

# Restoring a Safe Climate

## What's the Problem with Methane? And what can we do about it?

### Why methane?

- Ton per ton, methane is a far more potent greenhouse gas than CO<sub>2</sub>
- It's short-lived in the atmosphere since Nature oxidizes it continuously — but it still causes 20 percent of today's global warming
- The last time the planet heated enough to lose Arctic sea ice in the summer, so much methane burst out of the permafrost that the temperature spiked rapidly enough to cause about 30 percent of all species to go extinct. We're about a decade away from losing all Northern sea ice.
- We could reduce atmospheric methane to pre-industrial concentration, using biomimicry. We could also protect against a catastrophic methane burst should it begin.

### What are we doing about methane now?

In 2021, 155 countries pledged to collectively reduce methane emissions by 30 percent by 2030. This is a big win for international cooperation on climate.

However... nearly half of methane emissions come from natural sources such as wetlands, which are widely dispersed. So unfortunately it's unlikely that we could reduce emissions (and thus atmospheric levels) by more than a few percent.

### What else can we do to lower methane's impact?

In addition to reducing emissions, we need to remove large amounts of methane that's already in the air. By amplifying natural oxidation, we would be able to double the natural rate of methane removal...and cut methane levels in half by 2030. This would return methane levels to safe, pre-industrial quantities...cool the planet significantly... and help protect against the prospect of a catastrophic, extinction-level methane burst.

Building our capability for “enhanced atmospheric methane oxidation” (EAMO) could safeguard our children and the rest of life on Earth from a catastrophic methane burst, should one develop from the fast-melting Arctic permafrost.

The last time the planet lost its Arctic sea-ice cover, so much methane burst out of the permafrost that the temperature spiked rapidly enough to cause about 30 percent of all species to go extinct. We appear to be about a decade away from losing all Arctic sea ice in summer. But if we have the capacity for methane removal up and running, we could literally protect life on Earth.

## How does Nature remove methane from the atmosphere?

Nature oxidizes methane into water and CO<sub>2</sub>. Yes, CO<sub>2</sub> — but that gas has only a few percent of the warming power than methane.

In a nutshell: here's the chemistry of one major oxidation pathway. Iron chloride forms naturally when iron-rich dust contacts sea-salt spray; in the presence of sunlight, this chemical oxidizes methane.

## How can we do the same?

Through biomimicry — a sophisticated process of replicating natural methods — scientists have reproduced the iron chloride pathway of methane oxidation. EAMO involves distributing a fine, short-lived iron chloride mist over the ocean in sunny regions. This can be done by adding iron chloride to ship exhaust.

Is it safe? EAMO uses extremely small quantities of iron chloride, which is already present in the atmosphere. Iron chloride is not only short-lived: it's considered so safe that it's commonly used to treat municipal water supplies.

### For more info, see:

[PeterFiekowksy.com/resources](https://PeterFiekowksy.com/resources);  
For media or donor inquiries, please contact [cdouglis@gmail.com](mailto:cdouglis@gmail.com)

## Next Steps for 2024

- Optimize the chemistry of methane oxidation
- Develop software to measure the amount of methane removed, using existing satellite data
- The Climate Restoration Safety and Governance Board (CRSGB) organizes review panels to maintain social license
- Secure funding commitments for the first three years

## Is methane removal financially viable?

Methane removal makes tremendous financial sense. At full scale, it's expected to cost roughly \$1 billion per year. At the same time, by rolling back temperatures by an estimated 10 percent, it could reduce climate-related emergency relief and insurance claims by \$50 to \$100 billion a year.

EAMO can therefore be funded by:

- Wealthy donors committed to the well being of future generations
- Government agencies, to save tens of billions in annual emergency relief
- Insurance companies, since EAMO could save tens of billions a year in claims
- Carbon offsets: full-scale operation could produce 7 billion carbon offsets per year.



Climate Restoration