

A methane data revolution is just around the corner, making it possible to move beyond generic emission factors that attempt to estimate the release of methane pollution, and to replace them with more accurate empirical measurements of what is actually happening on the ground. This is crucial for effective mitigation measures. The International Methane Emissions Observatory (IMEO) of the United Nations Environment Programme (UNEP) is poised to catalyse rapid climate action informed through these new data, with a programme of science studies, industry partnerships, the design of a robust measurement, reporting and verification (MRV) framework, a satellite alert and response system, and a team of several dozen methane experts.

IMEO Grows Its Impact

The mission of UNEP's International Methane Emissions Observatory is to provide open, reliable and actionable data to the individuals who can act to reduce methane emissions. Since its launch at the Group of Twenty (G20) meeting in 2021, IMEO has grown its effectiveness and impact (Box 1).

The year 2022 saw widespread recognition of the importance of curbing methane emissions, with increased attention in the media, extensive coverage at the United Nations Climate Conference in Sharm El-Sheikh, Egypt (COP27) and the growth of the Global Methane Pledge (GMP). At COP28 in Dubai, United Arab Emirates, IMEO launched the new Methane Alert and Response System (MARS). This system collects data from multiple satellites and issues alerts to countries and companies when emissions are detected.

Under the GMP, more than 150 countries have committed to collectively reducing their methane emissions by 30 per cent across all sectors by 2030. UNEP, through IMEO and the Climate and Clean Air Coalition (CCAC), is the designated implementation partner for the GMP. IMEO collaborates with governments, scientists, satellite operators and companies to integrate and improve the quality of methane emissions data, with a specific focus on identifying mitigation opportunities.

IMEO highlights as of 2023

- 20 IMEO-funded and coordinated peer-reviewed studies have been published and 7 studies submitted or under review.
- 114 oil and gas companies – covering 37% of production – joined UNEP's measurement, reporting and verification programme OGMP 2.0 September 2023 cut-off.
- Methane Alert and Response System (MARS), launched at COP27, has issued alerts on 127 plumes to the responsible authorities.
- Methane data platform is under design.
- Funding is secured for baseline studies that will provide an empirical and actionable assessment of emissions across methane-emitting sectors for selected countries.



Photo credit: QatarEnergy



Unlocking the Methane Data Revolution

Global anthropogenic methane emissions are responsible for about 30 per cent of the Earth's warming being experienced today (UNEP, CCAC and International Energy Agency [IEA] 2023). In many cases, emission reductions can be achieved in a cost-effective manner using existing technologies. Given the short-term warming impact of methane emissions, rapid reduction of these emissions is essential to meet agreed climate targets under any scenario for global decarbonization. Methane is primarily emitted in the energy, agriculture, and waste sectors, with the energy sector offering the greatest potential for rapid cost-effective mitigation. This is why UNEP's IMEO has chosen this sector for its initial focus.

Scientific studies based on global atmospheric observations estimate that total anthropogenic methane emissions from the oil and gas sector are in the range of 80-140 million tonnes per year. However, significant uncertainty surrounds the magnitude and location of emissions. Current emission reports rely mainly on legacy emission factors – estimated average values of the methane pollution released from various sources per unit of activity – instead of on empirical, measurement-based characterization of actual emissions across the oil and gas supply chain. This has made it challenging to track changes in emissions over time.

Over the past decade, the methane science community has developed and demonstrated the robustness of measurement-based approaches, with the Oil and Gas Methane Partnership 2.0 (OGMP 2.0) spearheading a substantial shift in the practice of measurement-based reporting for the oil and gas industry. A new generation of satellites is in the process of revolutionizing the quantification of emission data with unprecedented accuracy and precision. Leveraging the capabilities and partnerships established since 2021, IMEO is poised to catalyse this data revolution, delivering transparent, reliable and actionable emission data to regulators, investors and companies.

Better Data, Ongoing Action

In 2023, a total of 92 oil and gas companies reported their 2022 methane emission data to UNEP's transparency initiative, OGMP 2.0. In this early stage, the main benefit lies in the transition from generic estimation methods to empirical measurements. This allows companies to more strategically focus their mitigation efforts. While the aggregate dataset is not yet comprehensive enough to provide regional insights, it provides crucial information to those with the agency to execute actual emission mitigation actions. This report highlights stories of the practical

progress in implementation and mindshare increase for methane mitigation among OGMP 2.0 member companies.

In the oil and gas production segment, where the vast majority of methane emissions are released, the operated assets of OGMP 2.0 members (property, plants, equipment, etc.) contributed one-sixth of global oil and gas production, with another one-fifth of the assets being non-operated. In 2022, the cumulative methane emissions reported by OGMP 2.0 member companies totalled 1.6 million tonnes. For all emissions in OGMP 2.0 scope in 2022, stemming from one-third of global production, the reported volume is equivalent to around 2 per cent of total oil and gas emissions. The significant difference likely has several contributing factors, which require attention and are explored in this report.

84

companies met the Gold Standard pathway criteria

In total, 84 companies met the Gold Standard pathway criteria, meaning that they are on a credible pathway to achieve Gold Standard reporting of methane emissions for a vast majority of their operated

assets by the third year and of their non-operated assets by the fifth year. Individual company fact sheets are annexed to this report. Notably, the quality of measurement of methane emissions is still growing, and companies need to continue to expand coverage to more of their assets.

In the coming year (Box 2), IMEO anticipates a continued enhancement in both the quantity and quality of reported data as more assets are reported at increasing levels. The greater availability of robust scientific data will enable a more precise understanding of any disparity between emission reported by companies and actual quantities measured in the atmosphere. By 2025, thanks to the methane data revolution, a more comprehensive assessment will be possible, providing a more thorough account of methane emissions in the sector.

IMEO look ahead for 2024

- Continuous improvement of OGMP 2.0 reporting level
- Roll-out of Methane Supply Index version 0
- Full operationalization of MARS
- Kick-off of country baseline studies
- Further diversification of IMEO funding

