

# National Oil Companies and Methane Reductions

## *How to Meet 2030 Goals*

By Ben Cahill

---

**R**educing methane emissions from oil and gas is one of the best available options to slow the pace of global warming. National oil companies (NOCs) produce about half of the world's oil and gas, and their participation will be vital in efforts to cut methane emissions. At the 2023 UN Climate Change Conference (COP28) in Dubai, more than 50 companies signed the **Oil and Gas Decarbonization Charter** (OGDC), which included ambitious methane reduction targets. This was the first such commitment made by many NOCs.

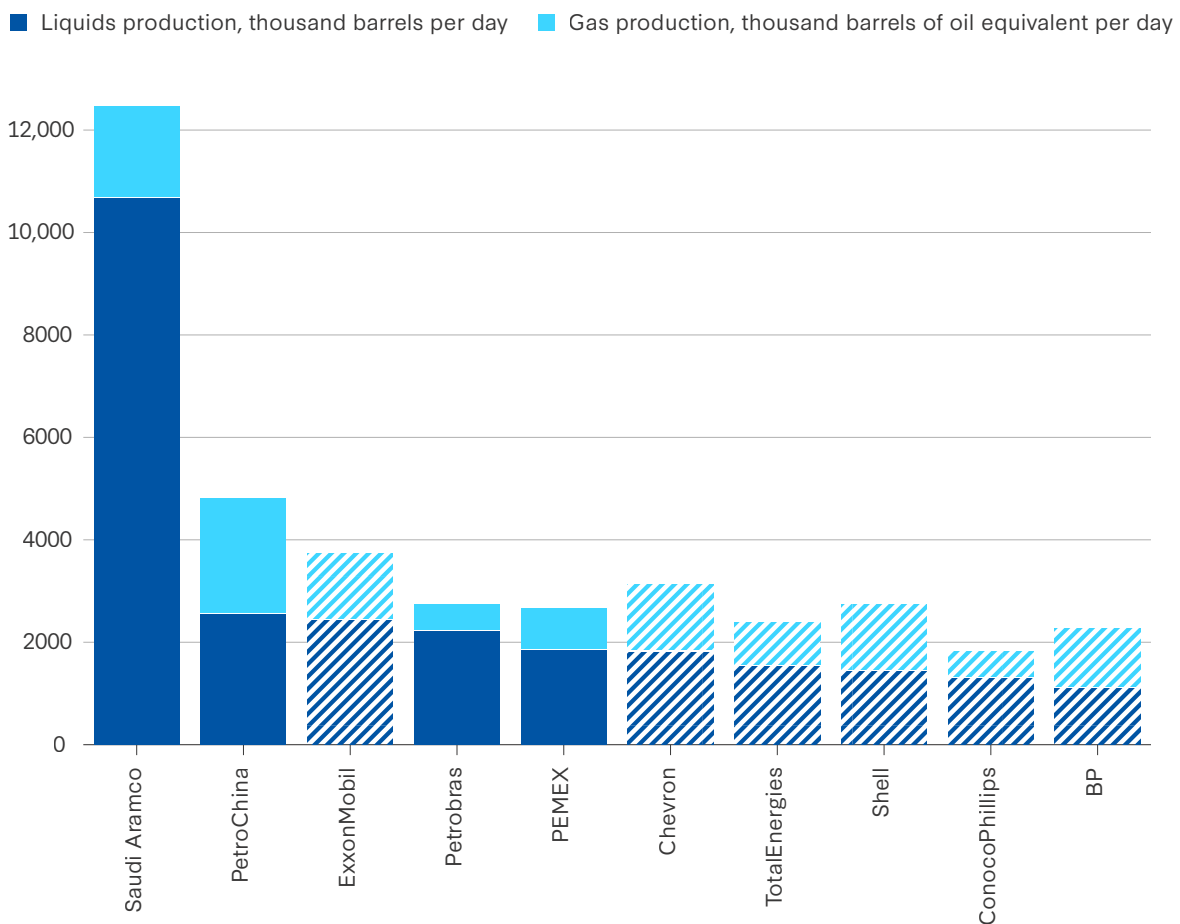
At the halfway market to the next COP summit, follow-through is uncertain and increased transparency is required to monitor progress. Many NOCs will need guidance, technical support, and capacity building to better measure, monitor, report, and verify their methane emissions. A few will need financial support from multilateral institutions, industry associations, or financial sector institutions. In the past few years, as awareness and concern over oil and gas methane emissions have grown, promising new initiatives have promoted industry collaboration and assistance for NOCs from environmental groups and philanthropies.

This paper examines what these companies must do to realize their plans and raise their ambitions, and which types of partnerships can help accelerate these changes. It summarizes the importance of methane reductions by state oil companies, outlines their climate and methane reduction commitments, and analyzes the progress and emissions reductions pathways that will be necessary to meet these important goals. The paper also highlights case studies of effective collaboration with these companies to promote methane reductions, including stories of how various NOCs have engaged with external actors.

## NOC Pathways and Models

For many years, investor, shareholder, and societal pressure for methane reductions focused on international oil companies (IOCs)—mainly the larger publicly listed companies—rather than NOCs. Civil society and advocacy groups pushed IOCs to make more ambitious methane commitments, and emerging rules and regulations reinforced the need for action. While much work remains to realize substantial methane reductions by public companies, last year civil society groups turned their attention toward another key industry sector: NOCs. The impetus is clear. NOCs make up **about half** of global oil and gas production. Many of these companies hold large reserves and will continue producing for decades to come, even in accelerated energy transition scenarios in which demand for hydrocarbons begins to plateau and decline. State oil companies are simply too big to ignore.

**Figure 1: Oil and Gas Production, 2023**

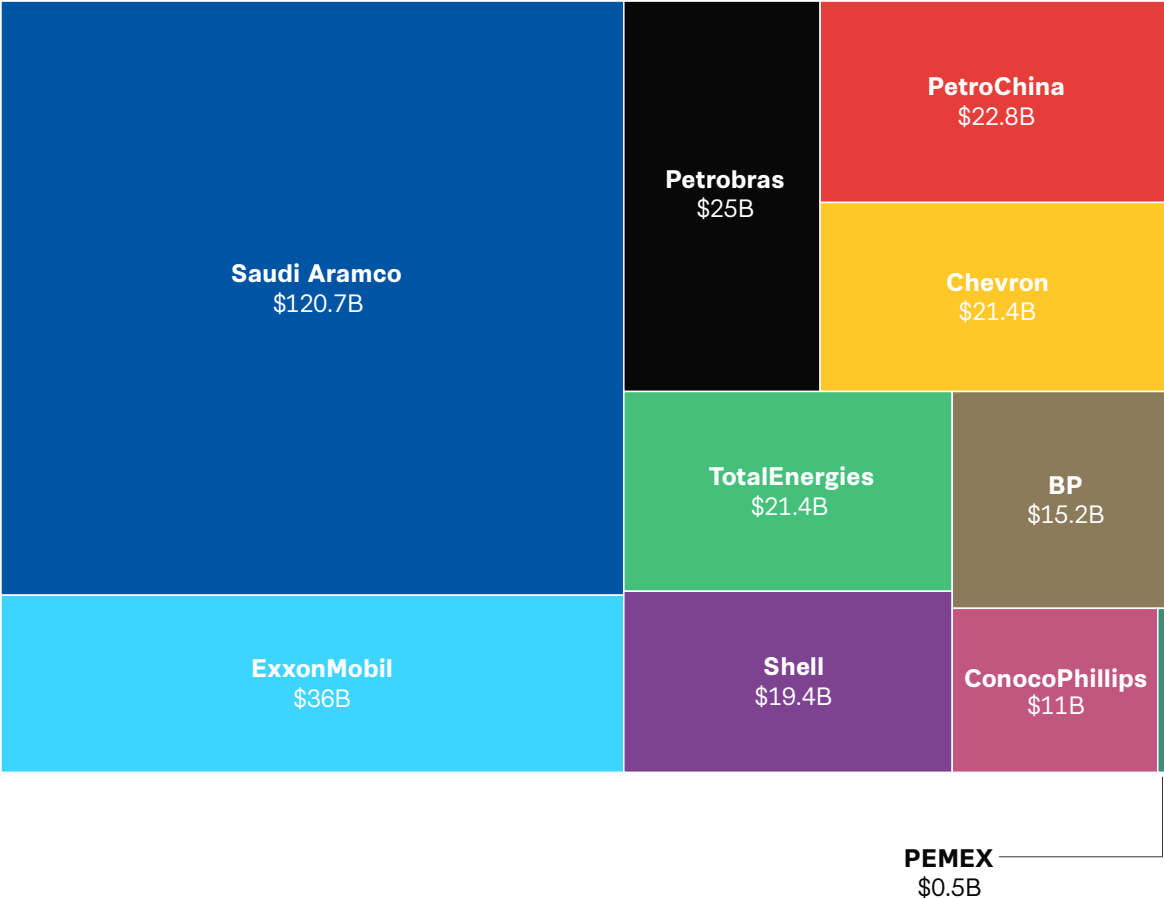


Note: Shaded columns denote NOCs.  
Source: Company annual reports and financial statements.

For advocates of rapid methane reductions, however, NOCs represent a challenge. These companies **are heterogeneous**, ranging from some of the world’s largest resource holders to emerging companies with little technical wherewithal or financial resources. NOCs also have very different stakeholders and expectations than the “supermajors” or large independents, due to their economic and energy security mandates. State oil and gas companies must generate revenue for their home governments and support

economic growth; protect energy security by safeguarding national resources and satisfying domestic demand; and meet various political and geopolitical demands of governments that are often their sole shareholders. There are some parallels with the obligation of IOCs to generate returns for shareholders, but for NOCs with large resource endowments, these resources are critical to national economies and generate enormous economic rents. Some NOCs provide more than half of government revenues. Others are tasked with delivering subsidized energy in their home markets and face heavy tax and dividend burdens that constrain their spending. (For an in-depth analysis of NOC roles, responsibilities, and pathways in the energy transition, see the CSIS white paper, “**National Oil Companies, Climate Commitments, and Methane.**”)

Figure 2: NOC and IOC Net Income, 2023 (USD, billions)



Source: S&P Capital IQ Pro, <https://www.capitaliq.spglobal.com/>.

These expectations and burdens do not insulate NOCs from external pressures. Like all oil and gas companies, they face important questions about the resilience of long-term oil and gas demand and the availability of capital, partnerships, and societal support. Yet they are following very **different pathways**.

Some oil- and gas-producing states have ambitious climate targets and are looking to state oil companies to help invest in new sectors and realize these goals. Other NOCs are already making **considerable efforts** to diversify their business and sources of revenue. These companies tend to have smaller reserves and therefore greater urgency to transition to new areas. Still other NOCs—even those with

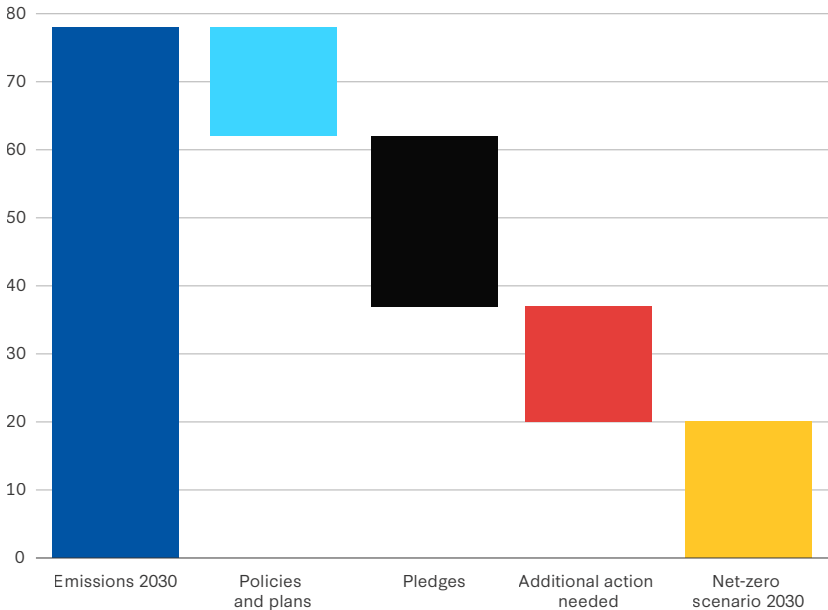
large resources—have shifted to a “**produce now**” mentality, to ensure that national resources are developed on a faster timeline and to help fund national economic diversification efforts. Finally, some state companies have **done little** to prepare for the long-term shift away from fossil fuels. Contributing factors vary but include skepticism about the energy transition, beliefs that their resources will remain competitive, or simply government inertia.

In short, NOC roles and responsibilities shape their corporate strategies, including their climate pledges and the extent of their methane commitments. Those seeking to engage these companies on methane reductions should be mindful of these obligations, even as they push companies to move faster. It will be important to minimize perceived conflicts between methane reduction efforts and NOC mandates to produce national resources and deliver sufficient revenue to their governments. Overcoming these challenges is essential for NOCs to make faster, deeper methane reductions.

*Methane Focus Turns to NOCs*

Advocacy groups realized that COP28 in Dubai—and a COP presidency held by the chief executive of Abu Dhabi National Oil Company (ADNOC)—represented an important opportunity to secure stronger climate commitments from NOCs. These companies may commit to tougher targets due to government climate pledges, investor pressure, influence from joint venture partners, strong executive leadership, or a combination thereof. One strategy heading into COP28 was to promote a virtuous cycle among NOCs by leveraging ADNOC’s role in hosting the conference and encouraging it to bring other national companies along on the journey toward methane reductions. This was a pragmatic approach, and organizations **announced many** new methane initiatives at the conference.

**Figure 3: Methane Emissions Pledges and Required Action in a Net-Zero Scenario (Million Tons)**



Source: International Energy Agency (IEA), *Global Methane Tracker 2024* (Paris: IEA, March 2024), <https://www.iea.org/data-and-statistics/charts/reductions-from-current-reduction-pledges-policies-and-national-action-plans-for-methane-emissions-from-oil-and-gas-2030>.

More than 50 companies signed the OGDC, including numerous NOCs and companies with mixed state and public ownership. For many, this was their first public commitment to methane reductions. These companies **pledged** to end routine flaring (as **defined** by the World Bank) and to reach “near-zero” upstream methane emissions—defined as methane intensity of 0.2 percent—by 2030. These companies also set a goal of reaching net-zero **Scope 1 and 2** emissions by 2050 and pledged to share by 2025 their aspirations for Scope 1 and 2 emissions for 2030. Softer targets centered on increasing their investment in renewable energy, increasing transparency, and “enhancing measurement, monitoring, reporting, and independent verification of greenhouse gas emissions.”

Several other initiatives announced at COP28 targeted oil and gas methane emissions, including NOC operations. Eleven large climate-focused philanthropies pledged **\$450 million** for methane abatement, seeking to complement other charitable support and spur additional commitments to triple funding to cut non-CO<sub>2</sub> pollutants. In another new program, foundations and environmental organizations, in partnership with the International Energy Agency (IEA) and the UN Environment Programme (UNEP), pledged to enhance transparency and accountability on methane reductions. That effort aims to **leverage** satellite data, publish and share information through new platforms, and build partnerships to “provide financial institutions, governmental ministries, commercial gas buyers, nongovernmental organizations (NGOs), and media” with better data on emissions. UNEP’s International Methane Emissions Observatory had already announced the Methane Alert and Response System (MARS), a global satellite data **initiative**.

**Table 1: NOC Methane Reduction Targets**

ADNOC (Abu Dhabi)	Achieve 0.15 percent upstream methane intensity by 2025. Reach near-zero methane emissions and achieve zero routine flaring by 2030.
CNOOC (China)	Reduce average methane intensity in natural gas production to below 0.25 percent by 2025.
Ecopetrol (Colombia)	Reduce upstream methane emissions by 45 percent by 2025 and by 55 percent by 2030 (2019 baseline); reach near-zero methane emissions by 2030.
Equinor (Norway)	Reach near-zero methane intensity in oil and gas production by 2030.
Kazmunaigas (Kazakhstan)	Reach near-zero methane emissions and achieve zero routine flaring by 2030.
NNPC (Nigeria)	Reach near-zero methane emissions and achieve zero routine flaring by 2030.
ONGC (India)	Reach near-zero methane emissions and achieve zero routine flaring by 2030.
PEMEX (Mexico)	Reduce methane emissions by 30 percent by 2030 (2020 baseline).
Pertamina (Indonesia)	Reach near-zero methane emissions and achieve zero routine flaring by 2030.
Petrobras (Brazil)	Reduce upstream methane intensity by 62 percent by 2025 and 70 percent by 2030 (2015 baseline); reach near-zero methane emissions by 2030.

PetroChina	Reduce methane intensity by 50 percent to 0.25 percent by 2025 (2019 baseline). Reduce methane intensity by 20 percent to 0.2 percent by 2035 (2025 baseline) and to near-zero methane emissions for operated assets by 2030.
PETRONAS (Malaysia)	Reduce groupwide methane emissions in natural gas value chain operations by 50 percent by 2025 and by 70 percent by 2030 (2019 baseline); reach near-zero methane emissions by 2030.
PTTEP (Thailand)	Reach near-zero methane emissions and achieve zero routine flaring by 2030.
Qatar Energy	Achieve upstream methane intensity of 0.2 percent by 2025.
Saudi Aramco	Achieve upstream methane intensity of 0.2 percent by 2025 and near-zero methane intensity by 2030 (reported upstream methane intensity reached 0.05 percent in 2022).
Sinopec (China)	Reduce methane intensity by 50 percent by 2025 (2020 baseline).
SOCAR (Azerbaijan)	Reach near-zero methane emissions and achieve zero routine flaring by 2030.
Sonangol (Angola)	Reach near-zero methane emissions and achieve zero routine flaring by 2030.
Sonatrach (Algeria)	No targets.
YPF (Argentina)	Reduce methane emissions by 10 percent by 2027 and 30 percent by 2030 (2021 baseline); reach near-zero methane emissions by 2030.

Source: Company annual reports and sustainability reports; and “Oil & Gas Decarbonization Charter Launched to Accelerate Climate Action,” COP28, December 2, 2023, <https://www.cop28.com/en/news/2023/12/Oil-Gas-Decarbonization-Charter-launched-to-accelerate-climate-action>.

Notes: Unless otherwise indicated, these commitments refer to operated assets. In some of these countries, gas flaring has been regulated or banned for years, as in Nigeria, but flaring has persisted due to poor enforcement and lack of compliance by NOCs and other operators.

## Global Flaring and Methane Reduction Partnership

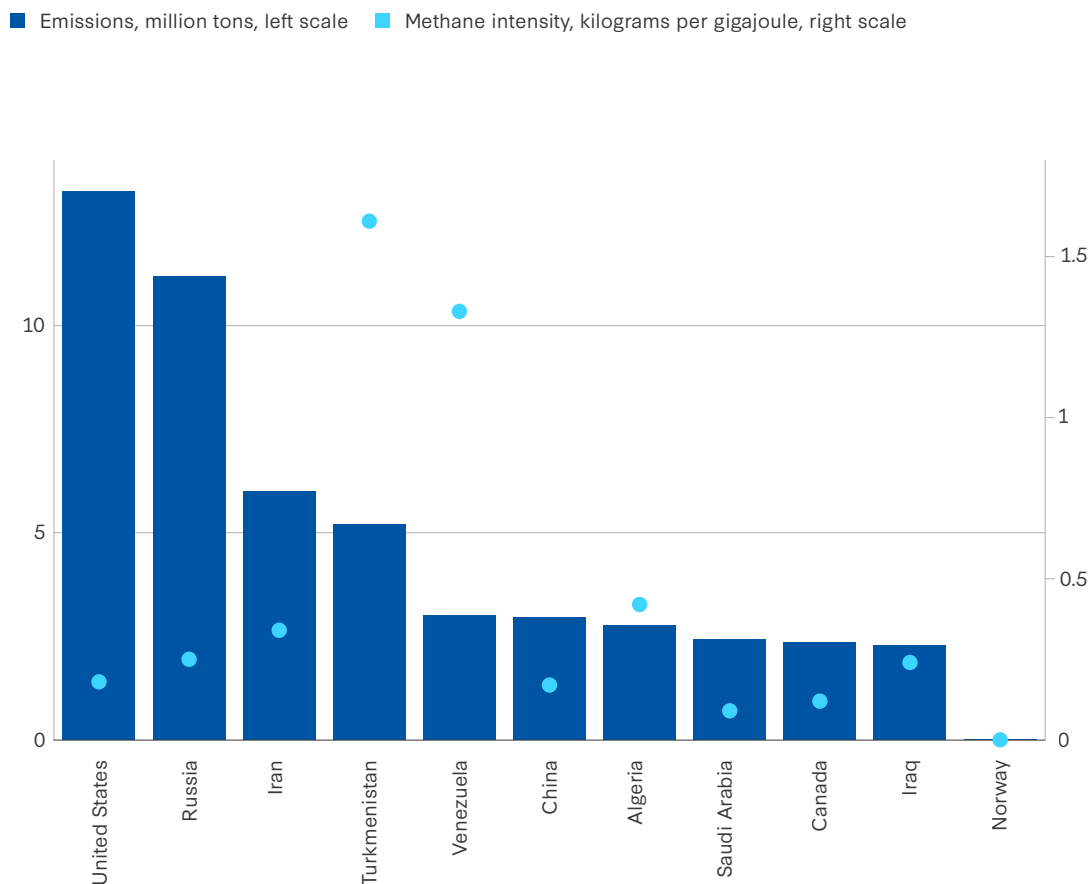
During COP28, the World Bank **announced** a \$255 million Global Flaring and Methane Reduction (GFMR) Partnership. This multi-donor trust fund—supported by governments as well as oil and gas companies—will provide grant funding, financial and technical support, and assistance with policies and regulations to reduce greenhouse gas emissions from oil and gas.

The program includes specific grant financing criteria to ensure governments and state-owned entities are committed to long-term, programmatic approaches to greenhouse gas reductions, such as endorsing the World Bank’s Zero Routine Flaring by 2030 Initiative; joining the Oil and Gas Methane Partnership 2.0 (OGMP 2.0); and pledging to reduce methane intensity to 0.2 percent by 2030.

GFMR will also provide technical assistance to governments and state-owned entities on how to design a package of methane abatement projects that could attract support from banks or financial institutions. Vetting and technical and policy support from the World Bank could help encourage lending by such institutions, or perhaps offer a framework that could underpin methane-focused debt instruments such as bonds for methane abatement projects.

Because the GFMR Partnership is backed by diverse players with varying priorities and interests, it will be challenging to build consensus and move quickly. But a potential advantage is the World Bank’s status as a multilateral organization and its capacity to provide advice and guidance on technical solutions, financing, regulations, and policy. The institution’s long-term relationships with governments through offices in dozens of countries is an added advantage. The fund could play an important role in financing methane abatement projects, especially in countries with more limited financial resources and technical capacity. There should be ample opportunity to collaborate with civil society organizations and other initiatives to support methane reductions.

**Figure 4: Methane Emissions from Oil and Gas Production and Methane Intensity, Selected Producers, 2023**



Source: IEA, *Global Methane Tracker 2024*.

The OGDC entailed new commitments to methane reductions, but many NOCs had already signed on to various programs. As noted in Table 2, a growing number of NOCs have joined the **OGMP 2.0**, a measurement-based reporting framework that **requires companies** to establish either a methane intensity or absolute reduction target, submit implementation plans, and report their emissions annually at an individual asset level. Joining this program allows companies to take part in a “community of practice” in which companies can share technical knowledge regarding the transition

to measurement-based reporting and mitigation. Aside from OGMP 2.0, several NOCs are part of the **Oil and Gas Climate Initiative** or its Aiming for Zero initiative. Others have joined the Methane Guiding Principles, discussed below, or signed on to the World Bank’s Zero Routine Flaring by 2030 Initiative. Still, a number of NOCs have failed to join any of these programs or to set clear methane reduction targets, including Mexico’s PEMEX and Algeria’s Sonatrach. China’s three large NOCs have methane reduction goals and are part of a Chinese **industry alliance** to cut emissions, but they are less engaged in international efforts and share comparatively little data.

**Table 2: NOC Membership in Methane Initiatives**

	OGMP 2.0 Membership	Oil and Gas Climate Initiative “Aiming for Zero”	World Bank Zero Routine Flaring by 2030 Initiative	Methane Guiding Principles	Oil and Gas Decarbonization Charter
ADNOC	■				■
CNOOC					
Ecopetrol	■	■	■		■
Equinor	■	■	■	■	■
Kazmunaigas	■		■		■
NNPC			■		■
ONGC			■		■
PEMEX					
Pertamina	■		■		■
Petrobras	■	■	■		■
PetroChina/ CNPC		■			
PETRONAS	■		■	■	■
PTTEP	■				■
Qatar Energy	■	■	■	■	
Saudi Aramco		■	■		■
Sinopec					
Socar			■	■	■
Sonangol		■	■		■
Sonatrach			■		
YPF					■

Source: Adapted from IEA, *Global Methane Tracker 2024*.



## New Buyer Demands on Methane Intensity

The European Union's methane **legislation**, adopted by the European Parliament in April 2024, has important implications for global gas suppliers, including NOCs. The rules will apply to all domestic producers, banning routine flaring and venting and imposing extensive leak detection and repair requirements as well as new measurement, reporting, and verification (MRV) rules. Crucially, the methane legislation also applies to imported oil, natural gas, and coal, with the goal of reducing methane emissions associated with EU energy consumption and helping drive down emissions from global oil and gas. Starting in 2025, the European Union will require new data to support a methane transparency index. By 2027, importers must demonstrate that all contracts signed after entry into force of the methane legislation are subject to MRV rules equivalent to EU requirements. In a series of steps between 2027 and 2030, the European Union will set new rules on methane intensity, and by 2030 all imports must be below a yet to be determined maximum methane intensity value. (For a detailed analysis of the EU rules, see the CSIS Brief, "**EU Methane Rules: Impact for Global LNG Exporters.**")

The European Union is well ahead of other regions in demanding better data on methane intensity, but other countries may follow suit. Japanese and South Korean government agencies and liquefied natural gas (LNG) importers have established the **Coalition for LNG Abatement Toward Net-Zero** (CLEAN) initiative to collect information on emissions intensity of their gas supplies. This initiative, including Japan's JERA and South Korea's KOGAS—the world's two largest LNG buyers—is currently focused on gathering information and improving transparency. But if the largest gas buyers in Asia begin to incorporate such data into gas purchasing contracts, they could send a powerful signal throughout the global gas industry.

Another important international methane initiative is the **international working group** on methane measurement, monitoring, reporting, and verification (MMRV) involving the U.S. Department of Energy, the European Commission, and various gas-producing and gas-consuming states. The group is developing a comprehensive, credible system to assess emissions across natural gas value chains.

In general, NOCs are ill-equipped to meet emerging buyer demands on methane intensity. Even Gulf NOCs that presumably have lower emissions intensity than competing suppliers in the United States have taken only **limited steps** to quantify and verify their emissions intensity at the LNG cargo level. NOC gas suppliers to Europe from the Middle East, North Africa, Central Asia, and sub-Saharan Africa must quickly adapt to new rules.

### *Case Studies: Collaboration with NOCs for Methane Reduction*

Measurement of methane emissions is the essential first step, since this will reveal emissions patterns, enable mitigation, and allow for credible reporting. Various methane reduction programs offer opportunities for NOCs to collaborate with peers and external actors to better monitor, report, and reduce their methane emissions. But there is naturally some duplication of effort. It is not always clear to companies which program will prove most beneficial or where to start. In practice, most companies

will pursue **multiple initiatives** at the same time, but human capacity at NOCs can be limited and companies may be wary of dilution of effort.

Companies can be overwhelmed by the amount of advice and technical support available from NGOs, industry initiatives, and multilateral organizations—as well as the vendors, oil field services companies, and consultants seeking to offer their services. Advocacy groups and analysts often note that companies are struggling to manage all of these external demands. This raises the risk that companies sign on to an array of programs but fail to follow through; indeed, the proliferation of methane programs may generate confusion that allows operators to drag their feet. Accountability mechanisms in voluntary programs are naturally limited. The IEA suggests that investors and insurers can help bridge this gap by incorporating methane reductions and performance targets into their engagement with the oil and gas industry, including NOCs. The agency **recommends** that financial institutions “promote strict performance standards, verifiable methane reductions, and transparent and comparable disclosures” on methane emissions.

Which programs have been the most effective, and which new commitments hold the most promise? The following case studies seek to answer this question, highlighting stories of international engagement with NOCs on methane reductions. They include reporting frameworks and standards supported by multilateral institutions, multi-stakeholder groups comprising industry and civil society organizations, and voluntary, industry-led efforts by groups such as the Oil and Gas Climate Initiative (OGCI). These examples show that while NOCs are generally less susceptible to public pressure on climate and methane commitments, and many of them have still made little progress, there are effective channels of influence and cooperation.

### **OIL AND GAS METHANE PARTNERSHIP**

The **Oil and Gas Methane Partnership** (OGMP) was created in 2014 as a voluntary initiative for companies looking to reduce methane emissions across their value chains. In 2020, OGMP 2.0 was launched as an updated reporting framework to encourage companies to shift toward measurement rather than estimates of their methane emissions. It is a global **asset-level** MRV program. Companies that join OGMP 2.0 must set a methane reduction target—either an absolute emissions reduction target or an emissions intensity target—and submit annual reports to document progress toward the most rigorous reporting levels (Level 4 and Level 5), including annual reporting on emissions with a description of data quality. These companies make a commitment to reach Level 5 within three to five years, and implementation plans must describe how they plan to meet the measurement targets. Companies are awarded the gold standard when they report all their assets at the Level 4 standard and show efforts to move toward Level 5 or deliver explicit and credible paths to report at Levels 4 and 5 within three years for operated assets. The Level 5 designation requires companies to reconcile source-level reporting with site-level independent measurements for both operated and non-operated assets.

Table 3: OGMP 2.0 Reporting Levels

Level 1	Level 2	Level 3	Level 4	Level 5
Single consolidated emissions number, for all operations in an asset or all assets within a region or country.	Emissions reported in consolidated, simplified source categories based on International Association of Oil and Gas Producers and MARCOGAZ emissions categories.	Emissions reported by detailed source type using generic emissions factors.	Emissions reported by source type using specific emissions factors and activity factors.	Level 4 source reporting as well as reconciliation with site-level measurements.

Source: “Mineral Methane Initiative OGMP 2.0 Framework,” Oil and Gas Methane Partnership, November 2020, [https://ogmpartnership.com/wp-content/uploads/2023/02/OGMP\\_20\\_Reporting\\_Framework-1.pdf](https://ogmpartnership.com/wp-content/uploads/2023/02/OGMP_20_Reporting_Framework-1.pdf).

Over **140 companies** have thus far joined OGMP 2.0 and committed to move toward stringent reporting standards and reconciliation of bottom-up and top-down methane measurements. A growing number of NOCs have joined OGMP 2.0, including ADNOC, Colombia’s Ecopetrol, Indonesia’s Pertamina, Brazil’s Petrobras, Malaysia’s PETRONAS, and Qatar Energy. To date, only a **limited number** of the largest NOCs by production volume have set measurement-based methane targets, but last year, ADNOC, Ecopetrol, Petrobras, PETRONAS, and Qatar Energy achieved the gold standard for reporting. Ecopetrol, for example, has made significant progress along the pathway toward gold standard reporting over the past three years. **In 2021 and 2022**, incomplete data for operated assets and missing data for most of its non-operated portfolio prevented the company from reaching this level. But in 2023, Ecopetrol was recognized for reporting at the **highest level** of asset granularity while deploying various technologies for site-level measurements.

Meeting this standard requires the deployment of validated measurement methods across operated and non-operated assets, and NOCs that join OGMP 2.0 can access helpful guidance and peer-to-peer learning. The program provides **guidance documents** and templates, and companies become part of a “**community of practice**.” OGMP 2.0 holds workshops to share technical information, as well as an annual implementation conference, to help companies in the transition to measurement-based reporting. These resources and the standards set by the program provide member NOCs with guidance toward transparent and verifiable methane measurement.

## Methane Guiding Principles: Advancing Global Methane Reduction

The Methane Guiding Principles (MGP) emerged in 2017 as a partnership to promote methane reductions in the oil and gas industry. The initiative seeks to develop and share practical tools and guidance across **five guiding principles**: to continually reduce methane emissions; advance strong performance across gas supply chains; improve the accuracy of methane emissions data; advocate sound policy and regulations to achieve methane reductions; and

increase transparency. Each member of MGP provides annual reports on their progress toward meeting these five key principles.

MGP comprises oil and gas companies as well as environmental NGOs, multilateral organizations, and industry associations. NOC members include Norway's Equinor, PETRONAS, Qatar Energy, and Azerbaijan's SOCAR. A core assumption of MGP is that as each company navigates the methane journey, it can share lessons with others. A company may, for example, detail how it collaborated with joint venture partners in a certain operating area, or how it deployed various detection technologies across operations. The initiative **has developed** outreach efforts to bring new companies up to speed, support them in reduction efforts, and share technical tools and best practice guides.

In November 2023, MGP established the Advancing Global Methane Reduction (AGMR) initiative. The impetus for AGMR was to move beyond publishing technical documents and training manuals and instead build more robust cooperation between companies and their NOC and host government partners. Under this program, companies take ownership of methane-related assistance and programs and partner with governments and NOCs. The goal is to provide a comprehensive stewardship process to help companies navigate this ecosystem.

Through AGMR, each company nominates a country where it will serve as either lead or co-lead. For example, bp is **the lead** for Azerbaijan and Woodside is the lead for Senegal, given their operating experience in these countries. As country leads, they help NOCs and their governments understand the support offered by the IEA, UNEP, OGCI, MGP, and many other groups. AGMR now includes at least 23 targeted countries, with 25 companies offering support.

The theory of change for AGMR is that in-country experience and relationships matter greatly. Country leads—some of which have decades of local operating experience—have relationships not just with high-level policymakers and executives but also at the operational level, with engineers and plant managers at NOCs. Their staff speaks local languages and can engage effectively with governments and regulators, local oil field services companies, and financial institutions. As a result, AGMR leads in each country can assemble outside experts to quickly aid NOCs—for example in early efforts to test assumptions about methane emissions by segment, or develop more accurate, measurement-informed methane abatement cost curves for each country. AGMR also provides a pathway to provide policy advice to governments.

It is early days for this program, and there are questions about how it will evolve. The approach varies by country, depending on the technical capacity of NOCs and other operators as well as the government—but also depending on the preferences of each country lead. It is possible that a more systematic, consistent approach across countries would be beneficial, with a standardized process for company engagement and stronger protocols on sharing information. There also appears to be substantial overlap between the AGMR program and the OGDC signed at COP28, so there could be some inefficiencies or dilution of effort.

## Satellite Monitoring Campaigns: OGCI and Future Satellite Data Initiatives

Since 2021, the OGCI, a coalition of 12 leading oil and gas companies including several NOCs, has implemented satellite monitoring campaigns in Iraq, Algeria, Kazakhstan, and Egypt. These campaigns sought to demonstrate the potential for rapid methane reductions based on satellite surveillance of fugitive emissions.

After a successful pilot campaign in Iraq by OGCI in 2021-2022, in collaboration with satellite and remote sensing operator GHGSat and consultancy Carbon Limits, OGCI extended this work to the other three countries. GHGSat conducted more than 175 observations over Iraq in a nine-month period across six sites. When methane plumes were detected, OGCI and its partners contacted operators to share the data so they could investigate and mitigate these issues. Identified problems in Iraq included flaring of non-associated gas, venting, and maintenance events. During campaigns in Algeria, Kazakhstan, and Egypt, satellite surveillance included 530 high-resolution observations that detected 308 methane plumes. Forty-one of these plumes emitted methane at a rate of more than 2,000 kilograms per hour, accounting for some 44 percent of total detected emissions. The distribution of methane plumes across sources, including gathering pipelines, tank venting, equipment venting, and flaring systems, also varied substantially across these three countries (see Figure 5). These results show that fixing a small number of persistent methane events can have an outsized impact.

Increasing the quality and availability of methane emissions data is necessary but not sufficient for mitigation results. Success of satellite monitoring campaigns—especially when conducted by outside organizations rather than operators themselves—depends on strong working relationships with operators. In the case of Iraq, existing relationships held by OGCI member companies were important. And in the other country campaigns, OGCI suggests that NOCs and other joint venture partners benefited from the experience of its members in developing reporting and mitigation programs. The initiative recommends that future satellite surveillance campaigns should be combined with on-site monitoring and knowledge-sharing events.

These pilot projects illustrate the promise of satellite surveillance in detecting methane emissions—and they hint at a data revolution in the making. OGCI chose to keep data confidential, as its purpose was to enable mitigation rather than a “naming and shaming” exercise. The initiative argues this helped to build trust with local operators, enabling actions to reduce emissions. However, other groups may choose to take a different approach in the future.

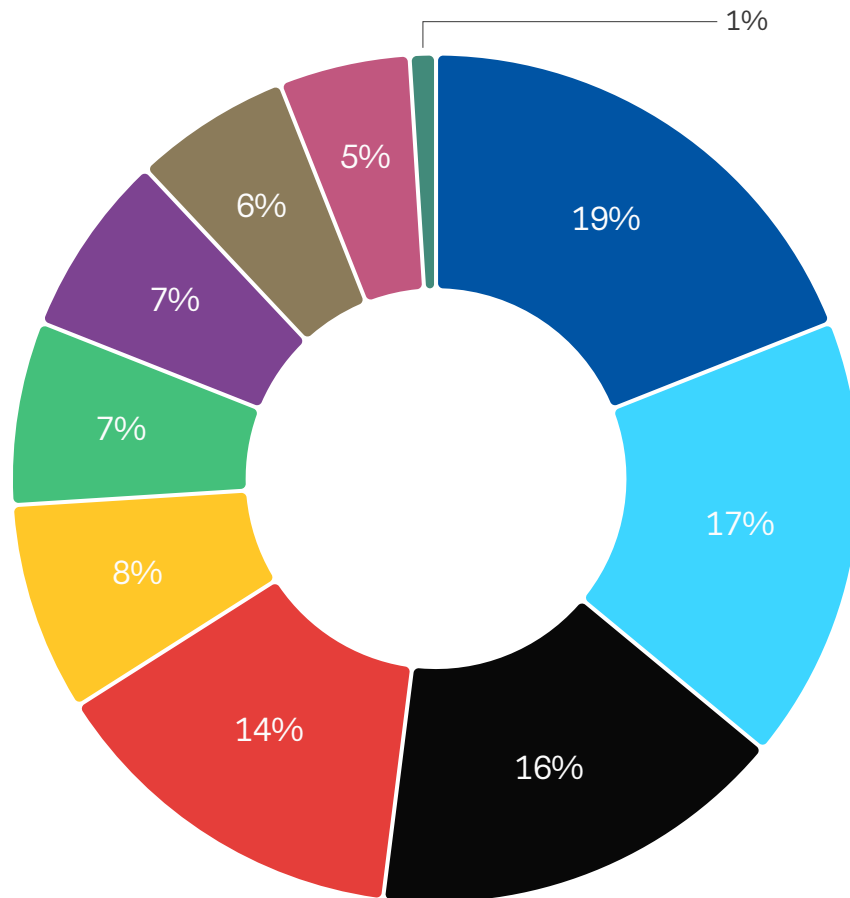
These satellite campaigns are only the beginning, and NOCs will face a brighter spotlight. The next few years will see a proliferation of publicly accessible satellite data on methane emissions—and these efforts will focus on highlighting the world’s largest sources of emissions. Satellite data should grow rapidly in the next few years, from sources including Environmental Defense Fund’s MethaneSAT, GHGSat, and numerous other providers.

MethaneSAT has signed a partnership with Google to provide data on methane emissions and pair it with new mapping of global oil and gas infrastructure by the technology company. Through Google Earth Engine, a large volume of granular data will soon be accessible to civil

society groups, journalists, and investors (for publicly listed NOCs). Many NOCs are ill-prepared for this step change in transparency and will have to develop strategies to investigate and mitigate these events.

**Figure 5: Detected Methane Plumes in Monitored Areas, Percent of Total Detected Events, Campaigns in Algeria, Kazakhstan, and Egypt**

- Incomplete combustion from burning pit
- Gathering pipelines
- Equipment venting
- Tank venting
- Gas lift system vent
- Flaring systems
- Oil heater at well site
- Vents from liquid unloading
- Equipment leaks
- Unidentified



Source: “Results of OGCI Satellite Monitoring Campaign 2022–2023 over Kazakhstan, Algeria, and Egypt,” Oil and Gas Climate Initiative, March 2024, <https://www.ogci.com/wp-content/uploads/2024/04/SMC-Results-vf.pdf>.

## The European Union’s “You Collect, We Buy” Concept: Good Idea but Slow Progress

Several years ago, the European Union proposed a scheme called “You Collect, We Buy,” which was included in its 2022 external energy engagement strategy. The concept is to pair technical and financial support for methane reductions by EU gas suppliers with agreements to purchase gas with verifiably lower emissions intensity. During COP28, European Commission

president Ursula von der Leyen **announced** that the commission would develop a road map for the scheme by COP29, but the ground rules have not yet been established.

One challenge was the early targeting of Algeria as a pilot country. Algeria is a long-standing gas exporter to Europe with a massive methane emissions problem, so it was logical to select it for this program. At 2.77 million tons of methane emissions from the oil and gas industry in 2023, according to the IEA, Algeria was the world's seventh-largest emitter. Algeria flared **8.2 billion** cubic meters of gas in 2023, the World Bank reported. Its state oil company Sonatrach has pledged to reduce flaring across operations, but it still provides scant data and has not joined any major methane reduction commitments.

Algeria and Sonatrach illustrate the potential complexity of collaborating with NOCs on methane reductions. Between 2019 and 2023, oil and gas **accounted for** 47 percent of Algeria's government revenue and 84 percent of its export revenue (see Table 3a and Annex VI of the IMF's 2024 Article IV **report**). The country's political economy is built around the distribution of hydrocarbon rents. Governance of the oil sector is opaque, senior officials at Sonatrach and the energy ministry are often replaced with little warning, and project details are sensitive matters. As a result, transparency does not come easily to Sonatrach, and staff are understandably wary of sharing data and information. Even its joint venture partners can be left in the dark regarding decisionmaking. In short, the spirit of collaboration and mutual learning that works well in other operating environments is more difficult to create in Algeria, although organizations continue to explore opportunities.

Aside from challenges specific to Algeria, there are other open questions about the "You Collect, We Buy" initiative. It is uncertain which types of methane abatement projects would be supported and how the program might supplement or partner with the World Bank's GFMR Partnership. Developing a set of guidelines and plans for leveraging new sources of investment capital could help the European Union to advance methane reduction efforts.

### *Capacity Building and Support: What Works and What Is Needed*

NOCs are often portrayed as the dinosaurs of the energy world: lumbering companies that are poorly managed and resistant to change. This caricature is inaccurate. Saudi Aramco is a top-tier technology leader and by far the oil and gas industry's most profitable company. Petrobras is a preeminent deepwater operator, and PETRONAS and Qatar Energy are leading LNG companies. And NOCs are not static. Along with the rest of the industry, they evolve and respond to external conditions. As investment trends, partner expectations, and technology and data evolve, so do NOCs. These companies also learn from each other. CEOs and board members at NOCs naturally monitor the competition and benchmark themselves against their peers. All of these factors have supported the momentum on climate and methane commitments by NOCs in the past year.

However, building technical and human capacity to address emissions requires sustained engagement, especially with NOCs that operate in a different political, economic, and regulatory context from IOCs. So, what lessons can be learned from the case studies above, and what else is needed to accelerate action? A few themes are apparent.

**Top-down commitment matters.** In theory, governments with strong methane reduction targets would issue clear marching orders for NOCs to help realize these reductions—and misalignment between NOCs and their governments can hinder action. In most cases, direction from the C-suite of these companies matters most. NOCs would benefit from a stronger emphasis on methane reduction targets as part of performance criteria for senior management. Methane abatement should be a topic that is routinely discussed and revisited at board meetings and at the senior executive level. Investors in publicly listed NOCs have an opportunity to suggest more robust, ongoing processes to set targets and assess progress. Companies such as Norway’s Equinor have made continual methane reductions a **consistent focus** at operating units across the company and demonstrate the right commitment to transparency.

**Trust is important.** NOCs have complex mandates and operate in an array of political and economic contexts. While some enjoy a strong degree of operational and financial independence, others are resource-constrained and face intense government oversight over their spending priorities and, at times, their interaction with outside groups. Long-standing partners are often best positioned to work with NOCs, as they understand the mandates of their partners and better comprehend which approaches will work and which will backfire. The Methane Guiding Principles’ AGMR program is a promising approach, because country leads have a head start in existing joint ventures and collaboration with NOCs, and they know the local landscape of service sector companies. Many IOCs have made public commitments on methane reductions, and this is one of the best ways for them to advance progress.

**Transparency is essential.** While it is encouraging that so many oil and gas companies have stepped up their methane commitments, performance is lagging. The World Bank **estimates** that global gas flaring increased last year by 9 billion cubic meters—an amount equivalent to all of Romania’s **gas consumption**. This is environmentally destructive and an enormous waste of resources. Much of this gas flaring takes place in countries where NOCs dominate oil and gas consumption, demonstrating the scale of the challenge. Understandably, despite the emerging methane pledges by many companies, including NOCs, **trust is low**. Comprehensive MRV programs carry far more weight than voluntary commitments with no reporting requirements for measurement-informed data.

**Money is rarely the problem.** A small number of emerging producers and NOCs are resource constrained, and some need financial support for methane abatement. That help could come from the World Bank’s GFMR Partnership or other dedicated lending from multilateral institutions. Investors continue to work on options to support methane reduction, such as sustainability-linked bonds or other debt instruments, and more work in this area is urgently needed. But numerous NOCs have sufficient resources to invest in MRV. The challenge is not lack of capital but lack of awareness or incentives. This suggests that creative approaches are required: to engage NOC executives and boards, to maximize influence through joint venture partnerships, and to promote NOC-to-NOC sharing and collaboration. In this regard, the OGDC was a promising start, and institutions like OGMP 2.0 offer useful ways to promote ongoing dialogue, commitments, and accountability.

**Human capacity is a challenge.** Many NOCs lack the technical expertise and dedicated teams to implement widespread MRV of methane emissions. OGMP 2.0 is an important way for companies to begin the journey toward measurement of emissions across assets, and the partnership offers technical guidance and learning opportunities. But even at larger, better-resourced NOCs, the number of staff



with the technical background to implement a methane quantification program, or to sort through various methane detection vendors and assess their capabilities and results, is often quite small, and the learning curve is steep. Academic partnerships can help, especially in building local capacity rather than relying on international consultants and trainers who may fly in for workshops or events but have limited opportunities to fill the skills gap. Some funding allocated for oil and gas methane reduction efforts should support academic centers of excellence in regions such as Southeast Asia, the Middle East, and Northeast Asia, to help develop new modeling capacity and train a new generation of methane scientists. Strong candidates include universities with close links to NOCs in countries such as the United Arab Emirates, Saudi Arabia, and Malaysia.

The past year was an eventful period for NOC commitments on methane reductions, but time is of the essence. Because methane is a short-lived climate pollutant and **climate forcer**, cutting methane emissions as quickly as possible is the key to slowing the pace of global warming. For the oil and gas industry, the critical target is to achieve major reductions by 2030, so the required financial and operational steps must start almost immediately. NOCs are complex and not especially nimble organizations, but the right mix of technical and financial support as well as public pressure will encourage them to move faster. The potential payoff is well worth the effort. ■

***Ben Cahill** is a senior fellow with the Energy Security and Climate Change Program at the Center for Strategic and International Studies (CSIS) in Washington, D.C.*

*Allegra Dawes, formerly an associate fellow with the CSIS Energy Security and Climate Change Program, made substantial contributions to this brief. The author is grateful to Zubin Bamji, Stan Sokul, Sonna Sathiamoorthy, Manfredi Caltagirone, and Roland Kupers for their comments. Any remaining errors are those of the author.*

*This report was made possible by Environmental Defense Fund as part of a project on financial sector engagement with national oil companies.*

**This report is produced by the Center for Strategic and International Studies (CSIS), a private, tax-exempt institution focusing on international public policy issues. Its research is nonpartisan and nonproprietary. CSIS does not take specific policy positions. Accordingly, all views, positions, and conclusions expressed in this publication should be understood to be solely those of the author(s).**

**© 2024 by the Center for Strategic and International Studies. All rights reserved.**