IMEO
Advisory Council

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UPDATES

- **Science Studies**
  - Notable papers published
  - Measurement campaigns updates
  - EGU Conference
- **MARS**
- **Steel Methane Programme**
- **OGMP 2.0**
  - Growing company and non-company membership & global coverage
  - Addressing the gap in industry reported emissions and atmospheric measurements
- **Key recent Government Engagements**
- **IMEO Data Integration Approach**

- **AOB**

Science papers published in the last 6 months

- Assessing the Relative Importance of Satellite-Detected Methane Superemitters in Quantifying Total Emissions for Oil and Gas Production Areas in **Algeria** (Nov 2023)
- Aircraft-based mass balance estimate of methane emissions from offshore gas facilities in the southern **North Sea** (Jan 2024)
- Ground-Based Mobile Measurements to Track Urban Methane Emissions from Natural Gas in **12 Cities across Eight Countries** (Jan 2024)

Campaign Updates

1. Aerial Measurements of Emissions in Oman

- **AIM**: To study of O&G (+waste) methane emissions on the Arabian Peninsula, with aerial and ground-based methane survey characterizing site-level emissions and source-level distribution.
  STATUS: Field measurement campaign completed in Dec 2023; data analysis ongoing.

2. Multi-scale Measurements in Colombia

- **AIM:** To characterize emissions from oil and gas (+waste) production in Colombia at a regional, site, and source levels.
- **STATUS:** The first phase of measurements completed in Q2 2024; Next phase scheduled in Q3 2024

Campaign Updates

3. Characterization of LNG Facilities In Australia

- **AIM:** To conduct facility-level airborne measurements of all onshore LNG liquefaction facilities in Australia.
- **STATUS:** Western Australia measurements completed in May 2023. Eastern Australia measurements took place in May 2024; Northern campaign scheduled later this year.

4. Validation of Methane Quantification Technologies

- **AIM**: To validate methane quantification technologies to ensure target tracking and support regulatory decision-making processes.
- **STATUS:** The campaign is planned to take place in June 2024

EGU Conference

- IMEO was **at the forefront of methane discussions** at EGU 2024, with its work and presentations prominently featured.

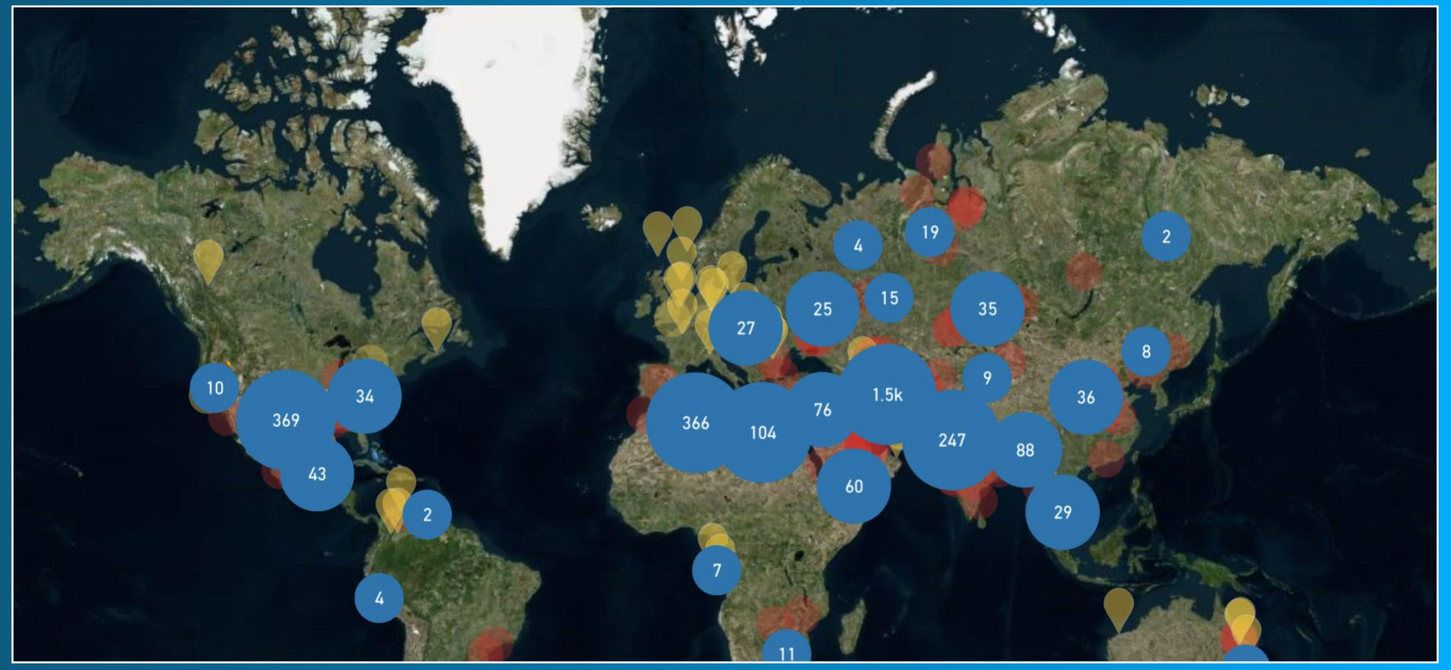
- During a session focused on quantifying anthropogenic methane sources, IMEO's studies were prominent, **comprising about 80% of talks and posters**. The session drew considerable interest, with over 250 participants.

    - IMEO's presentations, notably on the Nord Stream synthesis and MARS attracted significant attention and stimulated discussions on potential enhancements.

- IMEO's scientific results were well received, with numerous inquiries from representatives of various institutions worldwide.

MARS is detecting emissions events across all sectors and around the world

- Over 3,600 plumes detected across all sectors
- Over 230 plumes notified to government and OGMP 2.0 stakeholders
- Increasing engagement in countries with frequent detections, such as Turkmenistan, Egypt, Iraq
- Working with partners to identify opportunities to support mitigation following MARS notifications



Steel Methane Programme

Growing OGMP 2.0 membership and global coverage

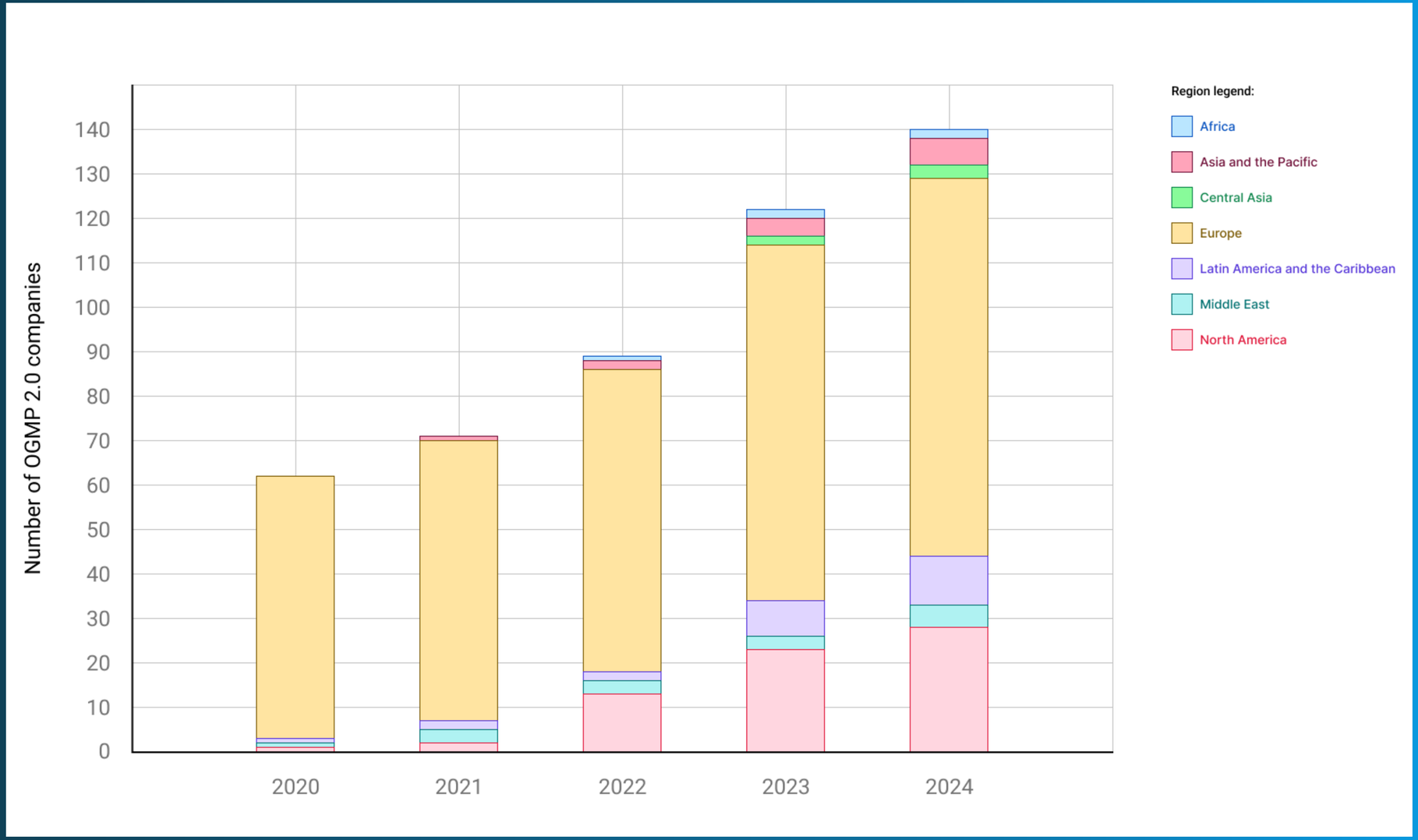
Over 140

member companies

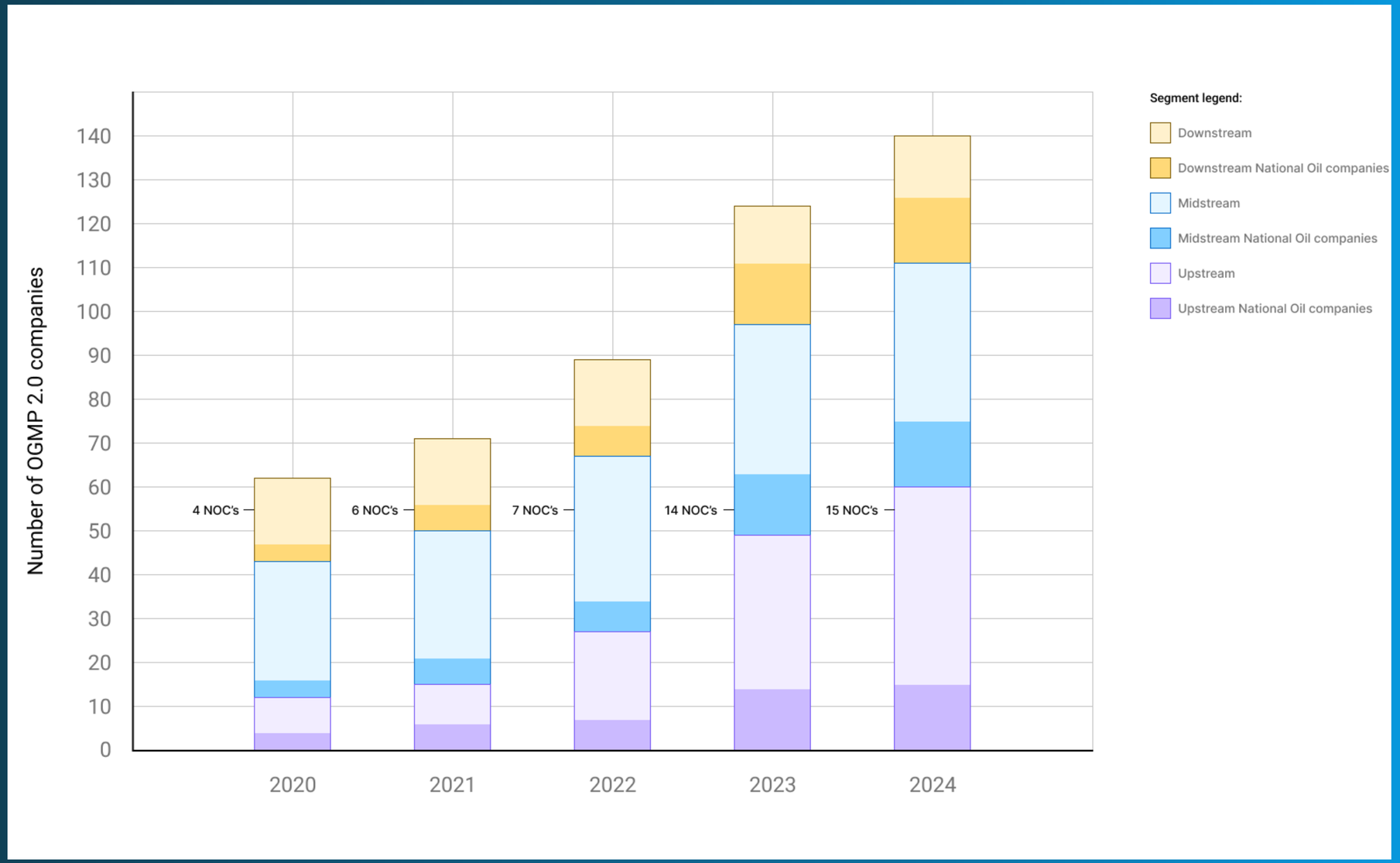
+100% in 3 years

of global oil and gas production

OGMP 2.0 membership growth by regions



OGMP 2.0 membership growth by segments



More OGMP 2.0 companies will report at Level 4 and 5 in 2024

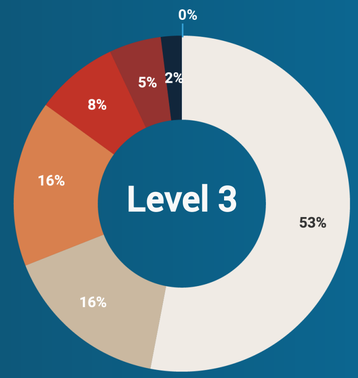
This will allow us to better understand and start closing the persisting gap between industry reported emissions and global estimates of what is in the atmosphere – highlighted in both IMEO and IEA reports.

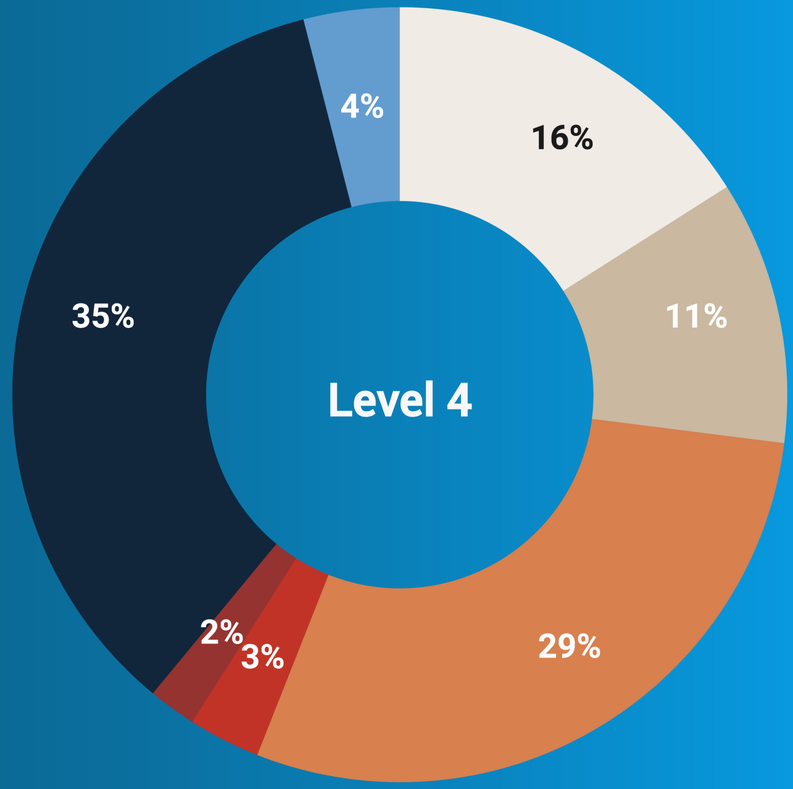
- Emissions reported by OGMP 2.0 companies in 2023 amounted to **1.6M tons =** only a small fraction of global oil and gas emissions, estimated at **80-140M tons**.
- To close this gap, we need wider OGMP 2.0 coverage, higher data quality and more data from non-operated assets.
- Only with direct measurements at Level 4 and 5 can we have confidence in company data as highlighted by the following case study.

Case Study: L4 data reveals emissions 2.3X larger and from different sources than previously thought

Comparison of reported Level 3 and Level 4 emissions source, in absolute terms*, 2022

- Fugitive Component and Equipment Leaks
- Venting – Natural gas driven pneumatic equipment
- Stationary Combustion
- Venting – Well liquids unloading
- Venting - Tanks
- Flaring – Incomplete combustion
- Venting - Other

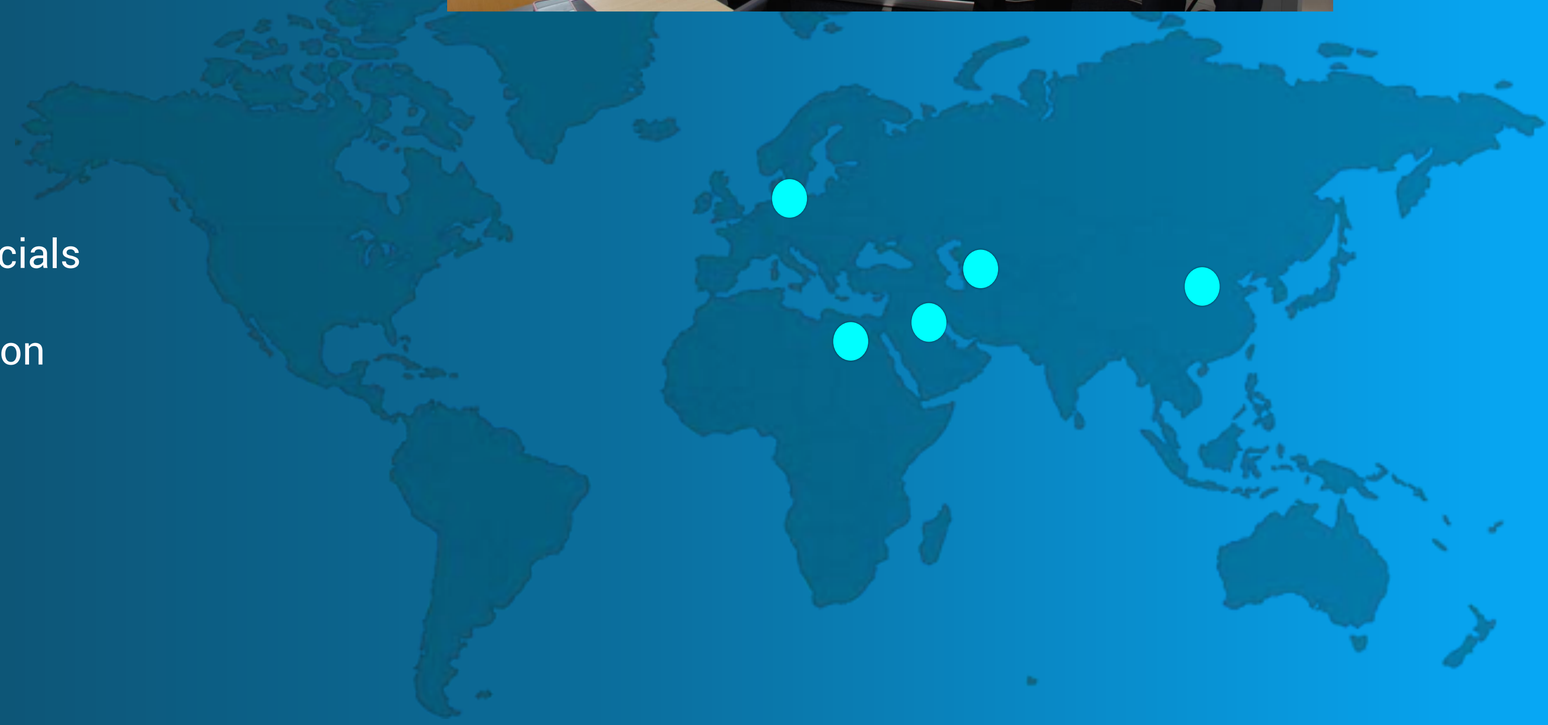




*In absolute terms the Level 4 emissions were reported to be 2.3x of that of the Level 3.

Key recent government engagements

- Visit of **European Commission Executive Vice President Sefcovic**
- **Turkmenistan** High-Level Government Delegation in Paris
- **Kuwait** NOC training and high-level meetings
- IMEO training to **Egypt** government officials
- **China** Workshop on Methane Observation and Quantification co-hosted by IMEO



IMEO Data Integration Approach

<u>General principle</u>: integrate methane emissions data from diverse sources at different spatial and temporal scales to produce policy-relevant, reliable and publicly available data products (e.g., Methane Supply Index).

- IMEO will traceably and transparently report the sources and methodologies employed in data integration processes.
- IMEO is accelerating its data ingestion efforts encompassing existing data streams (science studies, MARS, inventories) while preparing for integrating the rapidly expanding number and diversity of sources of methane emissions data (MSAT).

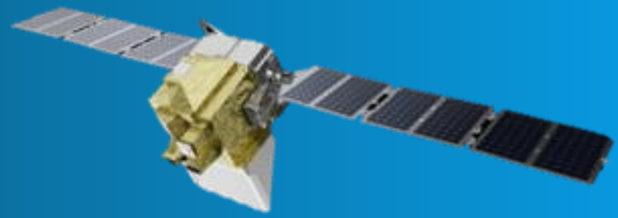
IMEO Data Integration Approach

Methane Supply Index

Transparent, accurate, and measurement-based estimates to track changes in emissions over time and provide a basis for buyers to discriminate purchasing or for regulators to levy fees.

- Phase 0 – 2024: robust measurement-based data (regional-level for upstream, and site-level to derive emissions distributions for the other segments) used in a handful of concrete case studies to illustrate how the methane supply index is assembled.

IMEO Data Integration Approach



MethaneSAT – unique capabilities

To precisely measure methane levels with high spatial resolution at regional scale, allowing it to track all methane escaping from oil and gas production worldwide, not only high emitting point sources but also smaller, diffuse sources.

Launched in March 2024 and now in commissioning phase, it will provide:

- Most comprehensive accounting of total global methane emissions: where emissions are coming from, how much is being emitted and how those emissions change over time.
- Comparison of emissions across major oil and gas basins around the world and track how they change over time at the sub-basin, basin, country or global scales.

Thank you !

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BEZOS EARTH FUND

Global Methane Hub

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