should also said that fossil-fuel methane emissions have in the past been "severely underestimated" and then revised upward, and might be so again.

Coal production is responsible for about **31%** of overall energy industry-related methane emissions, narrowly making up the largest share. There are several points during the coal production process at which methane is released, but primarily in the form of **coal mine methane (CMM)**, in which methane forms alongside coal in deep-underground coal seams and escapes after the coal is mined—whether

intentionally as a form of ventilation in active coal mines, or unintentionally through fissures after coal mines have been abandoned. Active coal mines account for 60% of CMM in 2020 in the USA, but abandoned coal mines are also a cause for concern for those concerned about methane emissions, as, without remediation, they can continue to emit methane for a century, resulting in emissions totals per year like 22 billion cubic meters in 2010 alone (18% of total CMM in that year per a 2021 AGU study). Abandoned coal mines (ACMs) are also a dilemma because they suggest that transitioning to green energy cannot solve everything—even if all the coal mines close, many of them will continue to emit methane.



To most effectively reduce active coal mine emissions, better emissions standards and capture technology can be emitted in Chinese coal mines, or, possibly, coal mine closure because of cheaper green energy should be prioritized. A 2021 CPR article and a 2022 World Bank podcast transcript offer several possible ways forward which countries can use to tackle the problem of abandoned coal mine methane emissions—including funding companies that work to capture ACM methane emissions, enacting global regulations that clarify the issue of methane ownership, and establishing global credits (like Germany and Poland's existing incentives) for companies to use ACM methane for power production instead of wasting it.

Methane emissions from oil and natural gas

Another significant contributor to global energy-sector methane emissions is the oil and gas industry, primarily in the form of so-called "fugitive emissions" from the extraction of oil and natural gas from the earth through methods like **fracking**. Both oil and natural gas production narrowly trail coal production in the amount of methane which they emit, with an estimated **42 million tonnes of methane (30.4%)** from oil and **39 million tonnes (28.9%)** from **"the extracting, processing, and transporting of" natural gas**, per the IEA. It should be noted, though, that since the energy sector only accounts for about 40% of overall human-caused methane emissions, the oil and gas industry's overall role (at least in the realm of methane emissions) is relatively small (though not as small as rice): **about 25% of overall human-caused methane emissions.** According to the IEA, most oil and gas methane emissions in 2021 came from **major oil and gas exporters like Russia, the US, Iran, and Venezuela** (see linked chart), though some countries (like **Turkmenistan and Venezuela**) had much larger methane intensities, meaning they had more emissions per amount of energy produced.

It should be noted that natural gas, which is primarily used for electricity production, heating, and cooking, is a mix of gases, but **primarily just consists of methane itself** alongside a few minor hydrocarbon gases. As a result, as you might imagine, the production of natural gas and oil (which often occurs alongside pockets of natural gas) almost invariably carries with it the risk of releasing some methane into the atmosphere.

Although, like coal production, the emission of methane occurs at several points throughout the oil and gas production processes, methane is primarily emitted from **intentional or unintentional venting or flaring** from oil and gas wells, and also occasionally from pipelines during their transportation. Both oil and natural gas can be produced via the method of **hydraulic fracturing, or fracking,** in which fluids are injected into the ground to make oil or gas more easily accessible.

Disregarding other arguable drawbacks to fracking (such as the potential for aquifer pollution or increased risk of earthquakes), **fracking also promotes methane pollution as a result of an increase in the affordability and feasibility of oil and natural gas wells**—in fact, the increase in the rate of methane emissions over the past few decades has roughly coincided with the widespread adoption of fracking over the same time period.

Fracking releases methane because of the **venting of methane from oil and gas wells and flaring it off in an effort to convert it to (less heat-absorbent) CO2.** Natural gas (methane) is often extracted alongside oil in oil wells as a waste product, and the easiest and most cost-effective way of getting rid of this extraneous natural gas is **venting it into the atmosphere, or burning it off** in large flares. Satellite data collected by the World Bank suggests that the five countries where the most flaring occurred were **Russia, Iran, Iraq, the US, and Venezuela.** You can find an explainer of gas flaring here and a tracker of gas flaring here.

Advocates of increasing natural gas production over coal production often suggest that it is a cleaner fuel, that it has a lower greenhouse gas intensity, and that it can serve as a sort of "bridge" transition fuel to renewable energy. While this may be true depending on your perspective, natural gas flaring (in a 2022 study) has been found to **eliminate much less methane than originally believed,** as it was once (but is no longer) believed that flaring eliminated as much as 98% of methane. Furthermore, natural gas production causes much more **fugitive emissions** than once thought—fugitive emissions being, essentially, methane emissions that escape from gas wells that have been improperly sealed, from **"orphan wells,"** abandoned wells which (often bankrupt) companies cannot clean up, or even from other points in the production process in which gas can leak into the atmosphere. According to one 2020 study, the leakage rate of gas was more than 2% of the overall yield, contributing thousands of tons of methane to the atmosphere—one estimate found **281,000 tons of fugitive methane** from abandoned wells in the US in 2020 alone.

Methane is also released at a wide variety of other points in the production process, most notably from (intentional or unintentional) leaks in **pipelines and storage facilities**—for example, when parts of the Nord Stream pipelines in the Baltic Sea between Germany and Russia blew up in October 2022, **about half a million tons of methane** were emitted in the resulting leaks per an AP estimate. In another example, the Aliso Canyon disaster of 2015-16, about 100 million tons of methane were emitted in southern California after an inadvertent leak.

To rectify the problem of "orphan wells," solutions proposed include enacting global standards around oil and gas companies' responsibility for orphaned wells, establishing and maintaining global monitoring systems, and even establishing global programmes like the US's Superfund program to address the dilemma of the cleanup of orphaned wells just as one might fund the cleanup of hazardous waste sites.

Other human sources of methane

There are also other, relatively minor, sources of methane emissions which warrant a few paragraphs. **Methane released after microbes break down organic matter in landfills accounts for about 11% of emissions, per the IEA**, and landfill emissions are expected to **rise by 70% by 2050** with continued worldwide population growth. This non-fossil fuel methane source primarily occurs in developing nations—one 2020 study examined landfills in India, Pakistan, and Argentina and found that a Mumbai landfill released 85,000 tons of methane per year and a Buenos Aires landfill which released a quarter million–half of the city's total annual methane emissions.

Furthermore, methane released in the form of **biomass burning**, primarily through badly-ventilated wood cooking stoves in developing nations, accounts for about 3% of emissions. Solutions to both of these methane sources revolve around better funding for and financing of climate solutions in developing countries—for example, the World Bank might invest in a storage system and collection wells for Mumbai landfill gas or a development program replacing high-polluting wood stoves with lower-emitting ones in Gabon.

Natural sources of methane

As the IEA indicates, 40% of overall global methane emissions come from natural sources, and the 60% from anthropogenic (human-caused) ones. This fact, however, might be a little misleading, as it turns out that many of the natural sources of methane—such as wetlands, forests during wildfires, or permafrost release— are fundamentally controlled by human activity. In addition, many UNFCCC member states are victimized by natural disasters of which methane release is just a byproduct—for example, wildfires and deforestation in Australia or Brazil, or permafrost melting in Russia or Canada. This raises the stakes and makes it all the more important that an agreement is reached among UNFCCC member states—because if an agreement is not reached on reducing or maintaining methane emissions, then UNFCCC states will continue to suffer the consequences of continued methane emissions which are partially of their own making.

About **three-fourths** of natural methane emissions stem from **wetlands**, which released **194 million tonnes** of methane emissions in 2021 per the IEA. As a 2022 WIRED article shows, an "alarming" surge in the amount of overall methane entering the Earth's atmosphere began in 2020. According to a December 2022 study, about **half of the 2020 methane surge** could be attributed purely to methane emissions from swamps, bogs, and temporary wetlands in places like Siberia, where massive wetlands often form in the summer months after the thaw (the other half was attributed to a decrease in nitrogen oxide, leading to less methane being broken down). As the researchers found, however, the increased emission of methane because of the increased breakdown of organic matter in swamps was not merely a natural phenomenon, but was, in fact, stimulated by climate change, in what is known as a **positive feedback loop.** Basically, many wetlands in places like Siberia experienced abnormally hot and wet conditions (caused by global warming.) This caused them to release more methane, a greenhouse gas which caused more global warming, which cause more methane

release from wetlands, and so on, and so on. In this way, what might seem like a natural source of methane—wetlands—was actually a human-caused one.

As the WIRED article suggests, such a phenomenon is not restricted to the wetlands. **Forest fires**, another natural source of methane, are also subject to positive feedback loops—wildfires release methane into the atmosphere that was once stored in forests, which causes more global warming, which causes more extreme heat waves and droughts, which causes more wildfires, which causes more global warming. **Permafrost melt**, another natural source of methane, is also subject to positive feedback loops—permafrost melts in warm conditions, allowing microbes to break down organic matter and release methane, leading to more warming, leading to more permafrost melt, leading to more warming. Permafrost melt in particular is an alarming methane-related trend for the Arctic region and the world—for the Arctic because when permafrost melts it deforms the ground, leading to the disruption of roads and settlements in Alaska, northern Canada, Greenland, and Siberia; but also for the world because when permafrost melts it causes localized atmospheric warming at a much faster rate. In the worst-case scenarios, this leads to a mass methane release from the Arctic permafrost "carbon sink" which outweighs extra storage from extra plant growth and accounts for much more warming.

Ultimately, any proposed international agreement on the reduction of methane emissions must take into account most, if not all, of these sources from which methane rises into the atmosphere—ranging from livestock, to rice fields, to coal mines and natural gas wells, even to wetlands and Arctic permafrost. Any proposed international agreement should involve developed nations, developing nations, and China, all of whom are responsible for methane emissions (to varying degrees), and any proposed international agreement should include **binding concrete steps** which countries can take and to which countries can be held accountable for reducing their methane emissions.

Past international action on methane emissions

As discussed previously, methane has largely taken a back seat to carbon dioxide in terms of the greenhouse gases which countries have researched and tried to reduce their emissions of. However, in recent years, there has been some increased recognition of the importance of methane in the world's overall carbon budget, and, as a result, some progress and international collaboration over the issue of methane emissions. Most notably, there have been several actions taken under the umbrella of the UNFCCC and other international organizations: particularly the continued rollout of the IEA's recommendations for policymakers, the creation of the **International Methane Emissions Observatory (IMEO) in 2014**, **the publication of the Global Methane Assessment in spring 2021, and the creation of the Global Methane Pledge at COP26 in Glasgow in 2021.**

The IEA's Global Methane Tracker

Every year, **the IEA (International Energy Agency)** publishes a report with data on the sources of, the trendline over time of, and the specific sectors which contribute most to methane emissions for at least 100 countries in a variety of regions. They also provide country-level analysis on **policies** (what the most impactful policy approach for a certain country would be) and **abatement** (the emissions which a country could save if they adopt a certain policy and the cost of doing so). You can read the 2021 report and see the policies which your country would most benefit from here.

The International Methane Emissions Observatory (IMEO)

The International Methane Emissions Observatory, or IMEO, was organized in

2014 at the 20th Conference of Parties to the UNFCCC (COP20) and monitors global methane emissions with a global monitoring system of satellites that can track and estimate pollution from flaring and other sources. IMEO, which was formed as a part of the UN Environmental Programme (UNEP). IMEO has also launched the **Methane Alert and Response System (MARS)**, which essentially serves as an **early-alert warning system** which allows a network of satellites to "detect and attribute" methane releases and then notifies "relevant governments and companies," who can then take appropriate abatement action if necessary. At this point, however, as the IMEO website states, MARS is primarily focused on "very large point releases from the energy sector," and does not yet have the capacity to detect smaller scale releases with lower emissions or from area sources, such as "agriculture or waste." Furthermore, initial funding for MARS came from outside funders, specifically the **European Commission, the U.S. Government, the Global Methane Hub, and the Bezos Earth Fund.** Delegates at COP28 could take action to establish a dedicated source of funding for MARS from within the UN itself, and could also work to bring additional satellites online with additional observation capacity, perhaps even some of their own.

Global Methane Assessment

In early 2021, UNEP released the Global Methane Assessment, a comprehensive report which highlights extremely feasible and even **profitable** pathways which policymakers can implement immediately to reduce methane emissions and also the consequences of not reducing methane emissions (full report available here.) As the report shows, different regions have different economic sectors in which there is the highest potential for reducing emissions—e.g., **the sector which most needs addressing is the waste sector in Europe, coal production in China, the livestock subsector in Latin America, and oil and gas in the Middle East, North America, and Russia/CIS.**

They also provide proposals for initiatives that are somewhat grander in vision, but would apparently be extremely effective if implemented. For example, the report

discusses **emissions pricing** (sort of like what the Biden Administration passed as a part of the Inflation Reduction Act of 2022, but on a global scale). It also discusses a **"cap-and-trade"** sort of system, in which countries or companies' methane emissions are **capped** and they must **trade** with lower emitters for the ability to emit more on an open market (the effectiveness of this has been debated, **and some have argued that this would favor the largest emitters, like Russia or China**).

The assessment also discusses a **rising global tax on methane emissions**, which, if it started **"at around $800 per tonne could … reduce methane emissions by as much as 75% by 2050."** The effectiveness of such a tax, however, is also a subject of debate—**proponents of the tax have argued that it would pay for itself in the long-term, but skeptics have argued that the short-term economic damages would be too much to bear for countries whose economies are dependent on coal, oil , and gas production.**

In any case, delegates at COP28 might incorporate recommendations from the Global Methane Assessment into their proposals if they find such recommendations beneficial. It should also be noted that the Global Methane Assessment was produced in part by the Clean Air and Climate Coalition (CCAC), which also produces methane reduction proposals that can be found here.

Global Methane Pledge

The most significant international action or agreement to date on the issue of reducing methane emissions has been **the Global Methane Pledge**, which was introduced at COP26 in Glasgow and has, as of December 2022, been signed by **more than 100 countries** which combined are responsible for **about 45% of global methane emissions**. (The Pledge can be read in its entirety here). When countries sign the Global Methane Pledge, they agree to take nonbinding **"comprehensive domestic actions"** that would best serve **the goal of reducing methane emissions**

by at least 30% below 2020 levels by 2030. More specifically, signatories agree to take actions to achieve the "-30% by 2030" target by focusing on implementing "standards to achieve all **feasible** reductions **in the energy and waste sectors** and seeking **abatement of agricultural emissions through technology innovation** as well as **incentives and partnerships with farmers."** However, as it stands today, the agreement suffers from **numerous drawbacks**. For one, important methane emitters like **Russia, India, Iran, and China** (which alone accounts for about 21% of global methane emissions) **have not yet signed on**. Furthermore, its agreements are **nonbinding and voluntary**, meaning that there is no mechanism to hold countries accountable if they don't take actions toward the **"-30% by 2030"** goal (which, by the way, is projected to eliminate just about 0.36°F of warming by 2050). Finally, the vagueness of its wording effectively means that countries can set their own goals and implement self-guided policies without significant international oversight, which arguably prevents countries from taking the actions that would most efficiently reduce methane emissions if they decide it would be less beneficial or more politically dangerous to take such actions..

Ultimately, the **Global Methane Pledge** launched at COP26 may serve as a foundation off of which COP28 delegates might build. Or, like the **Kyoto Protocol** or **Copenhagen Agreement** before it, the Global Methane Pledge might serve as an outdated agreement which COP28 delegates decide should be discarded for **a new and improved international agreement—an agreement that can better hold** countries, companies, or individual actors accountable for their methane emissions; **that offers** concrete goals for the reduction of methane emissions across all economic sectors; **that offers** concrete strategies which countries can use to reduce their livestock emissions, phase out their coal mines, or plug their orphaned wells; **that addresses** emissions from natural sources like wetlands and permafrost; and, most importantly, **that overcomes** the historical resistance and skepticism of important emitters like Russia, Iran, or China. Delegates at COP28 might decide to prioritize long-term wealth by reducing methane emissions, or they might decide to prioritize short-term wealth by maintaining them. The choice is theirs.

Further reading

Overview – Global Methane Tracker 2022 – Analysis - IEA

Methane Tracker – Data Tools - IEA **(See how much methane your country emits and in what sectors here)**

The Grim Origins of an Ominous Methane Surge | WIRED **(Good article about natural sources of methane)**

methanelevels. org **(Graph of global methane emissions over time)**

The new Global Methane Pledge can buy time while the world drastically reduces fossil fuel use | PBS NewsHour **(Good explainer about the Global Methane Pledge)**

The Permian Basin is ground zero to billions of dollars in zombie oil wells | Grist **(Interesting article about orphaned natural gas wells)**

Wetland emission and atmospheric sink changes explain methane growth in 2020 **(2022 Peng et al. study which discusses natural methane emissions)**

Methane emissions are driving climate change. Here's how to reduce them **(UNEP article which offers more info on agricultural initiatives organized to facilitate the reduction of methane emissions (including the KJWA and the 2021 UN Food Systems Summit)).**

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