METHANE EMISSIONS INDEX

MEI AT A GLANCE

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The Methane Emissions Index (MEI) is a comprehensive dataset summarizing methane emission estimates for most oil and gas (O&G) produced worldwide. It is based on empirical measurements, relying largely on area mapping from satellite data and aerial measurements. The MEI will provide a globally consistent, independent picture of regional methane emissions and how they change over time.

All emission estimates will be provided at the regional-level, largely corresponding to O&G production basins. The geographic definition of a specific MEI region depends on the availability of atmospheric measurements, which may in some cases differ from the geologic definition of an O&G production basin.

The MEI will assign emission data to individual calendar years and integrate data from multiple sources when available. As multi-year data become available, the MEI will track regional-level emissions over time.

The emission estimates are provided in three metrics: absolute emission rate (e.g., in metric tons per hour), methane loss rate (e.g., emissions as a percentage of gas produced), and energy intensity (e.g., emissions per unit of energy produced).

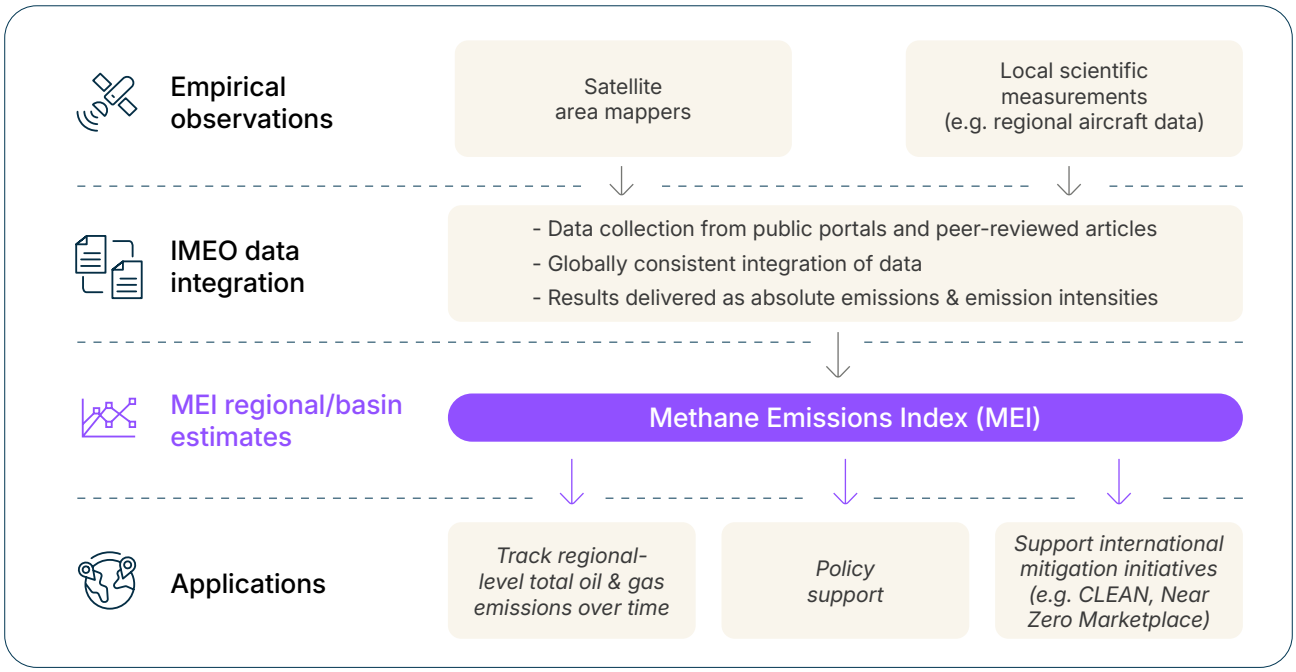

Figure 1: From empirical measurements to a globally consistent methane emissions index

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WHY BETTER METHANE DATA ARE NEEDED

Governments and oil and gas (O&G) companies are increasingly setting mitigation targets for the methane emissions associated with oil and gas operations and are utilizing a broader range of emissions data into their reporting. Following the Global Methane Pledge, countries have made high-level national commitments to curb methane emissions (1), while a growing number of O&G companies are setting company-level methane reduction targets through structured frameworks such as UNEP's Oil and Gas Methane Partnership (OGMP 2.0), which requires quantified, near-term targets supported by measurement-based reporting (2). In parallel, initiatives such as the Oil and Gas Decarbonization Charter (OGDC) and the Oil and Gas Climate Initiative (OGCI) reflect broader industry alignment around achieving near-zero upstream methane emissions by 2030 (3).

National governments have issued (4) and are drafting (5) regulatory mitigation frameworks, and O&G companies are currently implementing detailed mitigation strategies including collecting empirical emission data (2). In May 2026, the United Nations Secretary-General's Call to Action on Methane shared a roadmap for governments, industry and financial institutions to rapidly cut methane emissions this decade through proven and cost-effective solutions (6).

Improved tracking of methane emissions in the O&G industry is also important given the rapidly changing international O&G trade and the concomitant increase in shipments of liquid natural gas (LNG) globally. While effective tracking adds complexity to any monitoring program, it is critical for national economic interests as data quality affects purchasing decisions for those parties seeking low emission source profiles in response to commitments and current and upcoming regulations (7).

Reliable emission data (i.e., accurate, measurement-based, transparent, and complete) are critical for ensuring that methane mitigation is effective. To establish mitigation priorities and track mitigation over time, we need to accurately characterize the magnitude of emissions from each sector (such as O&G production or waste handling) and the spatial distribution of those emissions over time. Without these data, it will be next to impossible to assess progress against reported emissions and regulatory requirements and mitigation resources risk being ineffectively deployed, e.g., operators and regulators prioritizing the wrong emission sources.

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CLOSING THE GLOBAL DATA GAP

O&G industry emission reporting currently exists under global reporting frameworks such as OGMP 2.0 (2) and regulatory programs such as the U.S. Greenhouse Gas Reporting Program (8) and the Australian Safeguard Mechanism (9), but approaches remain inconsistent. Beyond OGMP 2.0, most O&G industry emission reporting today is based on generic emission factors that lack a systematic reconciliation of source- and site-level measurements needed to ensure that all measured sources are consistent with site-scale total emissions. Some data providers rely on satellite-observed super-emitter detections alone (e.g., point sources emitting >100 kg/hr) without providing a context of their contribution to total methane emissions. This approach overlooks the overall emissions situation, including the smaller emitters which can represent a very large proportion of total sector-level emissions (10). Additionally, when empirically-based and calculated data are combined – for example when data from data-rich regions are extrapolated to other parts of the world – understanding the uncertainty of the resulting dataset is critical, yet largely unaddressed.

Publicly available, scientifically rigorous, empirical methane emissions data exist for much of the globe and can be used to fill gaps in our understanding of emission patterns, and to enhance overall transparency in the performance of the O&G sector. Advances in airborne measurements and satellite monitoring now allow methane emissions to be quantified at the regional scale with greatly increased accuracy. Despite the increase in available empirically based emissions data, efforts to use these data are encountering a significant hurdle: the fragmented nature of available methane emissions data. The lack of data integration across different spatial and temporal scales and across technologies has so far prevented a clear picture of emissions across the globe from emerging.

UNEP's IMEO is developing a science-based, globally consistent methodology and associated methane emission dataset to generate empirically based methane emission estimates for most O&G production regions worldwide. The MEI will increase transparency regarding where emissions are occurring and how much is being emitted by incorporating empirical data from satellites and scientific measurements and harmonizing emissions and activity data across space and time. By providing a better understanding of patterns of emissions, it will be possible to address one of the actions requested by the United Nations Secretary-General in his Call to Action on Methane: 'Establish a science-based global standard and a marketplace for near-zero methane fossil fuels' (6). This standard refers to an 'internationally recognized methane intensity benchmark', for which 'compliance is a condition for financing, procurement and long-term market access.' The MEI will be designed as a method and data product to assess compliance based on publicly available empirical methane data.

HOW THE MEI WILL WORK

UNEP's IMEO is developing this index incrementally. The initial stage aims to produce a comprehensive dataset covering 138 O&G producing regions across the globe responsible for producing approximately 85% of global O&G. The index will be based on O&G basin-level emission estimates, relying largely on satellite data and aerial measurements (Figure 1). Total O&G methane emissions will be quantified using area mapping, and point-source data will be integrated where possible. Point-source observations alone cannot provide a complete and consistent estimate of total emissions over time.

These regional estimates can be aggregated to the country level, which is particularly useful in the early stages of implementation when more granular data is limited. Emission estimates will be delivered in terms of absolute emission rates and emission intensities. Case studies from a handful of regions will provide a technical in-depth illustration of the data, methods, methane metrics, and outputs of the MEI.

Accuracy will continue to improve as new satellites—such as CO2M and GOSAT-GW—become operational and additional data sources are integrated. UNEP's IMEO will manage and update the index periodically.

SUPPORTING IMPLEMENTATION OF THE EU METHANE REGULATION

The EUMR is one important potential application for the MEI. The index itself is being designed as a globally consistent data product with broader policy and market applications.

The EU methane regulation establishes a 2030 import standard under which O&G supplied to the EU must meet a defined methane intensity threshold or incur a penalty. The regulation follows a phased approach, with progressively stricter requirements for monitoring, reporting, and verification (MRV). This MRV system forms the foundation of the import standard and is central to ensuring that the system delivers real emissions reductions. The EU's MRV rules are built on the OGMP 2.0 framework by using OGMP 2.0 methodologies, templates, and guidance as reference criteria (11).

The effectiveness of the import standard depends in large part on the quality of methane emissions data. Historically, the O&G industry has significantly underreported methane emissions, as recently highlighted by the International Energy Agency in its Global Methane Tracker report (12). The Oil and Gas Methane Partnership 2.0 (OGMP 2.0), however, provides a globally recognized, measurement-based reporting framework upon which a MRV system can be built. OGMP 2.0, which already covers approximately 45% of global oil and gas production and is being expanded, demonstrates operators can provide more reliable emissions data while also reducing methane emissions.

Compliance with the import standard will rely on operator-reported data at the asset-level. However, data gaps, low data quality and inconsistent data currently represent a challenge, and which is likely to pose a barrier to effective implementation. Without robust reporting as outlined in the EU's MRV rules, it is difficult to ensure that emissions intensities are accurate and comparable across suppliers.

An MEI that is independent of operator-reported data could help address this challenge. By providing methane intensity estimates based on robust, transparent, and independently collected data, the index could support compliance while strengthening the integrity of the regulation and highlighting areas where reported data needs improvement (Figure 2).

The MEI is not designed as a substitute for high-quality operator-reported data. Rather, the two approaches are complementary.

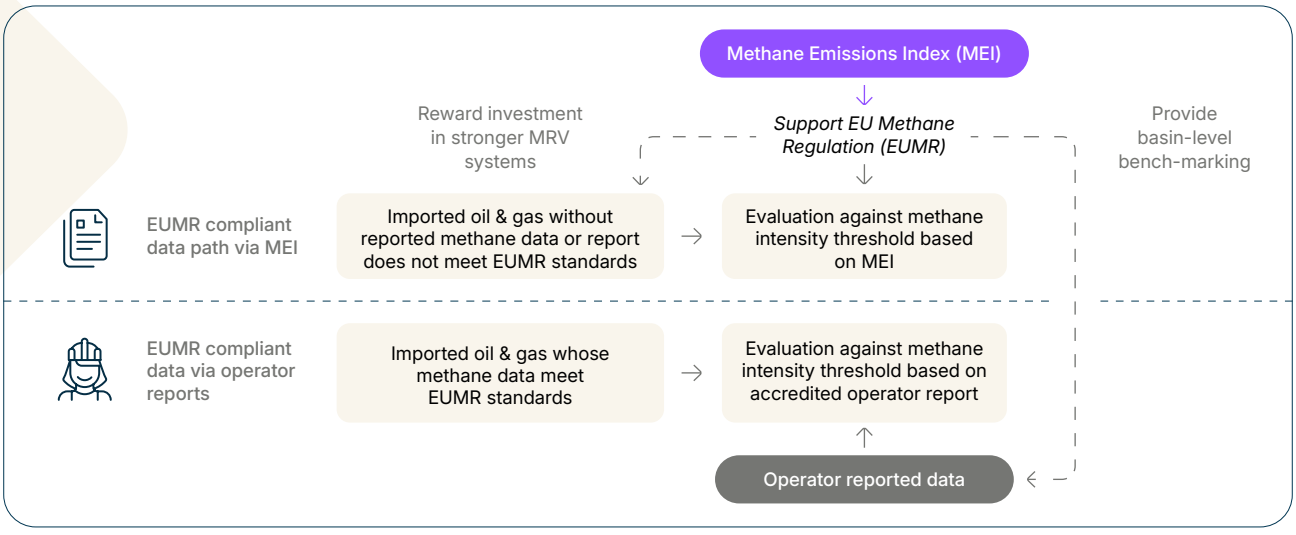

Figure 2: How MEI could complement operator-reported data under EU Methane Regulation

As industry and regulators move into implementation, this index could also help fill data gaps and simplify compliance in two ways:

1. When no reliable emissions data is available (i.e., due to gaps in O&G operator monitoring or traceability).
2. When reported data does not meet EUMR required standards, i.e., not aligned with OGMP 2.0 Level 5, article 12 requirements (stepwise progression toward Level 5–type reporting), or lacking independent assessment of methane reports by accredited third parties.

This complementary data approach ensures that all suppliers can be assessed consistently, regardless of their current reporting capability. It also allows countries that are still developing their MRV systems to participate in the regulation while progressing toward higher-quality reporting. The index can also serve as an assurance mechanism by identifying inconsistencies between reported and independently derived emission estimates.

COMPLEMENTING OPERATOR-REPORTED DATA

The index is not designed as a substitute for operator reporting; the two are complementary. High-quality, operator-reported data that fully complies with EU MRV requirements—aligned with OGMP 2.0 Level 5—remains the primary basis for calculating methane intensities and determining compliance. Where these requirements are not met, especially during the transition toward comprehensive measurement-based reporting, the index could provide credible regional methane estimates that enable continued participation in the EU import standard.

In regions with multiple operators, the index can be updated dynamically. As individual operators submit high-quality data and 'opt out' of the regional value in the index, the remaining average is recalculated. In the future, O&G operators who are not yet reporting OGMP 2.0 Level 5-aligned data may wish to distinguish themselves from basin-level MEI intensities to avoid potential EUMR penalties. As such, the complementary data approach maintains integrity while creating a clear incentive for operators to mitigate emissions, improve reporting, and achieve OGMP 2.0 Level 5.

The index will also help build confidence in the reported data by functioning as a benchmark. Regional estimates act as a safeguard against incomplete reporting and reduce the risk of selectively reporting only high-performing assets. This is critically important as there is growing evidence that emission intensities can vary widely across basins and within companies (7).

As an independent benchmarking tool, the index will enable more efficient implementation of the EUMR by supporting and strengthening operator-reported data. Because it integrates observations over time, it also allows for tracking emissions trends and monitoring progress toward reduction goals. Such benchmarking data can also provide civil society with confidence that the overall goals of the EUMR are being met and whether the regulations are meeting their goals or not.

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BENEFITS FOR PRODUCING COUNTRIES AND OPERATORS

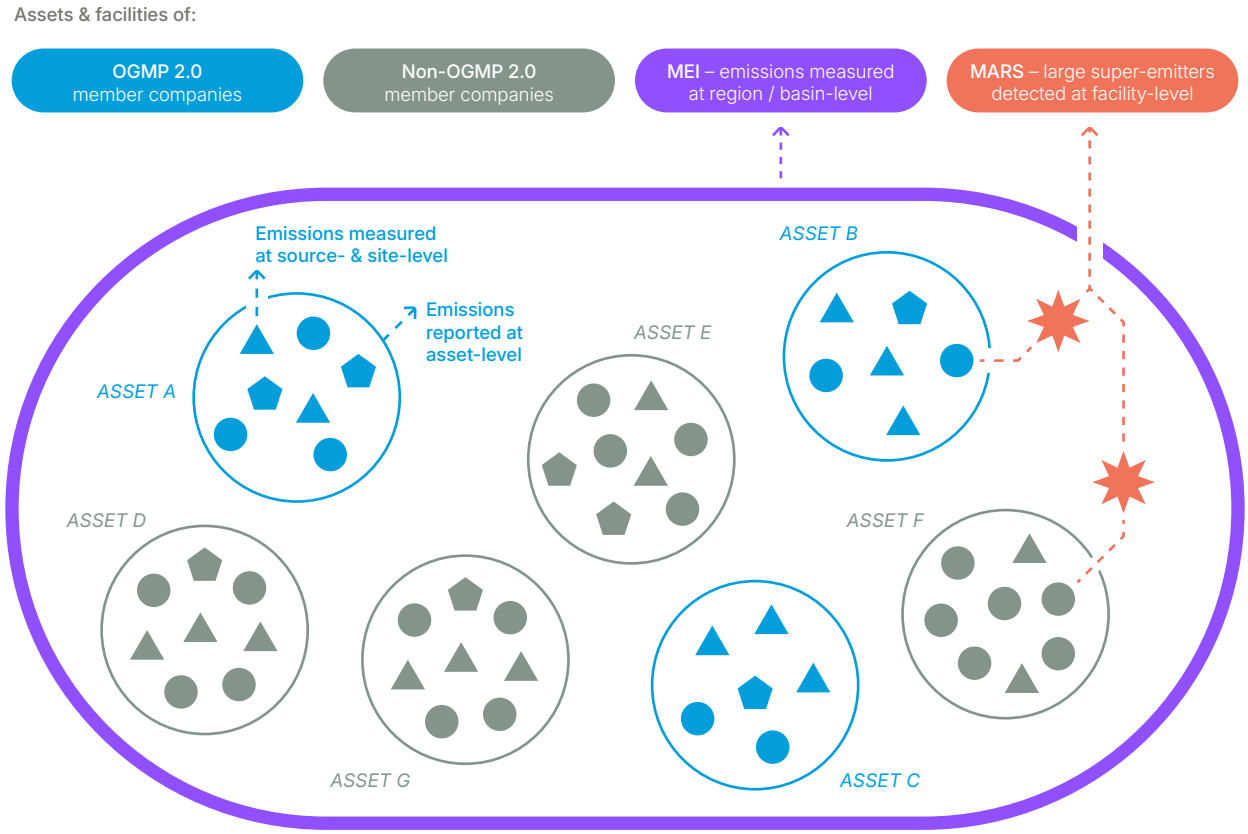
The MEI is designed to ensure that countries at different stages of MRV implementation can participate fairly in the EUMR while progressively improving data quality. Potential benefits include facilitating participation during the transition toward stronger MRV systems, reducing administrative burden where reporting systems are still developing, rewarding investment in measurement-based reporting, providing an internationally comparable method of benchmarking, demonstrating mitigation progress over time, and enabling operators to distinguish their performance from regional values.

APPLICATIONS BEYOND THE EU

The relevance of the index extends beyond the EU. Other importing regions and initiatives are exploring similar approaches to methane mitigation, including efforts in Japan and Korea (CLEAN initiative (13)) and the UK's Near Zero marketplace (14). Given that the MEI is designed to be globally consistent, it could support any or all of these efforts by providing a practical tool for both filling data gaps and ensuring quality of reported emissions.

HOW MEI COMPLEMENTS OGMP 2.0 AND MARS

MEI forms part of a broader UNEP IMEO data ecosystem. OGMP 2.0, MEI and the Methane Alert and Response System (MARS) address different but complementary needs: OGMP 2.0 supports operator measurement, reporting and mitigation at asset level; MEI provides independent regional- or basin-level quantification and benchmarking of total emissions; and MARS detects and notifies stakeholders of very large point-source emissions at facility level.



OGMP 2.0	Operator identification of mitigation opportunities and emission reporting	Asset-level reporting	Total emission estimate	Source-level measurements, validated with site-level measurements	Annual company reporting to OGMP/IMEO
MEI	Industry-wide tracking of emissions using public data	Regional-level quantification	Total emission estimate	Area-mapping satellite data, aerial measurements, local science studies	Integration of public data
MARS	Identification of very high emitting sources	Facility-level notification	Super-emitters only (> 100 kg/hr)	Point-source satellite data	Integration of public data

Figure 3: How MEI complements OGMP 2.0 and MARS

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