Key Messages

UN environment programme

Human-caused methane emissions are responsible for roughly a third of the planet's current warming. Reducing these emissions is the fastest, most cost-effective way to slow global warming in the near-term, avert climate damages and buy valuable time for full decarbonization.

The fourth edition of UNEP's International Methane Emissions Observatory (IMEO) publication, *An Eye on Methane: Invisible, but not unseen*, takes stock of progress in harnessing a data revolution that can accelerate methane reduction on a global scale.

IMEO provides open, reliable and actionable data to those who can use it to reduce emissions. Yet this report finds that even as the systems built to make this data revolution accessible and actionable for stakeholders have matured, engagement has not kept pace – despite mounting pledges to act.

Stakeholders must move from ambition to action to curb global methane emissions and keep the objectives of the Global Methane Pledge and Paris Agreement within reach.

THE TOOLS ARE IN PLACE TO TURN AMBITION INTO MITIGATION. COMPANIES AND GOVERNMENTS CAN ACT NOW

▶ Over 150 countries have committed to curb emissions through the Global Methane Pledge convened by the European Union and United States. It aims to reduce emissions 30 per cent by 2030.

▶ Meanwhile, oil and gas companies representing over half of global production have pledged to reach near-zero methane emissions by 2030 through the Oil and Gas Decarbonization Charter, launched at COP28.

▶ Despite target setting, the latest science shows atmospheric concentrations of methane rising at record speed over the past 5 years.

SATELLITE MONITORING IS READY FOR SUPER EMITTERS, YET RESPONSES LAG

▶ The credible data and tools needed to deliver on pledges are available through IMEO.

▶ UNEP's Methane Alert and Response System (MARS) is fully operational. It draws data from a growing array of methane-sensing satellites to give governments and companies the insights needed to identify and mitigate very large emissions.

▶ IMEO is now using AI models to scan vast amounts of satellite data, pinpoint emissions and quickly provide actionable data. IMEO scientists have improved the accuracy of these AI models by 200 per cent.

▶ To date, MARS has alerted governments and companies to over 1,200 major methane plumes. Several, including plumes in Algeria, Azerbaijan, Nigeria and the United States, were acted on to deliver credible mitigation.

▶ However, just one per cent of notifications received a substantive response providing further details on the cause of the emissions or whether action was taken.

▶ Engagement from governments and companies must increase to close the critical gap between governments and companies receiving data and taking timely action.

OIL AND GAS TRANSPARENCY TAKES THE LEAP FROM ESTIMATED TO MEASURED DATA

▶ The Oil and Gas Methane Partnership 2.0 (OGMP 2.0) is UNEP's flagship oil and gas reporting and mitigation programme. It engages companies within a framework that drives emission reductions through transparency and empirical data.

▶ This year, the first cohort of OGMP 2.0 companies has moved from the use of generic emissions factors to a combination of source and site-level measurements to report their emissions at the Partnership's "Gold Standard" of data quality. The shift to measurement data is essential to understand, manage and mitigate emissions.

▶ Higher quality, measurement-based data is enabling mitigation by identifying unaccounted sources of emissions. It also sheds new light on the difference between reported emissions and what is independently measured in the atmosphere.

▶ 140 companies have joined OGMP 2.0, collectively representing 42 per cent of global oil and gas production. Rapid expansion, in particular in additional oil and gas producing regions, is now necessary.

A SOLID SCIENTIFIC FOUNDATION FOR TARGETED MITIGATION

▶ To date, IMEO has initiated 37 scientific studies across the globe that have yielded 24 peer-reviewed papers. This research is delivering critical insights on how much methane is emitted, where it comes from, what methods are needed to reduce emissions, and how to accurately track changes in emissions over time.

▶ IMEO's science work is evolving from simply quantifying emissions in under-observed regions towards advancing reconciliation between multiple sources of methane data, providing validation for measurement-based approaches, and helping countries build robust methane inventories.

▶ This work includes IMEO's Baseline Studies, which will improve understanding of key methane emission sources from all emitting sectors in selected countries. Studies are currently advancing in Colombia and Nigeria and will provide insights essential to inform national emissions inventories and mitigation strategies.

▶ IMEO is also working to integrate methane emissions data from satellites, OGMP 2.0 reporting and other sources as part of its Methane Supply Index (MSI). The MSI will reveal the methane footprint of individual oil and gas supply chains, enabling importing markets to weigh emissions in decision making.

▶ Capacity-building programs, including IMEO's Methane Training Series, have empowered over 1,000 stakeholders in more than 30 countries with the knowledge needed to act on emissions. Meanwhile, UNEP's IMEO has scoped its largest in-country project to date in Turkmenistan, with the potential to reduce four million tonnes of methane annually.

RAPID MITIGATION OPPORTUNITIES IN THE STEEL SUPPLY CHAIN

▶ Methane emissions from metallurgical coal used in steel production represent on average 30 per cent of steel's near-term climate footprint and can be mitigated at roughly one per cent of the price of steel.

▶ IMEO's Steel Methane Programme provides a framework for targeting mitigation to reduce the climate footprint of the steel sector as the industry transitions to green alternatives.

▶ IMEO is expanding MARS to encompass metallurgical coal production, providing satellite data to governments and companies to identify mitigation opportunities.

▶ IMEO is continuing its methane science studies of metallurgical coal mines, with five studies under way around the world. These will validate the tools needed to measure and mitigate methane from the sector.

ACCESSIBLE INSIGHTS TO ENABLE ACTION FROM THE EYE ON METHANE DATA PLATFORM

▶ IMEO's Eye on Methane data platform delivers open, reliable and actionable global methane emissions data from satellites, companies and methane science studies —all in one user-friendly interface.

▶ Currently, Eye on Methane encompasses nearly 7,000 plumes detected via the Methane Alert and Response System, 37 science studies conducted around the world, and emissions data from 140 OGMP 2.0 member companies.

▶ Eye on Methane goes beyond simple emission rates, providing a comprehensive view through density mapping and integrated datasets. This allows users to uncover hidden patterns, understand the bigger picture and drive impactful change.

▶ Users can expect to browse by methane plumes, sector, company, country, as well as download or access the data via an API.