

# METHANE & DUAL ACCOUNTING AT THE UNFCCC

## SUMMARY

- Staying below 2°C is impossible without a drastic reduction of methane emissions.
- Neglecting action on methane reduction puts us at risk of passing climate tipping points.
- Enhanced action on methane must come in addition to CO<sub>2</sub> reduction and not instead.
- Methane (CH<sub>4</sub>) is a potent greenhouse gas with a much more intense warming impact than CO<sub>2</sub> in the short term - accounting for it with average Global Warming Potential over 100 years (GWP100) waters this down.
- To reduce methane emissions, we need accounting systems that represent its warming contribution properly.



Figure 1: Unmonitored methane leaks discovered by NGO Earthworks in Mexico by using infrared cameras.

# METHANE, WHY DOES IT MATTER?

Methane already has a significant and dangerous impact on climate - but this is hidden in the statistics by using GWP100. Methane stays in the atmosphere for 12 years and is over a hundred times more potent than CO2. While CO2 stays in the atmosphere longer, methane has a dramatic effect in the short-term. Currently observed warming from methane is more than half as much as warming from CO2 (Figure 2) and a strong increase in atmospheric methane concentrations has been observed over the last years, mainly because of fossil gas extraction, particularly through fracking (Worden et al. 2017).

Runaway climate change on a global scale will be triggered with continuing emissions at a point which science has not yet identified. Hansen et al. (2008) suggest that 350ppm of atmospheric CO2 might be the line - a line which we have already crossed. The 2°C guardrail is another, even more dangerous line that humanity decided in Paris we must definitely

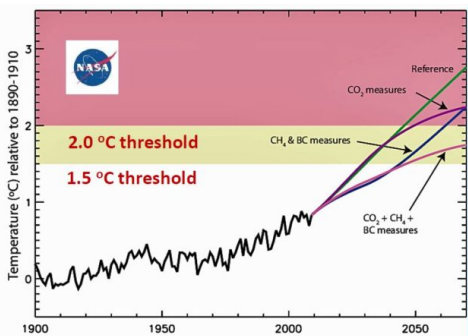


Figure 3: 1.5°C is out of reach with CO2 mitigation measures alone.<sup>3</sup>

# WHY IS METHANE MITIGATION NEGLECTED?

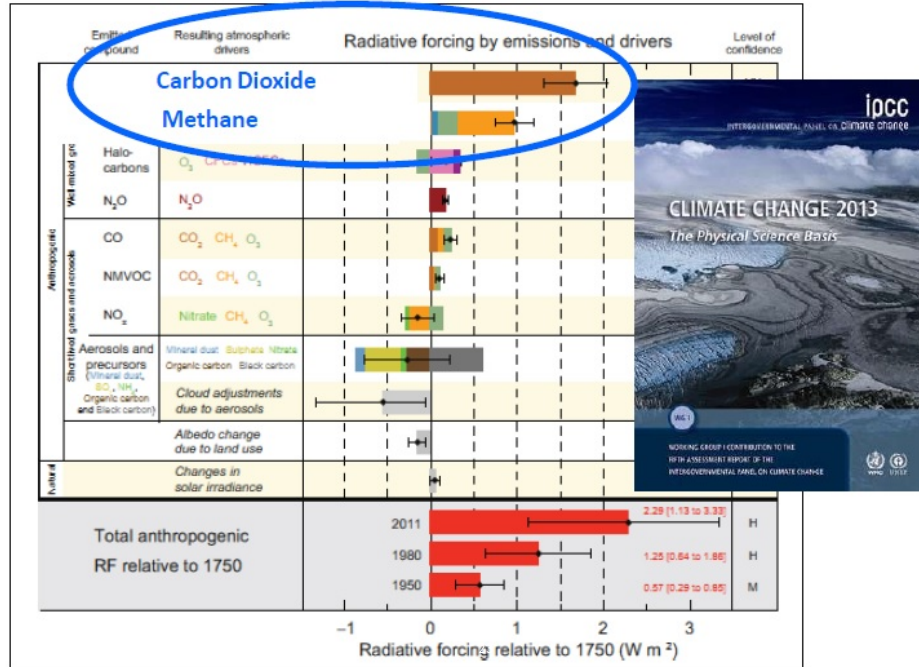


Figure 2: Radiative forcing of anthropogenic methane compared to CO2.<sup>1</sup>

not cross, aiming to stay below 1.5°C.

Methane warms the planet very fast and could push us past tipping points in the global climate system (permafrost melting, Amazon forest dieback, coral reef extinction, Greenland & West Antarctic meltdown, Gulf Stream collapse etc.) faster. Without cutting methane, the 1.5°C target is out of reach (Figure 3).<sup>2</sup>

1. Source: Stocker et al. 2013 (IPCC)
2. The study assumed a set of 400 mitigation measures. More ambitious measures are needed to stay below 1.5°C.
3. Source: Shindell et al. 2012
4. Source: Howarth 2015

The standard unit of measurement for greenhouse gas emissions is Global Warming Potential over 100 years (GWP100). This makes it possible to compare the effect of short-lived greenhouse gases that stay in the atmosphere for a limited amount of time (such as methane - 12 years on average) to CO2, which stays for centuries and accumulates. This perspective puts more emphasis on the long-term dynamics of the global climate. Using a 100-year time scale alone dilutes methane's powerful short-term climate impacts with 88 years in which it is not there. Using this weakness of accounting, the gas industry promotes fossil gas as a cleaner, more "climate-friendly" fuel ("natural gas"). Significant impacts of fossil gas (through methane leakages) unfold in the near term. The measurement units must reflect this. The International Energy Agency (IEA) has been particularly notorious in pushing for a "golden age" of more fossil gas,

using inaccurate numbers (Oil Change International 2018). Burning gas does indeed emit less CO2 than coal or oil, but it still contributes 21% to the global total. But when properly accounting for all GHG emissions and including methane losses during the lifecycle of practices with observed high leakage rates, the supposed climate benefits of fossil gas are proven false (Figure 4).

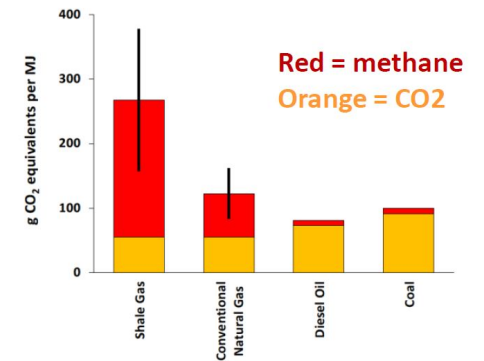


Figure 4: Emissions comparison of fossil energy sources using GWP20.<sup>4</sup>

# FRACKING - A PARTICULAR CONCERN

As conventional oil and gas fields get exhausted, fracking technology is on the increase. This can lead to an increase in emissions - hidden by the GWP100 lens. While methane leakage is not monitored and poorly accounted for and the gas industry speaks of "clean, natural gas", the

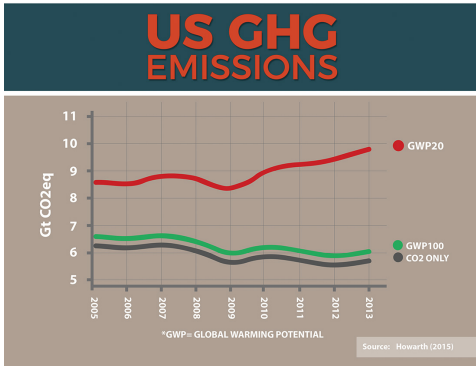


Figure 5: US emissions 2005-2013 using GWP20 and GWP100.<sup>5</sup>

methane spike and accelerating warming of the past decade is strongly linked to the fracking boom in the United States. We should not forget that in addition leaking methane, burning fossil gas emits a lot of CO<sub>2</sub>: even through a GWP100 lens, magically switching all coal and oil use in Europe to gas would extend its carbon budget by only 3 years! (Anderson & Broderick 2017)

## WHAT CAN YOU DO ABOUT IT ?

Climate actions on methane should complement and buy time for carbon dioxide reduction. By no means should methane reduction occur at the expense of long-term decarbonisation.

A more appropriate metric exists with GWP20. Using it alongside GWP100 (“Dual Accounting”) would be a big step towards vital methane reduction.

### Suggestions:

- Use Dual Accounting (GWP20/100) in national reports.
- Use Dual Accounting in the next NDC.
- Strengthen monitoring of methane emissions.
- Use GWP20 for methane emissions in carbon pricing/taxing.
- Use correct IPCC numbers for methane in your reports:
  - \* GWP100: 34 (2013), Out-of-date numbers: 25 (2007), 21 (1996)
  - \* GWP 20: 86 (2013), Out-of-date numbers: 72 (2007), 56 (1996)

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5. Source: Howarth 2015

Full references at <http://leave-it-in-the-ground.org/unfccc-methane>

## REFERENCES

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