Methane Tracker 2021

Helping tackle the urgent global challenge of reducing methane leaks

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About this report

(For the most recent data please visit our latest report, Global Methane Tracker 2023).

Methane emissions are the second largest cause of global warming. While methane tends to receive less attention than carbon dioxide (CO_2), reducing methane emissions will

This interactive online tool has quickly become a global reference. It focuses on emissions from oil and gas operations – the area with the greatest and most cost-effective pote

This 2021 update to the IEA Methane Tracker includes detailed estimates for 2020 that incorporate new data for oil and gas supply as well as the latest evidence from the scient

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on the role of satellites

Overview

Reducing methane emissions is a powerful and cost-effective way to act on climate change, providing an essential complement to action on reducing CO_2. Because oil and gas will continue to be part of the energy mix for years to come, even in rapid clean energy transitions, it is crucial for the oil and gas industry to be proactive in limiting, in all ways possible, the environmental impact of their supply. It is also vital that policy makers recognise action to reduce methane as a pivotal element of energy transitions.

This is not just a reputational or environmental issue for the oil and gas industry. Producers that can demonstrate that they are taking strong action to reduce methane emissions can credibly argue that their resources should be preferred over higher-emission options.

Key insights from the 2020 estimates

- We estimate that oil and gas operations worldwide emitted just over 70 Mt of methane into the atmosphere in 2020. Converted into equivalent amounts of CO_2, assuming that one tonne of methane is equivalent to 30 tonnes of CO_2, these methane emissions are comparable to the total energy-related CO_2 emissions of the European Union.
- This methane emissions figure for 2020 is around 10% lower than our estimate for 2019. A large portion of this drop occurred because of the fall in oil and gas production over the course of the year – especially in countries and regions where production has a high emissions intensity, notably Libya and Venezuela. Lower shale activity in the United States also played a role in bringing down these emissions, as did efforts to develop new gas infrastructure and the introduction of new methane regulations in a number of countries.

Oil and gas sector methane emissions, historical and in the Sustainable Development Scenario, 2000-2030

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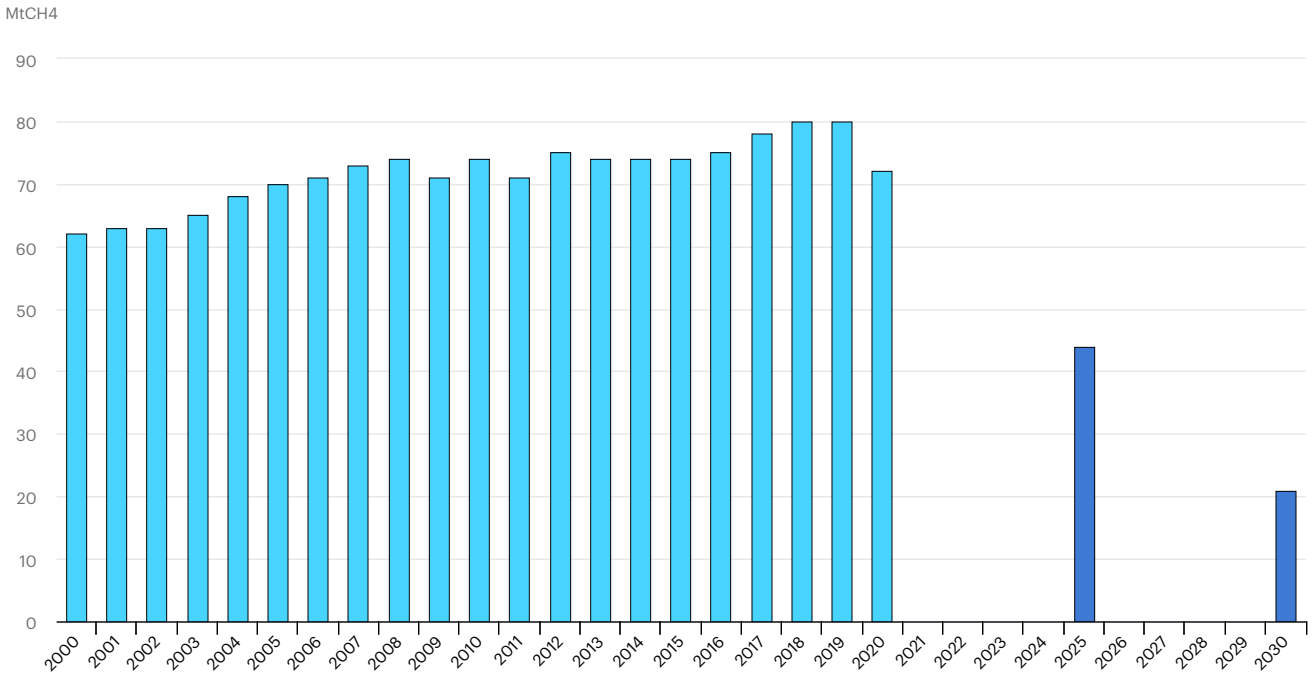

Historical Sustainable Development Scenario

- Oil production is responsible for around 40% of methane emissions today, with leaks across the natural gas value chain accounting for the remaining 60%. Upstream oil and gas operations lead to more than three-quarters of total emissions. The 7.5 Mt drop in methane emissions in 2020 is equivalent to reducing annual greenhouse gas emissions by around 230 Mt CO_2-eq. In the IEA Sustainable Development Scenario, the world requires a steady and rapid decline in emissions for the next 10 years: by 2030, methane emissions are around 70% lower than in 2020. This reduction would be equivalent to eliminating CO_2 emissions from all the cars and trucks across Asia.
- The intensity of methane emissions varies widely across countries that produce oil and gas. Based on annual data for 2020, we estimate that the emissions intensity among the worst performing countries is more than 100 times higher than among the better ones. This underlines that many countries should rapidly be able to achieve huge improvements in performance.

Total methane emissions and methane intensity of production in selected oil and gas producers in 2020

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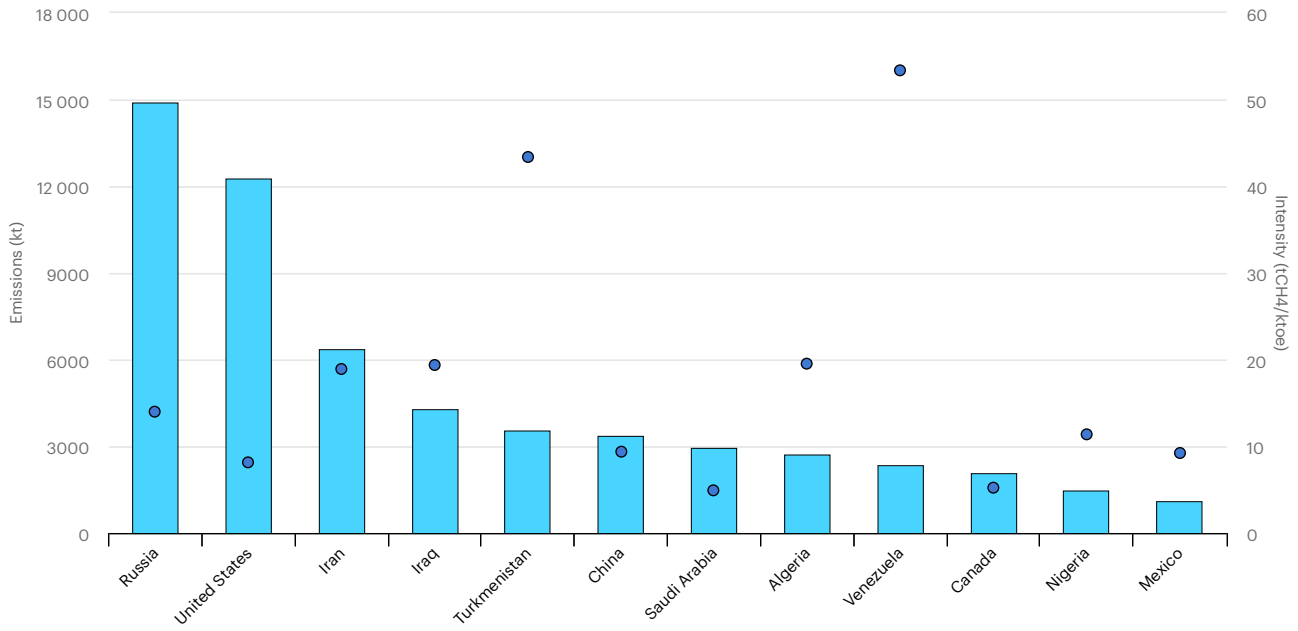

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- We estimate that around 10% of leaks in 2020 could be avoided at no net cost because the value of the captured methane is sufficient to cover the cost of the abatement measure. This share is smaller than in previous years because of unusually low gas prices in 2020, but it will expand again if natural gas prices rise, as they have done in early 2021.

- The oil and gas industry is facing capital constraints, and lower natural gas prices may make methane abatement less of a priority. Regulatory action to reduce methane emissions is therefore more important now than ever before. Regulatory regimes in Canada and Mexico entered new phases of implementation in 2020, which also saw the release of the new EU Methane Strategy. Drawing on the experience in these and other jurisdictions, our new Methane Regulatory Roadmap and Toolkit provides a step-by-step guide for policy makers and regulators looking to develop new policies and regulations on methane.

- Transparency on methane emissions is set to continue to improve, thanks to better reporting, including UNEP's Oil and Gas Methane Partnership 2.0; more ground-based and aerial measurement campaigns; and readings from satellites.

- The 2021 Methane Tracker update includes methane emissions from large-scale leaks detected by satellite for the first time. Globally, around 5.5 Mt of methane emissions were detected by satellites in 2020. This is a drop from the 6.7 Mt of methane emissions that were detected by satellite in 2019. Reductions were seen across a number of regions in 2020, but large levels of emissions were still seen across US shale plays, in Turkmenistan, and from pipelines in the Russian Federation. Conversely, relatively few large leaks were detected across major producers in the Middle East, including Iraq and Kuwait.

- While satellites provide a way to identif y, existing satellites do not provide measurements over equatorial regions, d to reduce emissions means that a lack of perfect information should not impede

- It is in the strong interest of the oil and methane emissions. Aside from the environmental gains, oil and gas opera ommercial advantage over higher-emitting sources. Reducing methane leaks into t he industry to minimise overall emissions from core oil and gas operations. This s ole in ensuring that it happens.

Analysis

All analysis

Driving Down Methane Leaks from the Oil and Gas Industry

A Regulatory Roadmap and Toolkit

The Energy Mix

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