Natural Resource Governance Institute

Measure to Manage
MENA National Oil Companies' Methane Emissions Reduction Commitments



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Key Messages

As methane emissions gain greater global attention and financing becomes increasingly tied to climate performance, the participation of Middle East and North Africa (MENA) national oil companies (NOCs) in global frameworks and initiatives is expected to grow. However, this will likely be at a different pace due to differing capacity and objectives of each NOC in the region.

NOCs integrated into global financial markets are more likely to participate in multiple international climate initiatives and adopt ambitious. In contrast, isolated NOCs are slower to act unless driven by government mandates or policy priorities.

NOCs' methane abatement strategies can differ significantly than those of international oil companies (IOCs) due to differences in their ownership structures, regulatory environments, operational priorities and access to capital and technology. Most MENA NOCs operate largely within domestic regulatory frameworks which may be less stringent on methane emissions, especially in developing countries. Often, these NOCs prioritize economic growth and energy security over environmental or climate concerns.

The lack of consistent and reliable methane emissions data from some NOCs presents a significant barrier to effective abatement. Without accurate baseline measurements, it is difficult to identify priority sources, track progress and evaluate the effectiveness of mitigation efforts. Such data gaps can undermine transparency, making it challenging for stakeholders—including regulators, investors and international partners—to assess performance or offer targeted support.

Executive summary

Methane is a potent greenhouse gas (GHG) and the second-largest contributor to global warming after carbon dioxide, and more harmful in the short term. The global oil and gas industry accounts for nearly one quarter of global methane emissions. National oil companies (NOCs) produce about half of the world's oil and gas, with one third coming from the Middle East and North Africa (MENA). They play a pivotal role in addressing global methane emissions.

While many climate advocates call for an end to fossil fuel production, producing countries and their NOCs continue to argue that they can maintain production while reducing emissions, mainly through investments in mitigation technologies.

As part of its strategy in the MENA region, the Natural Resource Governance Institute (NRGI) works with governments, oversight actors and NOCs on policies and practices related to a just energy transition. In this context, NRGI commissioned this study to assess the role of seven NOCs in MENA—Abu Dhabi National Oil Company (ADNOC), Saudi Aramco, Petroleum Development Oman (PDO), Iraqi state oil companies, Bahrain Petroleum Company (Bapco), QatarEnergy and Sonatrach—in methane emissions and reduction strategies.

The key findings of this report are:

- *There are variations in commitments and capacity: NOCs in the region display varying levels of commitment to methane reduction. These differences are less a function of financial capacity than the result of influences from transparency commitments; technical and human capabilities; and political and economic constraints.*

- *ADNOC and Saudi Aramco are leaders in measurement and reporting: ADNOC and Saudi Aramco are the most advanced NOCs in the region at monitoring, reporting and reducing methane emissions. Both have access to significant resources and have committed large funds to decarbonization. In 2022, Saudi Aramco launched a USD 1.5 billion sustainability fund, while ADNOC allocated $15 billion to decarbonization projects by 2030, aligned with its net-zero 2050 target.*

- *Algeria and Iraq are lagging performers: In contrast, NOCs in Algeria and Iraq have shown limited willingness to commit to costly methane reduction initiatives, given their central role in national economies and dependence on oil revenues.*

- *Access to international debt and equity markets is a key driver of NOCs' climate commitments. Companies like Saudi Aramco, ADNOC and QatarEnergy, which are heavily integrated into global capital markets, are more responsive to investor pressure and have signed up to international initiatives such as the Oil and Gas Methane Partnership (OGMP 2.0). Conversely, NOCs with little or no exposure, such as Algeria's Sonatrach, face weaker external incentives to adopt ambitious methane strategies.*

- *There are emerging shifts: Some NOCs, particularly in Iraq, are beginning to seek external financing for modernization, exposing them to greater international scrutiny and creating opportunities to attract green finance for methane reduction.*

Finally, the report includes a set of recommendations for NOCs



Set time-bound targets:
NOCs should adopt measurable, time-bound methane reduction targets covering both intensity and absolute emissions, aligned with international frameworks and integrated into national decarbonization strategies.



Strengthen monitoring, reporting and verification mechanisms:
Governments and NOCs should enforce robust monitoring, reporting, and verification systems. Investments in advanced monitoring technologies and independent third-party verification mechanisms are essential to ensure credible and transparent data.



Engage international initiatives:
Participation in global methane initiatives provides critical technical and financial support, particularly for NOCs with limited resources. International frameworks can offer incentives and put on healthy pressure to enhance transparency and accelerate action.



Adapt strategies to national contexts:
Engagement approaches should reflect each NOC's political, economic and technical realities, recognizing the wide variation in capacity and commitment across the region.



Enhance transparency and accountability:
NOCs should adopt standardized, verifiable reporting practices in line with international best practice, bridging gaps between self-reported and independent data as well as reconciling ground-based and satellite measurements.



Facilitate access to finance and capacity-building:
NOCs such as Sonatrach and Iraqi state companies require targeted support to access external financing, technologies and skills. International initiatives should have a strong government backing and play a central role in capacity-building and institutional support.



Promote regional peer learning:
NOCs such as Saudi Aramco, ADNOC and PDO should be encouraged to share best practices and partner with regional peers to accelerate methane reduction efforts.

Introduction

The global oil and gas industry is responsible for nearly a quarter of global methane emissions, a powerful GHG and the second-largest contributor to climate warming after carbon dioxide (CO2). According to many oil-and-gas-producing countries and their NOCs, reducing emissions from the sector is one of the best options to slow the pace of global warming. NOCs produce about half of the world's oil and gas, making their participation vital in efforts to cut methane emissions, in addition to governments putting climate policies into practice.

This report examines what the NOCs of Algeria, Bahrain, Iraq,[1] Oman, Qatar, Saudi Arabia, and the United Arab Emirates (UAE) must do to implement their plans and raise their ambitions to reduce methane emissions. It summarizes each of their current methane emissions reduction initiatives; evaluates the implementation of their commitments; analyses the effectiveness of current commitments against global best practices; identifies any barriers and challenges for implementing their methane emissions reduction initiatives; and provides recommendations towards enhancing their commitments. The report also summarizes two case studies that highlight best practices and provide useful lessons from other NOCs in the region.

In the MENA region, NOCs typically serve as dominant operators across the oil and gas value chain, often holding majority stakes and operatorship in joint ventures (JVs) with international oil companies (IOCs), particularly in upstream assets. This contrasts with NOCs in other regions (for example, central and southern Africa or Latin America), where IOCs often act as lead operators under production-sharing or service contracts. The one exception in the MENA region is Iraq, which does not have a singular NOC, but rather a number of state-owned oil companies managed under the Ministry of Oil. The Ministry of Oil has exploration, development and production contracts with IOCs, and the IOCs act as lead operators.

For the rest of the major MENA NOCs like Saudi Aramco, ADNOC, QatarEnergy and Sonatrach, centralized operational control is the norm. This uniquely positions these NOCs to implement and enforce methane abatement strategies at scale, making their effective leadership on emissions reduction in the region essential.

However, NOCs' methane abatement strategies can differ significantly than those of IOCs due to differences in their ownership structures, regulatory environments, operational priorities and access to capital and technology. Most MENA NOCs operate largely within domestic regulatory frameworks which may be less stringent on methane emissions, especially in developing countries, and often prioritize economic growth and energy security over environmental or climate concerns, such as in Iraq. Unlike IOCs, which typically operate in multiple countries and face intense pressure from shareholders, environmental, social and governance investors, and public opinion to reduce emissions, NOCs may face less pressure from investors and international markets. Technical capabilities may also vary widely from one NOC to another (e.g., ADNOC, which has large technical capabilities, compared to Sonatrach, whose are limited).

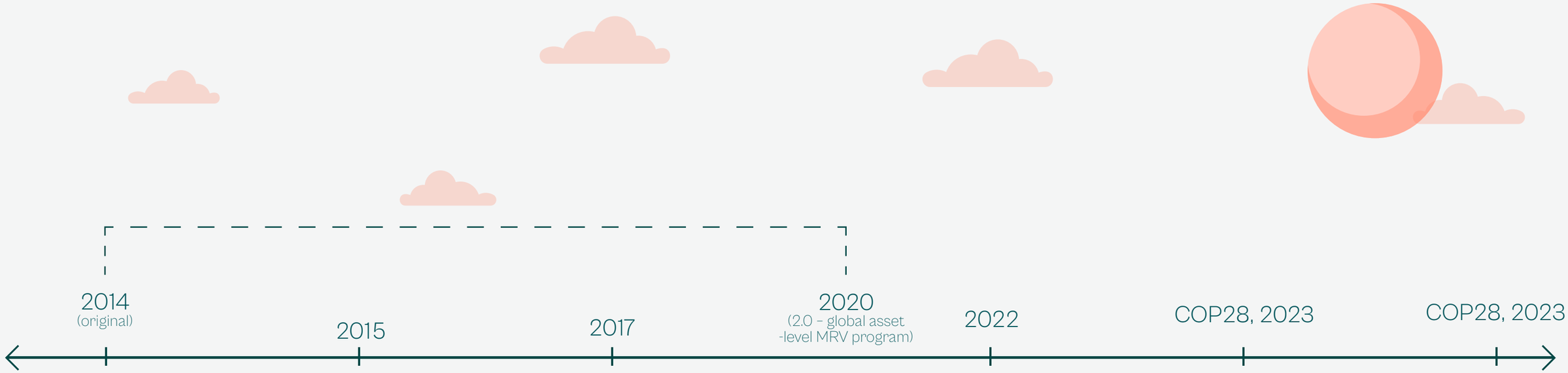
Additionally, a lack of consistent and reliable methane emissions data from some NOCs presents a significant barrier to effective abatement. Without accurate baseline measurements, it is difficult to identify priority sources, track progress or evaluate the effectiveness of mitigation efforts. Such data gaps can undermine transparency, making it challenging for stakeholders—including regulators, investors and international partners—to assess performance or offer targeted support. As a result, even when technical capacity exists, the absence of robust measurement, reporting and verification (MRV) systems can stall or misdirect abatement initiatives, reducing their overall impact.

This may also explain why MENA NOCs have shown more selective and varied engagement with voluntary global methane and climate initiatives, such as the OGMP 2.0, the Oil and Gas Climate Initiative (OGCI), the Oil and Gas Decarbonization Charter (OGDC) and the Global Flaring & Methane Reduction Partnership (GFMRP). These initiatives are increasingly being shaped—and strengthened—by the broader momentum of the global energy transition. With growing emphasis on low-emissions energy, such initiatives benefit from heightened visibility, stronger political will and rising expectations for transparency. This shifting context creates powerful incentives for companies to align with international best practices, making voluntary commitments more impactful.

However, while leading NOCs in the region such as Saudi Aramco, ADNOC and QatarEnergy have joined some of these initiatives—and have also been founding partners—many others remain on the sidelines and instead focus on partnering with multilateral agencies such as the World Bank for lower-cost, practical solutions (e.g., improving flaring efficiency and basic leak detection and repair (LDAR)) or technical support.

Many NOCs have signed up to these initiatives as part of their commitment to their countries' climate change mitigation commitments at the national level. For example, ADNOC is a signatory to several voluntary initiatives as part of the UAE's overall commitment to reducing climate change effects under the Federal Decree-Law No. (11) of 2024,[2] which includes methane emissions reduction. Qatar has adopted a National Climate Action Plan that aims to reduce GHG emissions by 25 percent by 2030, with a specific focus on reducing methane emissions,[3] and Iraq has unveiled an ambitious six-year roadmap to address the impact of climate change, including methane reduction.[4] Nevertheless, as methane emissions gain greater global attention and financing becomes increasingly tied to climate performance, the participation of MENA NOCs in these frameworks is expected to grow.

Measure to Manage
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Comprehensive, measurement-based reporting framework that improves the accuracy and transparency of methane emissions reporting for the oil and gas sector	*Global commitment by governments and oil companies to eliminate routine gas flaring at oil production sites by 2030*	*Global initiative that provides practical tools and guidance to reduce methane emissions across the natural gas value chain*		*Collective industry commitment to achieve near-zero methane emissions from oil and gas operations by 2030*	*Global commitment by oil and gas companies to achieve net-zero operations by 2050, eliminate routine flaring by 2030, and reduce methane emissions to near-zero*	*World Bank-led initiative to support developing countries in reducing methane emissions and eliminate routine gas flaring from oil and gas operations by 2030*

Table 1. Global methane reduction initiatives



Differing carbon intensities and priorities

MENA NOCs have widely differing carbon intensities[5] of oil and gas production—some, such as the UAE and Saudi Arabian NOCs, have the world's lowest, while others, such as the Omani and Qatari NOCs, have relatively higher intensities. This is because of the more dispersed and complex characteristics of their oil and gas reserves (in the case of Oman), or due to large liquefied natural gas (LNG) facilities (in the case of Qatar). Such differences in intensities can be partly caused by varying levels of methane leakage—for example, some NOCs have above-average levels, while others have significantly lower levels.

Additionally, the characteristics of each NOC fundamentally shape their individual methane reduction priorities. For example, QatarEnergy's focus on LNG production means that methane slip during liquefaction and transport is a key area for abatement, requiring abatement technologies that are very different to those of Iraq, for example, whose oil sector is marked by aging infrastructure and a heavy reliance on IOCs under services contracts. This often limits direct NOC control over operations and complicates coordinated methane management. Such distinctions will ultimately also influence how accountability actors—such as regulators, investors, or civil society—tailor expectations and interventions, recognizing that abatement opportunities and responsibilities vary significantly by context.

Figure 1. Upstream (Scope 1 and 2) emission intensities of national oil companies (tCO2e/kboe)[6]

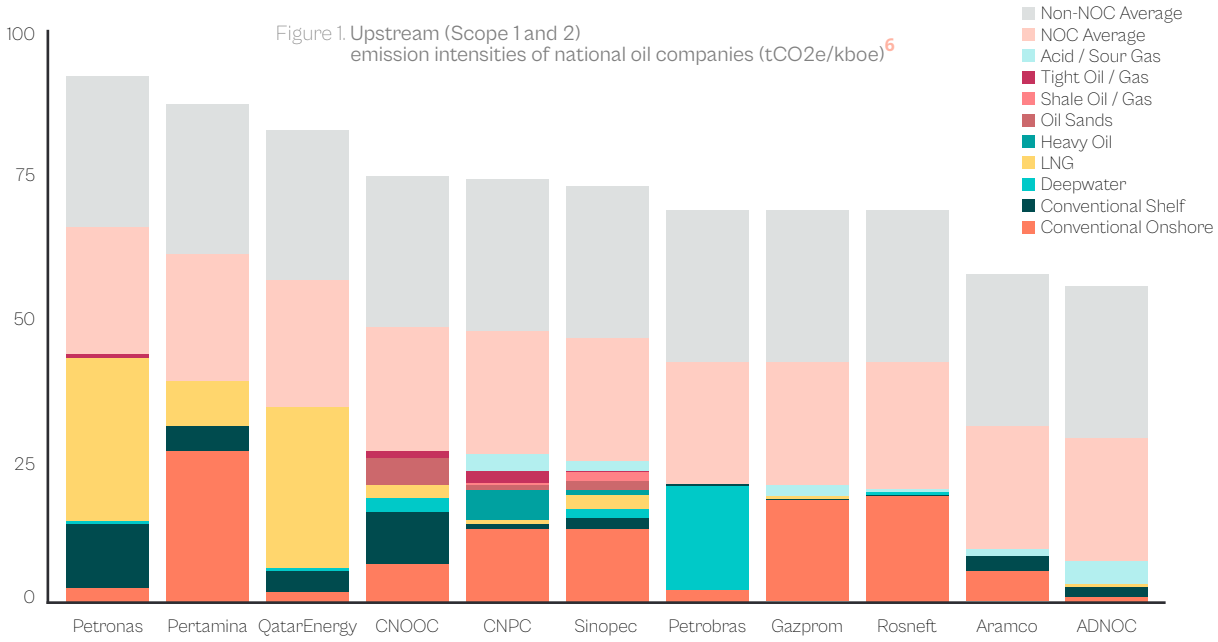
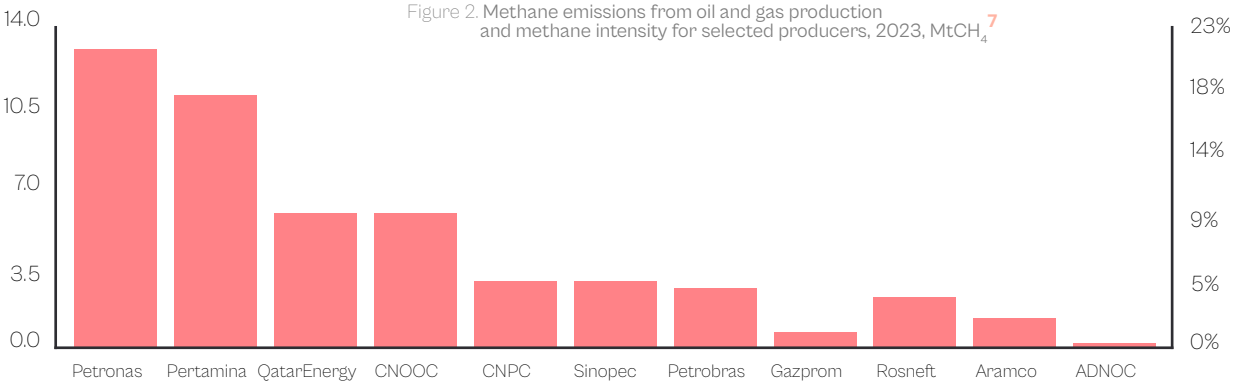


Figure 2. Methane emissions from oil and gas production and methane intensity for selected producers, 2023, $MtCH_4$[7]



Methane initiatives

In 2023, during the United Nations Framework Convention on Climate Change (UNFCCC) Conference of the Parties (COP) 28 Summit in Dubai, the OGDC was announced. Several NOCs from the MENA region, among others, joined the OGDC and signed their commitments to reducing GHG emissions, including methane. The OGDC builds on the earlier COP26 Global Methane Pledge, signed by countries representing 45 percent of global methane emissions and aiming to mobilize efforts to collectively reduce these emissions by 30 percent from 2020 to 2030. The new 2023 OGDC has aimed to achieve "near-zero methane emissions" on signatories' upstream emissions by 2030—defined as reaching 0.2 percent of total production—as well as eliminating routine flaring, thereby enhancing measurement, monitoring, reporting and independent verification of their methane emissions.

In 2024, at COP29 in Baku, Azerbaijan, the European Commission launched a new Methane Abatement Partnership Roadmap to further accelerate the reduction of methane emissions associated with oil and gas production and consumption, in collaboration with a number of partner countries, international organizations, non-governmental organizations (NGOs) and development banks. The roadmap provides a blueprint for cooperation between oil and gas exporters and importers to support companies—including NOCs—in improving their MRV[8] systems to reduce methane emissions. Still, as a roadmap, it does not specify an actual methane emissions reduction target, and instead encourages oil and gas companies to build on the OGMP 2.0 principles and other frameworks, such as those under development by the international GHG Supply Chain Emissions Measurement, Monitoring, Reporting and Verification Working Group in the strengthening and development of robust MRV systems towards future near-zero methane emissions.[9]

The OGMP was created in 2014 as a voluntary initiative for companies looking to reduce methane emissions across their value chains. In 2020, the OGMP launched its 2.0 version as an updated reporting framework to encourage companies to move toward measurement rather than estimates of their methane emissions, making it a global asset-level MRV program. So far, the OGMP 2.0 is the most sophisticated reporting framework in terms of methane emissions MRV, requiring oil and gas companies to report and document progress towards the most rigorous reporting levels which are Level 4 and 5 which include reporting from the source (level 4) and reporting that requires using advanced techniques such as airborne surveys, satellites, drones, or continuous monitoring systems to capture methane emissions at the entire facility level (level 5) including annual reporting on emissions with a description of data quality. By comparison, the OGDC is a broader initiative focused on an overall reduction in GHG emissions, including methane, and focuses more on policy advocacy, technological innovation and long-term sustainability goals as part of a larger climate strategy. Under the OGMP 2.0, companies are awarded the Gold Standard when they report all their assets at Level 4 standard and show efforts to move toward Level 5, or deliver explicit and credible paths to reporting at Levels 4 and 5 within three years.

Monitoring mechanism

With COP30 fast approaching in Belém, Brazil in November 2025, follow-through on the various initiatives outlined above is uncertain, and transparency is required in order to monitor progress. Many NOCs in the MENA region lead in technical capabilities and institutional capacities to achieve targets, but others need guidance, technical support and capacity-building to ensure better MRV of their methane emissions. A few may also need financial support from multilateral institutions, industry associations or financial sector institutions. In recent years, as awareness and concern over oil and gas methane emissions has grown, promising new initiatives have promoted industry collaboration and assistance for NOCs from environmental groups and climate activists.

Dark blue = Company has met criteria.
Medium blue = Company has not fully met criteria.
Light blue = Company has not met criteria.

Target setting
Net-zero operations by or before 2030
Emissions targets applied to operated and non-operated assets
Near-zero methane upstream emissions by or before 2030
Zero routine flaring by 2030
Investment in clean energy
Continuous improvement and interim ambitions
Strategies for implementation
OGMP 2.0 membership
Identify sources of methane emissions and abatement opportunities
Measure emissions and actions to prove target achievement.
Economic analysis of methane abatement opportunities
Best practice implementation and collaboration
Corporate economic incentives
Quantified plans for reducing Scope 1 2 CO2 emissions
Quantified plans for investing in clean energy technologies
Disclosure and reporting
Frequency and verification of indicators
Reporting of GHG emissions over time
Methane emissions volume
Upstream methane intensity
Flaring emissions volume
Flaring emissions intensity
Disclosure of emissions from operated and non-operated assets
Divested and acquired emissions
Investment in Scope 1 2 CO2-equivalent GHG emissions reductions
Investment in methane abatement
Investment in clean energy technologies

Table 2. Illustration of an accountability framework for assessing progress towards methane abatement goals[10]



Middle East and North Africa national oil company profiles

United Arab Emirates: Abu Dhabi National Oil Company

Technological investments and innovation

Solutions employed
Advanced process control (APC)
Satellite imaging, aerial drones and robotic inspectors
Advanced imaging sensors and laser dispersion spectroscopy
Mid-infrared open path chirped laser dispersion spectroscopy

Methane emissions reduction target : Near-zero emissions by 2030



Oil and gas production phase-down

Solutions employed
Highly unlikely, goes against ADNOC's planned ambitious oil and gas expansion programs to 2030

Nature-based solutions

Solutions employed
10 million mangroves planted by 2030 for carbon sequestration—not specifically targeted to methane emissions

Policy and regulatory measures

Solutions employed
Signatory to OGMP 2.0, GFMRP, World Bank Zero Routine Flaring by 2030 Initiative, OGDC, OGCI "Aiming for Zero"

Methane emissions reduction target : Near-zero emissions by 2030

OGMP 2.0 Standard achieved



OGMP 2.0 Gold Standard Pathway
Achieved in 2022 and 2023



OGMP 2.0 Gold Standard Reporting
Achieved in 2024

Table 3. Summary of Abu Dhabi National Oil Company strategies and solutions to achieve near-zero methane emissions by 2030

OGMP 2.0 ✓	OGCI " Aiming for Zero" ✗	World Bank Zero Routinee Flaring by 2030 Initiative ✓	Methane Guiding Principles ✗	OGDC ✓

Table 4. Abu Dhabi National Oil Company's membership in global methane emissions reduction initiatives

The UAE has five state-owned oil companies—ADNOC, the Sharjah National Oil Company, the Emirates National Oil Company, the Dubai Petroleum Establishment and the Ras al Khaimah Gas Company—but is mainly represented by ADNOC, as it is the lead NOC for the country. ADNOC has vast reserves and a large production portfolio compared to its counterparts. ADNOC is also a member of the OGMP 2.0, one of the founders of the **OGDC**, and a signatory to the World Bank's **Zero Routine Flaring by 2030 Initiative**, but it is not signed up to the OGCI "Aiming for Zero" or the Methane Guiding Principles.

ADNOC attained the OGMP 2.0 **Gold Standard Pathway Status** in 2022 when it announced its 0.15 percent methane intensity target by 2025, the lowest in the Middle East and lower than the OGMP 2.0's ambition of 0.2 percent. This coincided with the launch of UNEP's 2022 International Methane Emissions Observatory, a public global dataset of empirically verified methane emissions to provide open, reliable and actionable data. In 2024, ADNOC transitioned to the **Gold Standard Reporting Status**[11] for having effectively implemented Level 4 measurements for all material operated assets and attempting to reach Level 5.

Since 2022, ADNOC has also pursued efforts to implement state-of-the-art, next-generation innovative methane emissions reduction solutions. This has included several partnerships with methane mitigation solutions innovators, such as Baker Hughes, with which ADNOC partnered to introduce flare IQ technology, an APC application to optimize flare operations. This and ADNOC's other partnerships demonstrate its commitment to real-time improvement in combustion efficiency and fuel savings, as well as digitalization and artificial intelligence (AI) to expand methane emissions reduction capabilities across its asset portfolio. The company has also installed British climate tech firm Levidian's patented LOOP technology at the Habshan Gas Processing Plant to capture carbon from methane and transform it into graphene and clean hydrogen.[12] ADNOC also uses advanced AI technology to monitor all processing facilities and flag conditions that could lead to potential flaring requirements, allowing preventative action to be taken. These include: smokeless flare operations (when operated in cascade mode); real-time monitoring of combustion efficiency; net heating value; CO2, CO and volatile organic compounds; static emissions factors replacement with real-time combustion efficiency (CE) and destruction and removal efficiency (DRE) measurements; and early intervention by having access to real-time combustion efficiency data on the production floor.[13]

Separately, a Strategic Collaboration Agreement with Microsoft, signed in November 2024, will explore opportunities to accelerate AI deployment in methane reduction initiatives aligned to the OGDC.[14] It will also promote systemic upgrades to achieve the near-zero target by 2030.

So far, ADNOC's methane emissions quantification and reduction initiatives have resulted in upstream methane emissions reducing by 20 percent, from 35.63 kilotonnes (kt) in 2022 to 28.5 kt in 2023[15].

The company credits this achievement to several factors:

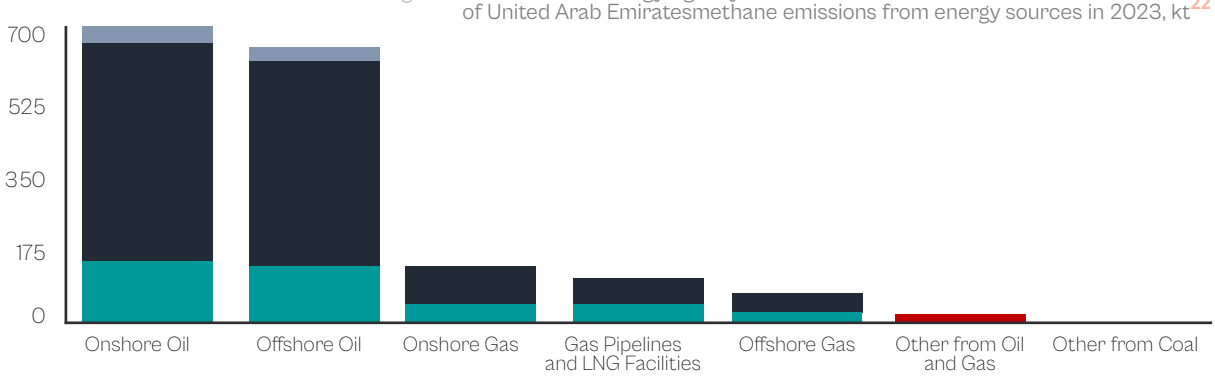
- *The use of flare recovery systems in gas processing plants has been increasingly effective;*
- *The replacement of on-site power generation with imported grid power has reduced fuel combustion;*
- *operational enhancements to rotating equipment have led to greater energy efficiency;*
- *LDAR surveys and interventions have led to higher accuracy of methane emissions data based on actual measurements.*

Although enhanced data accuracy typically results in initially finding more methane leaks, over time it can help to reduce methane emissions by targeting specific leak sources. This makes it harder to underestimate emissions or avoid reporting leaks, pushing the adoption of best practices and more effective technologies.
However, ADNOC's figures have come under criticism by climate watchdogs and scientists, including by Harvard University, which independently estimated the UAE's methane leaks in 2019 at 3.3 percent,[16] reflecting "leaky infrastructure combined with deliberate venting or incomplete flaring of gas."[17] Satellite-based studies provide more accurate estimates of methane emissions and may indicate underreporting in ADNOC's case due to outdated monitoring methods in 2019, potential omissions (intentionally or unintentionally), or having a higher number of dispersed wells with non-centralized processing, particularly at older fields. The latter also seems to be the case in Oman, which has an even higher methane intensity of 8.9 percent. However, such estimates have been challenged by other similar independent assessments. For example, the King Abdullah Petroleum Studies and Research Center (KAPSARC) estimated, also through satellite imagery, a methane intensity of 0.87 percent for the UAE in 2023.[18] Such differences can be attributed to varying methodologies, but large gaps may imply a higher level of generalization in assumptions. This is also true for the Harvard University's assessment of Qatar's intensity, which was found to be 0.06 percent (minus LNG facilities) due to a smaller number of high-production wells with centralized processing, but seems doubtful against the UAE's 3.3 percent. Another factor is that Qatar is a small country, and its geographic characteristics limit the satellite detection of methane.[19]

ADNOC reported its total methane emissions from upstream oil and gas operations in 2021 as 38 kt, which, according to the International Energy Agency (IEA), represents 3 percent of the UAE's total methane emissions from such operations (Figure 3).[20] This appears to contrast with data showing that ADNOC is responsible for 62 percent of all upstream oil and gas in the UAE, suggesting that its methane emissions should proportionally reflect a larger share of the total, unless other factors like methane capture or offsets are at play.

According to the IEA, the UAE released 1.64 million tons (Mt) of methane in 2023 from energy operations, 348 kt of which was fugitive, 73 kt flared and the rest—1.22 M—vented (or directly released into the atmosphere). However, it should be noted that the IEA is also counting methane emissions from the supply and use of fossil fuels, not just production. This contrasts with ADNOC, which reports figures only for its Scope 1 and 2 emissions. An investigation published in November 2023 by The Guardian and DeSmog appears to do the same, revealing that ADNOC flared approximately 11.1 BCM of gas between 2012 and 2022,[21] which would be about 7.15 Mt over 10 years, or 0.72 Mt per year on average across the entire energy value chain (upstream to end-use). However, it fails to specify that only a small percentage of this would be actual methane leakage, since the rest is combusted.

Figure 3. International Energy Agency estimate of United Arab Emiratesmethane emissions from energy sources in 2023, kt[22]



While these concerns may be valid, ADNOC's attainment of the OGMP 2.0 Gold Standard Reporting Status seems to be the company's answer to many of them, namely, introducing more stringent reporting standards and a reconciliation of bottom-up and top-down methane measurements. It should be noted that incomplete data for operated assets and missing data for non-operated portfolios prevents oil companies from reaching the Gold Standard. This indicates that, for it to have achieved this standard, reporting from ADNOC has been at a better level of asset granularity alongside the deployment of various technologies for site-level measurements, since at least 2021.

ADNOC reported a methane intensity of 0.07 percent in 2022,[23] which increased slightly to 0.08 percent in 2023, calculated from 28.5 kt of CH4 emissions[24] from 55.6 billion cubic meter[25] of natural gas production. The 2025 target of 0.15 percent methane intensity implies a near 100 percent increase from 2022–2023 levels. ADNOC has big gas expansion ambitions, which could increase overall leakage, but should not raise leakage rates.

Overall natural gas production is targeting an increase of at least 3.47 billion cubic meter this year with Phase-1 (Dalma) of the Hail and Ghasha offshore sour gas concession coming online in late 2025,[26] and perhaps 0.5 BCM from a planned expansion of 1.5 BCM by 2027 from the Shah Gas Project. A financial investment decision (FID) for the Rich Gas Development program in 2025 will increase ADNOC's current gas processing capacity by an additional 15.3 BCM or more,[27]while a FID for the Bab Gas Cap in 2026 is expected to boost processing capacity by 20 percent, or over 18.4 BCM,[28] highlighting the significant gas expansion plans the company is targeting in the short term to achieve gas self-sufficiency by 2030.
An additional ~1 billion cubic meter is also being realized from the Ruwais-Diyab unconventional gas concession, which is slated to produce 10.2 BCM by 2030.[29] The concession might increase overall leakage if it has many dispersed wells and does not use green completions,[30] but these should be offset by better emissions reduction technologies. In any case, the 0.15 percent target is defined by ADNOC as a *"world-leading methane intensity target"* that *"should not be confused with the actual (lower) intensity"* it aims to deliver.[31]

A simple summing of the new projects under development to 2030 suggest a gas output of ~71 billion cubic meter. ADNOC has committed to maintaining its methane intensity at 0.15 percent, which suggests 76.3 kt of CH4 emissions, more than double the level of 2022 emissions, but still lower than all other major world gas producers in 2023 (Figure 2). ADNOC reflects the expectation of higher emissions in its overall decarbonization approach for gas to 2030, noting that growth projects will result in an increase in unabated Scope 1 and 2 GHG emissions. However, this could be reduced by undertaking key abatement levers, including clean power, renewable energy, carbon capture and increased efficiency.[32]

Similar efforts could also further narrow overall methane emissions through, for example, satellite imaging, aerial drones and robotic inspectors equipped with advanced imaging sensors and laser dispersion spectroscopy. Mid-infrared open path chirped laser dispersion spectroscopy has already been identified as being able to provide automated, continuous and remote emissions monitoring at facility scale, and characterizes fairly low leak rates,[33] enhancing methane emissions mitigation and reduction efforts. Efforts to improve satellite imaging over water are also being developed. Given that much of ADNOC's production is offshore, this could enable an even deeper level of detection through enhanced satellite constellations (such as GHGSat's satellite fleets); advanced remote sensing techniques; and the integration of multiple monitoring platforms, including aircrafts, drones and fixed sensors.



Bahrain:
Bahrain Petroleum Company

Technological investments and innovation

Solutions employed
Emission Monitoring System on all air point-source emissions

Methane emissions reduction target : ***No methane reduction target***

Oil and gas production phase-down

Solutions employed
Highly unlikely, goes against Bapco's oil and gas explorations and refinery upgrade plans

Methane emissions reduction target : ***N/A***

Policy and regulatory measures

Solutions employed
Signatory to OGMP 2.0,
World Bank Zero Routine Flaring by 2030 Initiative, OGDC

Methane emissions reduction target : ***Eliminate routine flaring by 2030***
Achieve net-zero operations by 2050

Table 5. Summary of the Bahrain Petroleum Company's strategies and solutions to reduce methane emissions

OGMP 2.0	OGCI " Aiming for Zero"	World Bank Zero Routinee Flaring by 2030 Initiative	Methane Guiding Principles	OGDC
✓	✗	✓	✗	✓

Table 6. Bapco's membership in global methane emissions reduction initiatives

Bahrain's crude oil production was reported at 183,419 barrels per day in December 2023. Most of Bahrain's oil is produced from two fields: the onshore Bahrain field; and the offshore Abu Safah field, which it shares with Saudi Arabia. The majority of Bahrain's oil production is refined by the state-owned Bapco Refining, which processes over 267,000 barrels of crude oil daily, with over one-sixth originating from the Bahrain field and the remainder imported from Saudi Arabia via pipeline.[34]

While Bapco's Sustainability Report 2022 to 2023 indicates that the company has been recording its GHG emissions since 2014, it does not publicly disclose specific GHG emissions data, and it does not provide any methane-specific emissions data or targets. The report only acknowledges that Bapco is preparing for an annual GHG inventory, but there are no signs for a methane MRV framework. However, Bapco has also reported its efforts to take significant steps to reduce its carbon footprint.[35] Bapco Energies, along with the government, launched a sustainability-linked financial framework (SLFF) to raise funds through bonds and sukuk. Backed by Standard Chartered, the SLFF raised $2.2 billion in late 2023, with interest rates tied to emissions targets. These include cutting emissions intensity by 25 percent by 2030; Scope 1 and 2 emissions by 30 percent by 2035; and Scope 3 emissions by 30 percent by 2035, aiming for net-zero by 2060. Funds will support both operational emissions cuts and government spending, aligning with Bahrain's Vision 2030 goals.[36]

Bapco pledged to achieve net-zero operations by 2050, and to eliminate routine flaring by 2030. It is a signatory of the COP28 OGDC and joined OGMP 2.0 in 2023.[37] The company is also a member of the World Bank's Zero Routine Flaring by 2030 Initiative.

However, Bapco has not yet outlined specific methane measurement and reduction plans within its broader decarbonization frameworks. Compared to regional peers such as ADNOC and Saudi Aramco—both of which have adopted methane intensity targets—Bapco's methane management approach appears underdeveloped and lacks transparency. External data sources such as Kayrros, an independent scientific body which consolidates methane emissions data from multiple satellite constellations into a single platform, estimates Bahrain methane intensity of its oil and gas production at 0.82 kg/barrels of oil equivalent (boe).

Bahrain's commitment to methane emission reduction is important, as it continues to invest in oil and gas exploration, and is carrying out a $7 billion upgrade of its refining capacity. Initially slated to be completed in 2022, the project was delayed by the pandemic, but according to government announcements it is now more than 80 percent complete.[38] The expansion aims to boost Bapco's processing capacity from 267,000 to 380,000 barrels per day.[39] This expansion risks methane leakages and flaring if not developed with high environmental standards.



Iraq: Ministry of Oil

Technological investments and innovation

Solutions employed

Vapor recovery units (VRUs) for oil storage tanks to target methane gases LDAR
Satellite technology pilot (GHGSat)

Methane emissions reduction target : ***Zero Routine Flaring by 2030***

Oil and gas production phase-down

Solutions employed

Highly unlikely, goes against Iraq's planned ambitious oil and gas expansion programs

Nature-based solutions

Solutions employed

Alternate wetting and drying in agriculture
Solid Waste Management Act (indirectly reduces methane)

Policy and regulatory measures

Solutions employed

Signatory to GFMRP, World Bank Zero Routine Flaring by 2030 Initiative, OGCI "Aiming for Zero"

Methane emissions reduction target : ***Zero Routing Flaring by 2030***

Table 7. Summary of Iraq's strategies and solutions to achieve near-zero methane emissions by 2030

OGMP 2.0	OGCI " Aiming for Zero"	World Bank Zero Routinee Flaring by 2030 Initiative	Methane Guiding Principles	OGDC
✗	✓	✓	✗	✗

Table 8. Iraq's membership in global methane emissions reduction initiatives

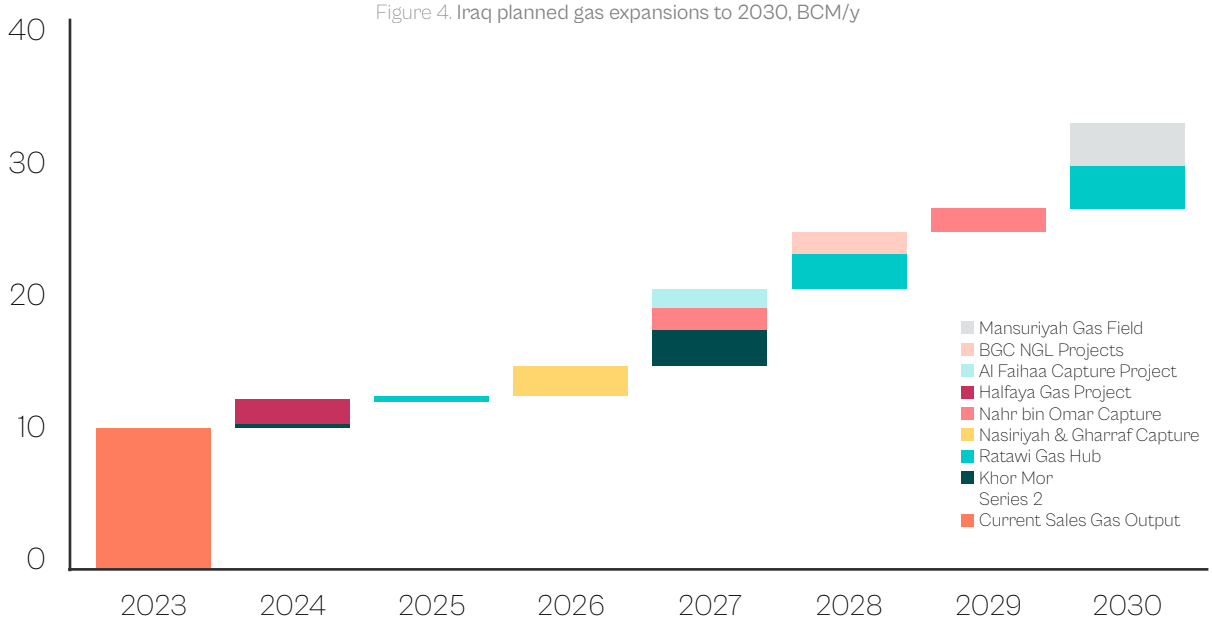
Although Iraq is the second largest oil producer in the Organization of the Petroleum Exporting Countries (OPEC) after Saudi Arabia, it is a net natural gas importer (consuming more natural gas than it imports) because of a lack of infrastructure investment. Until 2024, Iraq was flaring roughly 17.7 BCM[40]—approximately 55 percent of all produced raw gas in the country[41] (excluding the Kurdistan Region)—and 86 percent of the associated gas from oilfields, making up 65 percent[42] of all produced gas (20.6 BCM). According to the World Bank's Global Gas Flaring Tracker, Iraq is the world's second-largest flare gas emitter after Russia, with the Lukoil-operated West Qurna-2 oilfield being the biggest source of flaring in the world.[43] The Ministry of Oil does not operate most fields, and it is therefore dependent on IOC partners for methane mitigation efforts. Some of these companies have their own methane reduction targets, but many do not.

Although Iraq accounts for just 0.6 percent of global CO2 emissions, it has one of the highest levels of carbon intensity in the region. This holds true even for its methane emissions, which are relatively low compared to some of the world's largest emitters, but its methane intensity is the highest regionally , at 17.6 percent[44] due to flaring. While flaring is intended to burn all the natural gas being released by oil extraction, this is almost never the case, and it causes dangerous levels of "fugitive methane" to escape into the atmosphere. In Iraq's case, this is further compounded by issues of venting, leaks, incomplete combustion and accidents associated with the country's poor energy infrastructure. Multiple times, satellites have detected large plumes of methane gas over southern Iraq from pipeline leaks and other damaged infrastructure, which have spewed as much as 130 t/h of methane at a single time.[45]

Efforts to mitigate and reduce methane emissions in Iraq have mostly been through gas processing projects that can capture flare projects in order to monetize crucial associated gas and generate much needed electricity to meet the country's chronic power deficit. These schemes include the high-profile 600 million standard cubic feet per day (MMscf/d) Ratawi Gas Hub Project with TotalEnergies as part of its $27 billion contract to develop several integrated projects, including the Ratawi field; the Common Seawater Supply Project; a 1 GW solar plant, a 200 MMscf/d capture project at the Nasiriyah and Gharraf fields by the end of 2026; a 300 MMscf/d capture project at Nahr bcpin Omar in two phases with China Petroleum Engineering & Construction Corporation; a 125 MMscf/d capture project at the Al Faihaa oilfield; two new 140 MMscf/d Basrah Gas Company NGL projects; a 300 MMscf/d capture project at Halfaya with China National Petroleum Corporation (launched in June 2024); and 410 MMscf/d project from the Kirkuk-area fields that will be rehabilitated under BP. Additionally, oil production expansions at other prolific fields, such as West Qurna-1, could yield additional associated gas for capture and prevent flaring.

Logically, these projects should add up to 18.7 BCM of gas to Iraq's overall output, i.e., over 100 percent of current flared volumes (some fields will still be flaring, however, particularly in the north of the country). Iraq is targeting to end flaring completely by the end of 2028, which is an ambitious timeline. However, the country may be able to achieve close to 100 percent associated gas use, even if not fully within that timeframe. Overall, Iraq's roadmap for methane mitigation relies on the Ministry of Oil's decarbonization initiatives, which mainly include flare gas capture through the projects mentioned above, and the use of VRUs and LDAR systems. Other features identified in the roadmap include increased electrification of oil production processes and the potential use of green hydrogen, but this is mostly at a conceptual stage for now, despite plans announced in February 2024 to build an 800 tonne per year green hydrogen project for the South Refineries Company.[46]

Figure 4. Iraq planned gas expansions to 2030, BCM/y



Although Iraq's efforts to manage methane emissions are less sophisticated than those of its Gulf counterparts, the country has made progress in building large VRUs that work to address gas emissions accumulated above storage tanks. These units are mainly for oil storage tanks in the city of Basrah, where high temperatures affect the rate of accumulation. The Ministry of Oil has been cooperating with Carbon Limits, a Norwegian carbon mitigation company, since 2016[47] to build VRUs for oil storage tanks in order to target methane gases. VRUs can preserve more than 1.8 mcm of methane,[48] making an effective contribution to saving gas as well as gas condensate, thus preserving the environment. Additionally, Carbon Limits has provided several of the Ministry's subsidiary oil companies with its "Mist" platform to detect and quantify methane emissions. For example, the Midland Oil Company concluded training and deployment of Mist for its upstream operations in December 2023 to create a robust methane inventory, resulting in more accurate data to build an action plan to mitigate emissions.[49]

LDAR projects are also being undertaken in cooperation with Carbon Limits to inspect, repair and trap methane leaks at the Basrah Gas Company.[50] Carbon Limits was also part of a nine-month pilot program with OGCI and GHGSat, covering six oilfields in Iraq from late 2021 to 2022 for satellite monitoring of methane leaks, 80 percent of which identified and quantified methane emission rates at 1.5 tonnes per hour (t/h) of methane on average.[51]

To more comprehensively meet the Global Methane Pledge's goals, Iraq is also receiving support from the Climate and Clean Air Coalition in cooperation with the Clean Air Task Force towards developing its national methane emission inventory and mitigation assessment for the oil and gas sector.[52] These initial actions are essential for setting the stage for subsequently developing the overall methane mitigation assessment—a more comprehensive document which tells policymakers where the sources of emissions are, how large they are and the potential costs of mitigation, among other information.

Iraq's roadmap for energy and carbon reduction	
Ministry of Oil: Reducing the carbon footprint of oil and gas production	*Ministry of Electricity: Improving energy efficiency and renewable energy rollout*
Reduce flare gas burning	*Switching from heavy fuel to gas*
Reduce methane emissions (LDAR, VRU)	*Converting simple cycle to combined cycle plant*
Electrification of oil production processes	*Renewable energy plan, i.e., 12 GW by 2030*
Green hydrogen	

Table 9. Insight into Iraq's strategy for energy and carbon reduction[53]

Despite these positive developments, further action on reducing methane emissions has been limited. In fact, indications suggest that the Ministry of Oil lacks confidence in its ability to reach its target for zero flaring by the end of 2028. This is because of the multiple times the goal has been pushed back – for example, the target to end flaring by 2022 was postponed to 2025 in 2020, and has now been postponed to 2028. Despite progress in building necessary infrastructure to capture and benefit from the otherwise flared gas, more than 50 percent of gas from the wellheads is still flared today. Obstacles to scaling-up methane emissions reduction efforts include: lack of transparency; poor coordination within the Ministry of Oil and with other government entities; unfavorable contracts for the IOCs that do not include economically viable offtake solutions for captured associated gas; and a fragile political will. Cost is also an important consideration, but funding for such initiatives naturally follows from transparency and strong support from the government. For example, because oil sales account for nearly 90 percent of government revenue, decision-makers often have little incentive to allocate substantial funds to a sector that yields relatively minimal cash flow. Oil revenue typically goes to supporting an ever-growing public sector and associated patronage networks, and efforts to mitigate harmful emissions remain on the backburner.

Ongoing disputes over oil management and revenue sharing between the Kurdistan Regional Government and Baghdad have also led to significantly reduced cooperation on joint solutions and investments in flaring and methane reduction. Despite Iraqi officials asserting that contracts have been signed to capture all flared gas,[54] apart from a recently signed BP deal for the Kirkuk area, none of the announced initiatives target flaring in oilfields north of Baghdad.

Another factor is that key parties that control the sources of gas flaring—chiefly NOCs—are reluctant to share data about flaring. For their part, IOCs have been reticent in openly reporting flaring data from operations in Iraq on the premise that they neither own nor control those assets.[55] In April 2024, BP, the operator of the giant Rumaila oilfield, was hit by legal action alleging that its excessive gas flaring caused the death of a young Iraqi. In response, BP appeared to recognize that the rate of flaring at Rumaila was too high, and it was working hard to "reduce instances of flaring in Iraq."[56] While the Ministry of Oil acknowledges that flaring is a serious problem and affirms its intent to end it, the lack of reliable information undermines accountability efforts. What further compounds the issue is that the Ministry today shares much less information about its oil and gas operations than it did 15 years ago. For example, it has stopped reporting its monthly oil and gas statistics to the Joint Organizations Data Initiative, and also seems to have excluded the Kurdistan region's oil production from the data it reports to OPEC. Similarly, it has stopped publishing the volumes of used and flared natural gas reported by its North and South Gas companies, and is now also withholding pricing and revenue figures. It also consistently releases export volume data a month late.

Without regular reporting of use and flaring data that can be used to track progress, confidence in sporadically released numbers is undermined. Recent claims by the Ministry that flaring has reduced by 70 percent continue to be met by skepticism in the press,[57] especially because they do not explain where and how that reduction has been achieved. The other transparency shortcoming is the Ministry's failure to publish the provisions of new energy contracts, providing the public with no means of knowing whether the contracts contain sufficient assurances against flaring.

Oman:
Petroleum Development Oman

Technological investments and innovation

Solutions employed
Flare reduction and energy efficiency initiatives
Satellite monitoring, LDAR
Video-imaging spectro-radiometry technology as well as drone and ground-based surveys in collaboration with the German Aerospace Center (DLR)
Converting from open cycle to closed cycle gas turbine and renewable energy projects for power generation

Methane emissions reduction target : ***Near-zero emissions by 2030***
Net-zero emissions by 2050

Oil and gas production phase-down

Solutions employed
Highly unlikely

Nature-based solutions

Solutions employed
1.5 million trees by 2030—not specifically targeted to methane emissions
So far, PDO has planted 116,000 trees, distributed 47,000 seedlings, and used both drone and traditional methods to sow two million mangrove seeds. Additional efforts include planting 11,000 trees in Dhofar and Ras Al Shajer Nature Reserve.

Policy and regulatory measures

Solutions employed
Signatory to OGMP 2.0, World Bank Zero Routine Flaring by 2030 Initiative, OGDC and OGCI "Aiming for Zero"

Methane emissions reduction target : ***Near-zero emissions by 2030***
Net-zero emissions by 2050

OGMP 2.0 Standard achieved

OGMP 2.0 Gold Standard Pathway
Achieved in 2023

OGMP 2.0 Gold Standard Reporting
PDO collaboration with DLR aims to benchmark existing detection technologies and achieve the Level 5 Methane Reporting Standard

Table 10. Summary of Petroleum Development Oman's strategies and solutions to achieve near-zero methane emissions by 2030

OGMP 2.0	OGCI " Aiming for Zero"	World Bank Zero Routinee Flaring by 2030 Initiative	Methane Guiding Principles	OGDC
✗	✓	✓	✗	✗

Table 11. PDO's membership in global methane emissions reduction initiatives

Oman has three state-owned oil and gas companies: PDO; OQ (formerly known Oman Oil Refineries and Petroleum Industries Company), responsible for Oman's refining sector; and Oman Liquefied Natural Gas. PDO holds most of Oman oil reserves and is the leading exploration and production (E&P) oil company in Oman. It accounts for the more than 70 percent of Oman's crude oil production, as well as a significant proportion of the country's natural gas supply. It operates some of the largest oilfields in the country, such as Marmul, Fahud and Yibal fields. The Omani government owns 60 percent of PDO, while 34 percent is owned by Royal Dutch Shell, 4 percent by TotalEnergies and 2 percent by PTTEP (Thailand). PDO plays a major role in Oman's economy and is a key employer in the country, contributing to Oman's GDP and government revenues through oil and gas sales.

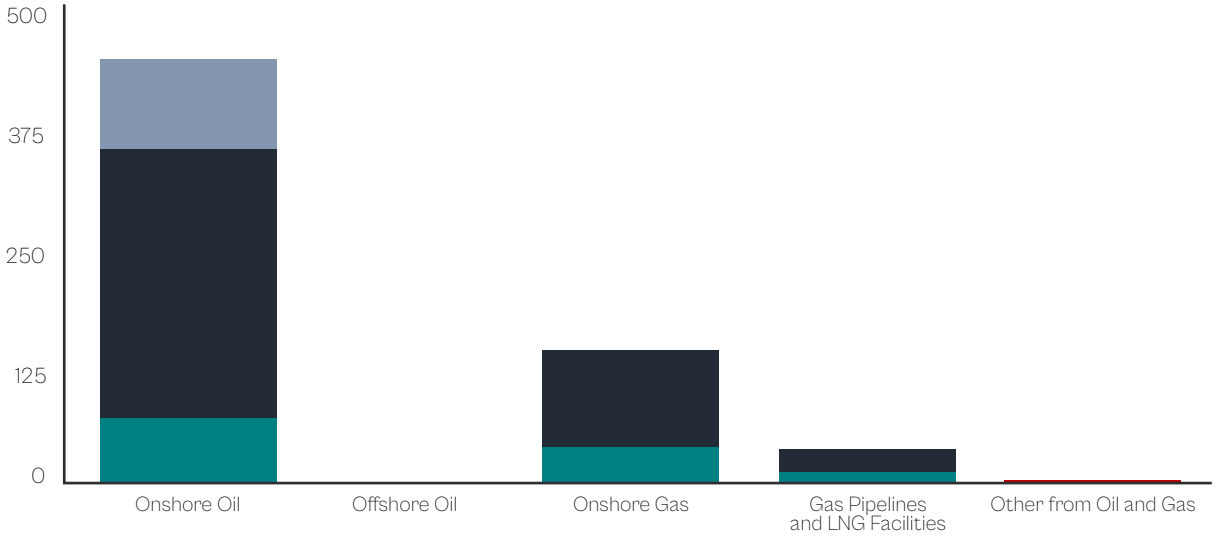
PDO reported its goal to reducing methane emissions, targeting near-zero emissions by 2030. It also aims to achieve net-zero emissions by 2050, and continues to enhance its methane intensity reduction efforts. According to PDO reporting, in 2023, it cut GHG emissions by 1 percent, lessening methane through flare reduction and energy efficiency initiatives. That year, PDO also achieved a 2.4 percent reduction of Scope 1 and 2 emissions compared to its 2021 baseline.[58] These are attributed to the company's efforts in reducing methane discharges; the implementation of flare reduction opportunities; power generation through converting from open cycle to closed cycle gas turbines; and renewable energy projects. Its methane management activities include satellite monitoring, LDAR, video-imaging spectro-radiometry technology as well as drone and ground-based surveys in collaboration with DLR. These have contributed to reducing fugitive emissions by 91 percent.

PDO is part of the OGMP 2.0, OGCI, OGDC and the World Bank's Zero Routine Flaring Initiative. In 2023, PDO attained Gold Standard Pathway of the OGMP 2.0 Gold Standard Reporting Status.PDO collaboration with DLR covers three clusters and 10 facilities for which the survey will help to benchmark existing detection technologies and achieve the Level 5 Methane Reporting Standard. According to PDO, upstream flaring fell from 0.89 million tonnes in 2022 to 0.88 million in 2023, and flaring intensity fell to 9.86 tonnes of 1,000 tonnes of hydrocarbons produced compared to 9.93 tonnes in 2022.

Despite its endorsement of a methane emission intensity target of 0.2 percent by 2025 and near-zero emissions by 2030, as per OGMP 2.0 targets, PDO has not made its methane emission measurements publicly available. According to the Climate Watch, Oman released 0.79 Mt of methane in 2021 from energy operations, representing 0.32 percent of the country's total GHG emissions that year.[59] External data sources show discrepancy in Oman's methane intensity: Kayrros suggests that methane intensity of Oman's oil and gas production was about 1.18 kg/boe in 2023. The IEA Methane Tracker reports methane emissions of 675,000 KT in the upstream of Oman's oil industry. Production in the country in 2023 is estimated to be 1,048 million barrels of oil. Dividing production by the total estimated emissions thus gives an average intensity per boe of 1.55 kg of methane per barrel of oil.[60]

These discrepancies in methane emissions data highlight the need for greater transparency and standardized reporting by PDO. Without publicly available measurements, it is difficult to assess progress toward Oman's OGMP 2.0 targets, raising concerns about the credibility and accountability of its methane mitigation commitments.

Figure 5. International Energy Agency estimate of Oman methane emissions from energy sources in 2023, kt[61]



Qatar: QatarEnergy

Technological investments and innovation

Solutions employed
APC
Satellite-based methane detection
Drone surveillance
Optical Infrared Gas Imaging

Methane emissions reduction target : ***Near-zero emissions by 2030***

Oil and gas production phase-down

Solutions employed
Highly unlikely, goes against QatarEnergy's planned ambitious gas expansion programs to 2030

Methane emissions reduction target : ***N/A***

Nature-based solutions

Solutions employed
N/A

Methane emissions reduction target : ***N/A***

Policy and regulatory measures

Solutions employed
Signatory to OGMP 2.0, GFMRP, World Bank Zero Routine Flaring by 2030 Initiative, OGCI "Aiming for Zero"

Methane emissions reduction target : ***Near-zero emissions by 2030***

OGMP 2.0 Standard achieved



OGMP 2.0 Gold Standard Pathway
Achieved in 2022 and 2023

Table 12. Summary of QatarEnergy strategies and solutions to achieve near-zero methane emissions by 2030

OGMP 2.0	OGCI " Aiming for Zero"	World Bank Zero Routinee Flaring by 2030 Initiative	Methane Guiding Principles	OGDC
✗	✓	✓	✗	✗

Table 13. Qatar's membership in global methane emissions reduction initiatives

QatarEnergy's third expansion plan to bring total LNG capacity to 142 Mt/y by 2030 is armed with the usual competitive advantages, including low production costs; lower carbon intensity of production (compared to its peers); large quantities of condensate, LPG, ethane and helium, allowing it to remain competitive during periods of LNG price swings; and expectations of large fiscal revenue from all phases of development. These are complemented by the announcement of large additional gas reserves (+240 Tcf, +10 MMbbl condensates),[62] and should cement QatarEnergy's standing in global LNG markets. However, the company has been somewhat slower moving than its Gulf counterparts (e.g., ADNOC) in taking bolder steps to adjust to emerging risks, not least when it comes to reducing methane emissions.

This is not to say that the company has not taken significant steps especially more recently. QatarEnergy was one of the first in the region to sign up to the Methane Guiding Principles in 2018, and became a member of the OGCI's "Aiming for Zero Emissions" scheme in 2022. Since then, it has also subscribed to the OGMP 2.0, receiving in 2022 and 2023 the Gold Standard Pathway Status based on its methane emissions implementation plan submitted to the OGMP 2.0 committee, but so far has not received the Gold Standard Reporting Status (unlike competitor ADNOC).[63]

Assessing well-to-tank carbon intensity data shows that QatarEnergy bases its calculations on a relatively lower short-term global warming potential (GWP_{20}) at 19.42 gCO2e/MJ (AR6, GWP_{20}),[64] compared to other major gas exporters like Russia and the United States (the 20-year measure highlights the significant impact methane has on short-term warming, as compared to GWP_{100}). In its data submitted to the OGMP 2.0, Qatar maintains its methane emissions for 2023 at 3.2 ktCH4, which, against 181 BCM of sales gas production that year, would mean a methane intensity of 0.0026 percent. This is barely higher than its 2022 methane intensity of 0.002 percent, as taken from QatarEnergy's published figure of 2.42 ktCH4 methane emissions in its sustainability report[65] against sales gas production that year of 178.5 BCM. However, it reports this figure only for its LNG facilities and not its entire asset base.

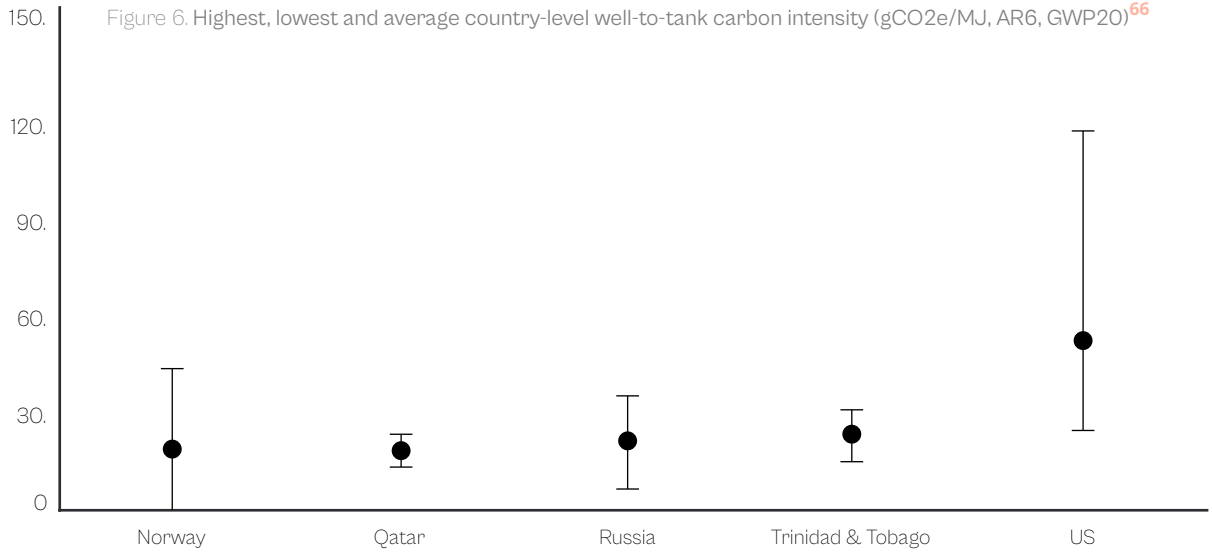


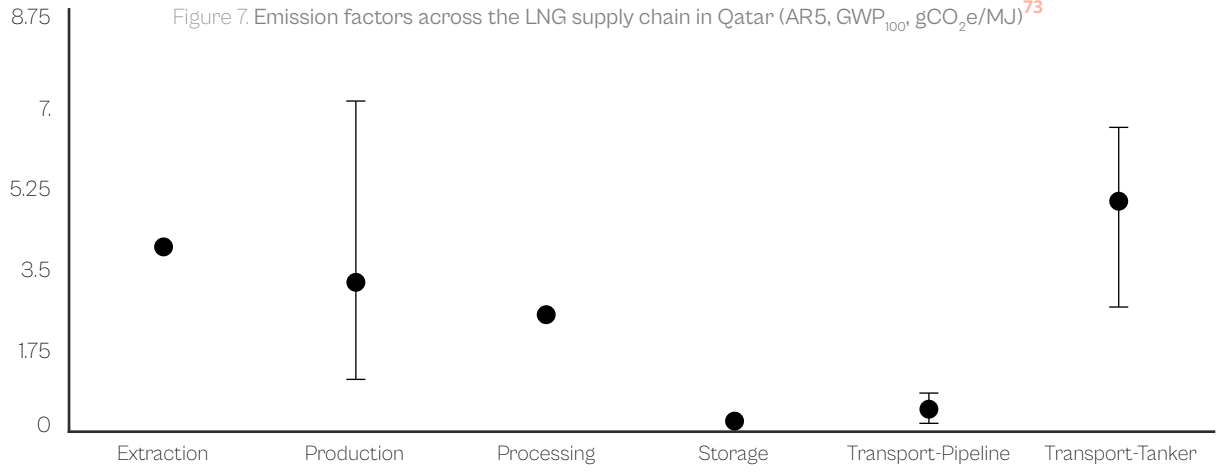
Figure 6. Highest, lowest and average country-level well-to-tank carbon intensity (gCO2e/MJ, AR6, GWP20)[66]

However, the IEA estimates energy related to methane emissions from Qatar at 0.98 Mt in 2023,[67] which against 181 BCM of sales gas production that year would mean a methane intensity of 0.8 percent, slightly lower than the UAE's, but far higher than the 0.002 percent figure. An estimate by the UNFCCC based on limited data reporting from Qatar pins methane emissions for 2022 at 137 ktCH4, which against 178.5 BCM of sales gas production that year would indicate a methane intensity of 0.11 percent. However, the UNFCCC received criticism that Qatar's last formal submission to them included GHG emissions only up to 2007.[68]

Even if not fully aligned with each other, these figures are some of the lowest in the world. However, lack of transparency due to the absence of rigorous reporting could pose a challenge. As an important exporter to Europe following the decline of Russian supplies, the launch of the European Union's (EU) Corporate Sustainability Due Diligence Directive in July 2024 has exposed the company to fines of up to 5 percent on its annual global revenue if it fails to address adverse human rights and environmental impacts.[69] The Directive is set to be enforced in phases starting in 2027, but has already received criticism from both within and outside the EU for being too complex and onerous, as well as "suffocating competitiveness."[70]

It remains to be seen whether the Directive is implemented in its original form or a reworked, simplified version. In any case, Qatar has said it will pull out of the European market if it loses 5 percent of its revenue supplying it.[71] The Directive has among the most far-reaching green reporting rules across the board, and it requires businesses to provide extensive information about their environmental footprint, exposure to climate risk and contribution to the green transition. Clearly, methane emissions reduction is a big part of it. It is also worth noting that for Qatar to pull out of the European market would be no small task, potentially exposing QatarEnergy to penalties, fines and arbitration, given that it has general security agreements with France, Italy, the Netherlands and others from 2026 to 2053.[72]

Figure 7. Emission factors across the LNG supply chain in Qatar (AR5, GWP_{100}, gCO_2e/MJ)[73]



For these reasons, Qatar has faced criticism[74] for underreporting or failing to report methane emissions accurately despite ongoing on-ground efforts to tackle and reduce methane emissions across its gas value chain. So far, the main focus has been the implementation of LDAR programs across all four operated assets (Dukhan, Offshore, NGL Complex and QatarEnergy Refinery) to quantify and reduce fugitive methane emissions. The other efforts being pursued are Optical Infrared Gas Imaging (OGI) cameras for leak detection and threat vulnerability assessment monitoring instruments for leak quantification, as well as, recently, the use of unmanned aerial vehicle aerial surveys (e.g., drones) to detect emissions.

One reason for the added focus on monitoring instruments could be to get more accurate data on methane emissions. However, since these may initially indicate a much higher level than previously assessed, complementary efforts to reduce these are being undertaken before a more impactful number of residual emissions can be reported. These efforts include large carbon capture and storage (CCUS) plans of >11 Mt/y and solar capacity of >5 GW by 2035[75] for on-site operations (thereby reducing fuel consumption); flare reduction initiatives, such as facility upgrades; process and operational controls; and jetty boil-off gas recovery facilities.

Separately, QatarEnergy LNG the subsidray of QatarEnergy has been using the services of a satellite-based methane monitoring provider since the beginning of 2023 for its onshore and offshore facilities to more accurately detect methane leaks, thereby enabling prompt identification and mitigation.[76] In its Sustainability Strategy for 2023, QatarEnergy mentions detecting methane leaks with a remarkable accuracy of 100 kg/h.

Whether as a high-volume LNG exporter to key bunkering ports or through operating its own ship-to-ship bunker vessels, QatarEnergy's well-to-tank emissions will significantly contribute to the overall life cycle of emissions of its LNG across the entire supply chain. Emissions factors are the highest at liquefaction, followed by transport by tanker. Given the high emissions from transport and the large distance to the EU, carrier transport efficiency measures could be another method to considerably reduce the emissions intensity of its LNG. Despite being one of the world's largest LNG exporters, Qatar ranked 23rd globally in flaring volumes in 2023 (typically flaring about 1 BCM each year out of a total of 144 BCM flared annually worldwide).[77]

Additionally, QatarEnergy's updated Sustainability Strategy has outlined multiple initiatives that will reduce the carbon intensity of LNG facilities by 35 percent, and of upstream facilities by 25 percent by 2035 (25 percent of LNG facilities and 15 percent of upstream facilities by 2030).[78] These should also naturally reduce methane emissions intensity, which is being targeted at a maximum of 0.2 percent by 2025,[79] aligning with the OGMP 2.0 ambition.

Saudi Arabia: Saudi Aramco

Technological investments and innovation

Solutions employed
Flare monitoring system
LDAR program
Digital solutions and real-time monitoring
Reducing upstream flaring and improving energy efficiency across operations
Satellite monitoring

Methane emissions reduction target :
Zero upstream flaring and near-zero methane emissions by 2030
Net-zero emissions by 2050

Oil and gas production phase-down

Solutions employed
Highly unlikely, as it is against its ambitious plans to maintain a maximum sustainable crude capacity at 12.3 million barrels per day (mb/d).

Methane emissions reduction target : ***N/A***

Nature-based solutions

Solutions employed
Plant 1 million trees by 2025
Saudi Green Initiative: plant 10 billion trees by 2030 (part of government initiative, not Saudi Aramco)

Methane emissions reduction target : ***N/A***

Policy and regulatory measures

Solutions employed
Signatory to World Bank Zero Routine Flaring by 2030 Initiative, OGDC, OGCI "Aiming for Zero"
Methane emissions reduction target :
Near-zero emissions by 2030
Net-zero emissions by 2050

OGMP 2.0 Standard achieved

OGMP 2.0 Gold Standard Pathway
Part of OGDC, which implies implementation of OGMP 2.0 framework

Table 14. Summary of Saudi Aramco strategies and solutions to achieve near-zero methane emissions by 2030

OGMP 2.0	OGCI " Aiming for Zero"	World Bank Zero Routinee Flaring by 2030 Initiative	Methane Guiding Principles	OGDC
✗	✓	✓	✗	✗

Table 15. Saudi Aramco's membership in global methane emissions reduction initiatives

Saudi Arabia is the world's second-largest producer and leading exporter of oil.[80] In 2023, the country produced around 9.6 million barrels per day of oil equivalent,[81] and it produces 3 percent of the world's natural gas,[82]largely in association with oil production and entirely for domestic use. Saudi Aramco, the state-owned enterprise responsible for the country's oil and gas exploration and extraction, claims to be among the least expensive and carbon intensive oil producers in the world, with vast proven petroleum reserves (17 percent of the global total).[83] In October 2024, Saudi Arabia's Energy Minister, Prince Abulaziz bin Salman, indicated that Saudi Arabia will maintain a maximum sustainable crude capacity at 12.3 Mb/d. This is slightly higher than the 12.0 Mb/d that Aramco was directed to maintain in January 2024.

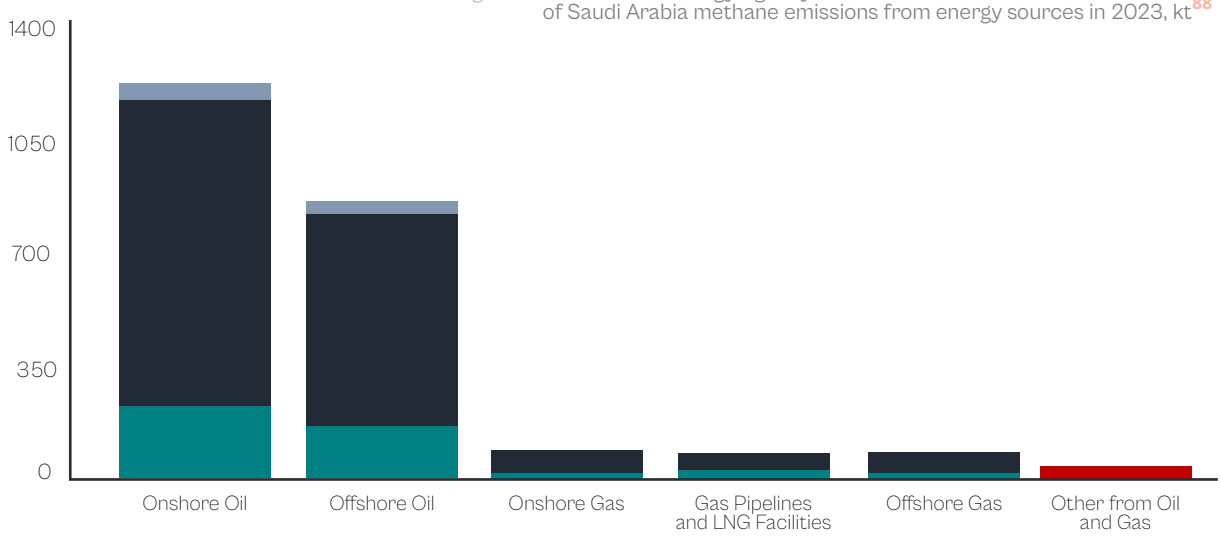
Saudi Aramco is part of global initiatives like OGCI, the World Bank's Zero Routine Flaring by 2030, and OGDC, but it is not signed up to the OGMP 2.0 or Methane Guiding Principles. Saudi Aramco played a key role in shaping OGDC and is aligned with its key objectives to achieve net-zero emissions by 2050. It has also set an ambitious target to reach zero upstream flaring and near-zero methane emissions by 2030. Additionally, Saudi Aramco is committed to reducing 15% of its Scope 1 and 2 upstream carbon intensity of emissions by 2035.

Saudi Aramco methane targets include achieving upstream methane intensity of 0.2 percent by 2025 and near-zero methane intensity by 2030. It claims to have one of the lowest methane intensities in the global oil and gas industry. In its 2023 Sustainability Report, Saudi Aramco reported upstream operations methane emissions of 27.708 million metric tons, while keeping its methane intensity at a very low 0.05 percent in both 2022 and 2023. This is well below the OGCI target of 0.2 percent. The company achieved this through initiatives like its flare monitoring system, LDAR program, digital solutions and real-time monitoring.

Saudi Aramco is also focused on reducing upstream flaring and improving energy efficiency across its operations. In 2023, the company recovered 8.9 billion standard cubic feet (scf) of flare gas due to efficient flare gas recovery systems. Improvements in its flaring minimization strategies led to avoiding 527 mmscf of methane emissions at the Midyan and Uthmaniya Gas Plants. Saudi Aramco is using satellite monitoring to track methane emissions from key facilities, showing a steady decrease in flaring since 2020. As part of its LDAR program, the company surveyed millions of components for potential methane leaks and fixed 1,800 leaks in 2023. The company is also using satellite monitoring tools to monitor methane emissions from its national operations.[84]

However, external data sources reveal large discrepancies between Saudi Aramco's reports and external emission estimations. For instance, Climate Watch suggested that, in 2021, Saudi Aramco produced the tenth -largest quantity of GHG emissions globally, at 730.6 million tonnes of carbon dioxide equivalent ($MtCO_2eq$), with methane accounting for around 67.04 MtCO2eq—a figure almost 40 times higher than Saudi Aramco's estimates.[85] Similarly, Kayrros estimated Saudi Aramco's methane intensity at 0.54 kg/boe.[86] This data diverges from KAPSARC satellite estimates of 0.17 kg/boe of methane intensity in 2023.[87]

Figure 8. International Energy Agency estimate of Saudi Arabia methane emissions from energy sources in 2023, kt[88]



Saudi Arabia has ongoing ambitions to increase oil and gas production, which could also increase the chances of methane production and leakage. Saudi Arabia has announced it is not going to pursue the increase of oil production to 13 mbd but it will be emphasizing on growing its gas production capacity.[89] It said:"Given that we anticipate oil and gas will remain essential for the foreseeable future, the risks of under-investment in our industry—including contributing to higher energy prices—are real. To leverage our unique advantages at scale and be part of the global solution, Aramco has embarked on the largest capital spending programme in its history."

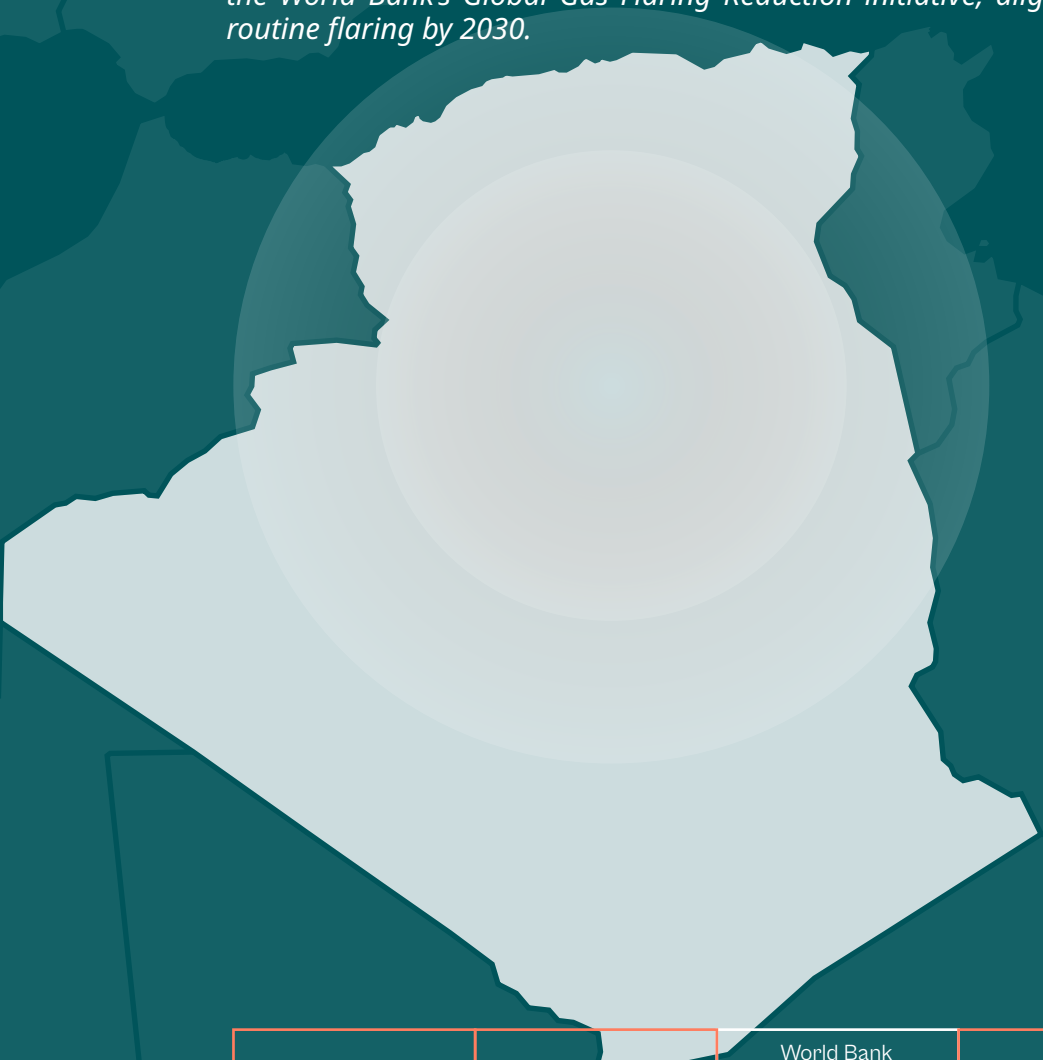
While the new oil production target was shelved in January this year, climate action was not the reason. Instead, it was a response to falling oil prices.[90] Saudi Arabia's decision to hold to current production levels was in line with an agreement among eight OPEC and other producers—Algeria, Iraq, Kazakhstan, Kuwait, Oman, Russia, Saudi Arabia and the UAE—to implement voluntary cuts totaling 2.2 mb/d from January to March 2024, a decision that later was extended to the end of 2025, with an option to expand the cuts, if necessary.[91]

In November 2023, the Saudi Ministry of Energy announced a discovery of two new natural gas fields in the Empty Quarter, in addition to the discovery of five new reservoirs in readily identified gas fields. In 2024, Saudi Arabia approved the world's largest unconventional natural gas development project, the $110 billion onshore Jafurah shale gas field to displace oil use in the power sector and produce low-carbon hydrogen for export.[92] According to Saudi Aramco's 2023 Sustainability Report, its flaring intensity increased in 2023 at 5.64 scf/boe, up from 4.60 scf/boe in 2022.

Algeria: Sonatrach

Currently, there is limited publicly available information regarding Sonatrach's specific commitments or initiatives related to methane emissions reduction, net-zero targets or participation in international frameworks such as the OGCI or the OGMP 2.0. Sonatrach has not been listed among the companies participating in these initiatives and has no methane emissions reduction targets. That is despite the fact that Algeria plays a key role in supplying natural gas and LNG to the EU, and is therefore subject to EU methane regulations and t ransparency requirements. These regulatory shifts underscore the growing importance of credible emissions data and could serve as a lever to push for greater measurement and reporting from exporter countries. While initiatives like "You Collect We Buy" signal the EU's intent to drive accountability, the limited tangible outcomes so far highlight a gap between policy ambition and implementation—an important space for further engagement and accountability.

However, Sonatrach has reported that it is working to reduce methane emissions and contribute to global initiatives aimed at lowering GHG emissions. The company participates in the World Bank's Global Gas Flaring Reduction initiative, aligning with efforts to eliminate routine flaring by 2030.



OGMP 2.0	OGCI " Aiming for Zero"	World Bank Zero Routinee Flaring by 2030 Initiative	Methane Guiding Principles	OGDC
✗	✓	✓	✗	✗

Table 16. Sonatrach membership in global methane emissions reduction initiatives

As part of its methane reduction strategy, Sonatrach launched a LDAR campaign and collaborated with institutions such as the Algerian Space Agency to enhance techniques for measuring and minimize emissions from oil and gas operations. The company reported a reduction in its overall volume of flared gas from operational activities by nearly 15 percent in 2023 (at 2.27 billion Sm3) compared to 2022 (at 3.13 billion Sm3), mainly due to avoided flared gas (1.06 billion Sm3) as a result of commissioning several associated gas recovery projects, mainly in the Hassi Messaoud. Sonatrach has set a target to reduce the overall volume of flared gas to lower than 1 percent and zero routine flaring by 2030.[93]

The IEA Methane Tracker reports methane emissions of 1,974 kt in the upstream of Algeria's oil industry, and 670 kt in the upstream of the gas industry. Algeria's production in 2023 was estimated at 597 million barrels of oil and 549 million boe in gas. Dividing production by the total estimated emissions thus gives an average intensity of 1.16 kg/boe for gas and 3.59 kg/boe for oil. Kayrros estimates Algeria's methane intensity in its oil and gas production at 2.08 kg/boe, almost double that of IEA's estimate.[94]



Why are some national oil companies more committed to reducing methane emissions than others?

NOCs face a unique set of challenges, often more complex than those faced by IOCs, due to structural, political and economic factors. This report shows that NOCs are not all alike; they exhibit a wide range of commitments to methane reduction, driven by a variety of factors. Money is rarely a factor behind the divergence in their approaches, but transparency, human capital, technical capabilities and political and economic constraints are the main challenges towards advanced methane emission measurement, reporting and reduction.

This report shows that UAE's ADNOC and Saudi Aramco are more advanced in their methane emission measurement, reporting and reduction compared to their counterparts. ADNOC and Saudi Aramco are some of the world's largest resource holders with limited challenges in terms of technology and financial resource access. However, the challenge remains in transparency in measurements and reporting, demonstrated by the discrepancy between self-reported methane emissions and estimates from external sources. Even though ADNOC and Saudi Aramco remain significant players in their respective economies in generating government revenues, allocating resources towards methane reduction does not necessarily affect their commitment towards the national economies. In 2022, Saudi Aramco announced the creation of a $1.5 billion Sustainability Fund to invest in technology that supports its energy transition objectives.[95] Similarly, ADNOC allocated $15 billion to support its decarbonization projects by 2030, in line with its objectives to achieve net zero by 2050 and to reduce carbon intensity by 25 percent by 2030.[96]

In comparison, for Algeria and Iraq, NOCs are reluctant to impose costly methane reduction mandates that may affect production given their critical role in their national economies, and general instability of their respective economies. It is also clear that these companies' commitments to provide cheap domestic fuel prices is another factor that reduces incentives to capture and sell methane (natural gas) that would otherwise be flared or vented. Also, Algeria and Iraq, with no debt or equity exposure (unlike ADNOC and Saudi Aramco), are often not subject to international investor scrutiny, and they rarely disclose methane emissions data, limiting accountability. The latter explains the modest or lack of methane emissions reduction regulations and commitments. Limited expertise or lack of specialized knowledge and trained personnel for methane monitoring, reporting and mitigation is another main challenge for low-resource NOCs to commit to methane reduction.

Essentially, a key factor influencing corporate commitments to methane reduction is the level of exposure to international capital markets. Investors and lenders, particularly those with strong environmental and climate commitments, can exert significant influence over NOCs' methane reduction strategies.

The financial profiles of NOCs are diverse, reflecting differences in operations, governance and corporate structures. Some NOCs are fully integrated into global financial markets through listed equity and access to bond markets, which are essential for meeting refinancing needs. For example, Saudi Aramco, ADNOC and QatarEnergy hold substantial amounts of listed bonds, which positions them well to respond to investor pressures demanding stronger climate and sustainability actions. QatarEnergy and ADNOC, for instance, are signatories to the OGMP 2.0 and have set aggressive methane reduction targets, demonstrating how alignment with global standards can push NOCs to adopt more transparent and ambitious emission reduction strategies. ADNOC has also been working to expand its focus to include clean energy technologies through Masdar, and it is investing heavily in its downstream and gas sectors, which require substantial capital. ADNOC's increasing engagement with international investors means it is likely to adopt more robust methane reduction initiatives in line with global climate commitments.

In contrast, many NOCs remain entirely state owned, with financial flows managed directly through the government. For example, Sonatrach has neither listed equity nor bonds and maintains significantly low debt levels, which leaves it relatively insulated from international capital markets and external financial pressures. As a result, NOCs like Sonatrach often exhibit less urgency in participating in methane reduction initiatives unless directly mandated by national policies or government agendas and priorities such as energy security, as is the case with Iraq.

However, some NOCs are shifting their strategies, requiring greater access to external finance. This shift is evident in Iraq, where the oil sector, traditionally state-controlled, is beginning to engage with international capital markets to fund modernization efforts. Iraq's state-owned oil companies are facing increasing international scrutiny, especially as the global demand for climate accountability grows. In response, Iraq is gradually exploring partnerships and collaborations, aiming to attract green finance to support the development of methane reduction technologies and improve operational transparency.

We find that companies with significant access to debt and equity markets are generally more likely to participate in multiple methane reduction initiatives, whereas those without such exposure often join only one or none of these pledges. Access to international capital not only influences participation in global climate initiatives but also drives NOCs toward more sustainable operational practices, as seen with ADNOC and QatarEnergy's aggressive methane reduction programs. In contrast, more insulated NOCs, such as Sonatrach and those in Iraq, may take longer to engage with such initiatives unless there is a direct mandate or otherwise stronger governmental incentives and domestic priorities pushing them toward climate action.

CASE STUDY



Case study 1.
Abu Dhabi National Oil Company's innovative approach towards methane emissions reduction

ADNOC has established itself as a regional leader in methane emissions measurement and reduction. As a key player in the global oil and gas industry, ADNOC's approach offers critical lessons in combining advanced monitoring, partnerships and international best practices to address methane emissions. ADNOC's methane management case illustrates how large NOCs can balance production ambitions with ambitious methane reduction goals, leveraging international frameworks, innovative technologies and transparent reporting. Key lessons from ADNOC's methane strategy include:



Aligning with international best practices and reporting:
ADNOC membership in global initiatives demonstrates its alignment with international best practices for methane emissions reduction. ADNOC is a member of the OGMP 2.0, one of the founding members of the OGDC, and a signatory to the World Bank's Zero Routine Flaring by 2030 Initiative. These memberships reflect ADNOC's strategic commitment to transparent MRV of methane emissions, as well as a broader pledge to reducing its environmental footprint.



Applying technological innovation in measurement, monitoring and mitigation:
Technological innovation is central to ADNOC's methane mitigation strategy. The company has adopted advanced monitoring and emissions reduction technologies across its asset portfolio. Notably, ADNOC partnered with Baker Hughes to deploy Flare IQ technology, an APC system that optimizes flare operations, improving combustion efficiency and reducing methane slip. In addition, ADNOC implemented Levidian's LOOP technology at the Habshan Gas Processing Plant to capture carbon from methane and convert it into high-value products such as graphene and clean hydrogen. AI technology also plays a key role in ADNOC's emissions management, with AI-powered monitoring systems installed across facilities to identify and address potential leaks or flaring events in real time. This includes smokeless flare operations, real-time monitoring of combustion efficiency, net heating value and volatile organic compound emissions, as well as early intervention based on timely, accurate data to prevent methane releases.



Introducing operational interventions:
ADNOC's integrated methane management approach has yielded tangible results. In 2023, ADNOC reduced its upstream methane emissions by 20 percent, from 35.6 kt in 2022 to 28.5 kt. This was largely attributed to operational enhancements, such as flare gas recovery during maintenance, shifting to imported grid power to reduce on-site combustion, and proactive LDAR programs. Furthermore, improvements in data quality through direct measurement rather than estimates have enhanced the accuracy of reported methane emissions, ensuring that leak sources are properly identified and mitigated.

Recommendations towards enhancing ADNOC's methane emissions reduction commitments:



Advance broad-based methane management programs:
Verified methane emissions reductions and disclosure of GHG emissions from operations are increasingly favored in international capital markets and among equity investors. Credible low oil-and-gas-sector value chain methane emissions will become increasingly important for NOCs like ADNOC to protect their access to key oil and gas markets that are implementing increasingly stringent environmental regulations on oil and gas imports (such as in Europe). Moreover, an ADNOC-led methane mitigation program can significantly support the UAE to achieve the objectives of the Paris Agreement. Methane emissions reduction projects are particularly effective at demonstrating progress against climate goals because they are relatively inexpensive, have a short lead time (often less than two years) and offer near-term climate results.



Realign operational management objectives to encourage robust reporting:
Robust methane management will require a specific mandate from ADNOC's executive team and/or political level. Without the right level of governance and prioritization, health, safety and environment managers and operational staff will lack the resources, technical knowledge and focus needed to address methane. Operational staff may also have a concern that spotting environmental problems can have a negative impact on their job appraisals. To address these constraints, executive action is especially critical, enabling the allocation of sufficient resources and adapting the operating culture to encourage robust methane emissions reporting.



Strengthen efforts to overcome legal and structural issues:
Reviewing existing terms in JVs with IOCs could establish better methane management practices. For example, it is quite common for majors and independents to be equity partners of an oil asset's field operators, but not have ownership of the associated gas (except for gas volumes used on-site). Reviewing these terms could unlock incentives for operators to manage gas productively, further reducing volumes of flared or vented gas. Additionally, developing regulations to reward sound quantification and mitigation, particularly in the gas distribution segment of the value chain, could incentivize avoidance of gas losses, further reducing emissions while increasing gas volume sales.



Improve economic incentives for mitigation actions:
Mitigation projects can be designed to address one specific issue at a broad scale to leverage the learning from pilots and reduce the costs per project. Designing and establishing specific funds for methane management (quantification and mitigation) can enhance internal action. For example, attractive economic returns on methane mitigation profits and savings can be earmarked for ongoing methane management programs.



Leverage market-based approaches:
There is the prospect that reducing emissions gradually will have economic benefits for NOCs through domestic or international carbon pricing or carbon taxation, potentially providing a significant boost to the no-cost abatement potential. Moreover, bringing the end-use consumer price of gas in line with the cost of supplies will spur better methane management and reduce emissions. If the cost of methane through carbon pricing is added, the economic incentive for action would be further enhanced. However, this will need to be balanced carefully against the social impacts of removing subsidies

Case study 2.
QatarEnergy's innovative approach towards methane emissions reduction

QatarEnergy's expansion and emissions strategy reflects the balancing act between maintaining global LNG leadership and meeting evolving environmental expectations. QatarEnergy is expanding its LNG production capacity to 142 Mt/y by 2030, leveraging its competitive advantages, including low production costs, low carbon intensity and additional gas reserves. Despite lagging initially, QatarEnergy has committed to major methane reduction initiatives, demonstrating the importance of aligning with global climate standards to maintain market access. Key lessons from QatarEnergy's methane strategy include:



Investing in advanced monitoring technologies:
To enhance its emissions monitoring and reduction, QatarEnergy is implementing LDAR programs, satellite-based monitoring, drone surveys and advanced emission control technologies. It is also expanding its CCUS capacity and increasing renewable energy integration to mitigate emissions from operations. The use of satellite-based methane detection, drone surveillance and OGI for leak detection highlights the importance of adopting cutting-edge technologies for environmental management.



Aligning with global standards:
QatarEnergy has joined multiple global methane reduction initiatives, such as OGMP 2.0 and the OGCI's "Aiming for Zero Emissions" scheme.



Balancing emissions reduction with business viability:
QatarEnergy's approach illustrates the challenge of reducing emissions while maintaining profitability, particularly in navigating complex regulatory landscapes like the EU's Sustainability Directive. QatarEnergy's expansion is underpinned by cost advantages, lower carbon intensity and diversified revenue streams, allowing it to remain resilient in volatile LNG markets.



Prioritizing market adaptability and strategic risk management:
By diversifying its markets and considering strategic exits, QatarEnergy demonstrates the importance of adaptability in response to evolving regulatory and geopolitical pressures. The company faces regulatory pressure, particularly from the EU's Sustainability Directive, which could impose significant fines if environmental impacts are not addressed. Qatar has even suggested it might exit the European market if compliance costs become too high, despite existing long-term supply agreements.

Recommendations towards enhancing QatarEnergy's methane emissions reduction commitments

Although QatarEnergy is making strides in methane reduction, improving transparency and accelerating decarbonization efforts will be crucial to sustaining its competitive edge in the future.



Incorporate clear and transparent reporting:
QatarEnergy has made progress with leak detection technologies and flare reduction, but it lags behind regional peers in transparent reporting, especially under the OGMP 2.0 Gold Standard. Currently, over 50 percent of its LNG assets report at Level 4; the Gold Standard will be achieved when all assets with material emissions have no demonstrable impediments

towards efforts to move to Level 5 reporting. However, the voluntary nature of the exercise can reduce concerted progress. To accelerate this, QatarEnergy should be mandated by national legislation to publish annual methane inventories, enhancing transparency. Promisingly, QatarEnergy has ongoing plans to include third-party verification of its methane emissions in existing verification programs to improve credibility.



Leverage market-based approaches:
LNG exporters like QatarEnergy could be incentivized through carbon pricing schemes or a carbon tax that reflects the environmental cost of methane emissions. By pricing methane emissions and rewarding successful mitigation efforts with tradeable credits, the economic case for adopting best practices and technologies would increase. Moreover, certifying low-emission LNG products ("green" LNG) would create market differentiation for exporters who lead in methane reduction.



Strengthen financial and incentive models:
While money is rarely the problem for Gulf NOCs like QatarEnergy, a lack of incentives and awareness around the financial benefits of mitigating methane emissions calls for creative approaches to engaging NOC executives and boards to maximize influence through JV partnerships, and promoting NOC-to-NOC sharing and collaboration. Initiatives like the OGDC are a promising start—which Qatar is not yet a part of—and can complement institutions like the OGMP 2.0, which offer useful ways to promote ongoing dialogue, commitments and accountability. Moreover, a regional Gulf NOC alliance that focuses on emissions—including methane—reduction would allow such NOCs to benefit from localized technology innovation, knowledge sharing and aligned policies.



Prioritize trust and transparency:
QatarEnergy can work with long-standing international partners in its energy sector to further advance methane emissions reduction efforts. International partners are often best positioned to work with NOCs, as they understand the mandates of their stakeholders and better comprehend which approaches will work best. QatarEnergy is already part of the Methane Guiding Principles, whose Advancing Global Methane Reductions (AGMR) program is a promising approach, giving the country leads of international partners a head start in existing JVs and collaboration with NOCs, as they know the local landscape of service sector companies. Many IOCs have made public commitments to methane reductions, making this one of the best ways for NOCs to advance progress.



Collaborate in research and development (R&D) and develop regional standards:
Industry groups and academic institutions should collaborate to fund research into innovative methane mitigation technologies. This could be supplemented by public-private partnerships on the ground to drive the development of cost-effective, scalable solutions for emissions reduction in a meaningful manner. While Qatar has often been behind its other Gulf peers in advanced R&D for emissions mitigation solutions and climate action, it can collaborate with other Gulf governments to develop regional standards (based on international ones) for methane emissions, including local content-aligned methodologies for quantifying emissions, their reduction targets and verification techniques.

Moving forward

This report shows that, overall, NOCs in the MENA region acknowledge the importance of methane emission reduction and have taken steps toward measuring and minimizing their methane emissions, albeit at different levels. Resource endowment, investor pressure and corporate leadership are some factors that explain the divergence on MENA NOCs' commitments toward reducing methane emissions. While some are more advanced in their emission measurement, reporting and mitigation, such as Saudi Aramco, ADNOC and PDO, discrepancies between self-reported data and external independent data sources are noticeable, likely due to differences in methodology. Inconsistency is also noticeable between ground-based and top-down data measurement methods, flagging the issue of transparency. To enhance transparency and reduce methane emissions, we recommend MENA NOCs and governments take action in the following areas:



Set clear, time-bound targets
MENA NOCs should adopt measurable and time-bound methane emissions reduction targets, ideally aligned with international frameworks such as the OGMP 2.0. These targets should cover both methane intensity and absolute emissions, and they should be integrated into national decarbonization strategies and corporate sustainability plans.



Strengthen data monitoring and verification
MENA governments and NOCs should harmonize efforts toward enforced monitoring, reporting and verification. NOCs should invest in advanced monitoring technologies and establish systems for regular third-party verification to enhance the credibility and transparency of reported data.



Participate in international initiatives
Finances also impact NOCs' commitments to methane emissions, necessitating the importance of enabling access of external funding and technical support for emerging NOCs with limited technical and financial resources, such as Sonatrach and Iraq's NOCs. However, funding naturally follows from transparency and strong support from the government. Therefore, support, encouragement and pressure from international methane reduction initiatives is important to engage NOCs in methane emissions measurement and reduction.

In addition, such an engagement should:



Consider NOCs' specific contexts, recognizing that MENA NOCs are at different stages of commitment and capacity regarding methane emissions reduction. Engagement strategies should be customized, taking into account each NOC's political, economic and technical contexts, as well as their resource endowments and partnerships.



Encourage transparency and accountability across MENA NOCs. International methane reduction initiatives should take a proactive role in supporting NOCs to adopt standardized, transparent and verifiable methane emissions measurement and reporting frameworks that align with international best practices, bridging the gap between self-reported and independent data sources and addressing discrepancies between ground-based and top-down measurements.



Facilitate access to external funding as well as technical and capacity-building initiatives, particularly for emerging NOCs with limited technical and financial capabilities, such as Sonatrach and Iraq's NOCs. Support should be contingent on demonstrated transparency and commitment, with governments playing a critical role in endorsing and enabling these efforts. International methane measurement and reduction initiatives should play an active role in engaging MENA NOCs, providing technical expertise, capacity-building and institutional support.



Leverage regional leadership and promote peer-learning and collaboration by encouraging advanced NOCs, such as Saudi Aramco, ADNOC and PDO, to share best practices and partner with regional peers that are lagging in methane mitigation. Regional champions should be supported to take a leadership role in fostering collective progress. International methane measurement and reduction initiatives should facilitate dialogue between MENA NOCs and global stakeholders to promote accountability and accelerate methane reduction efforts.

Measure to Manage:
Middle East and North Africa National Oil Companies' Methane Emissions Reduction Commitments

Appendix

Iraq Ministry of Oil

100% government-owned

Subsidiaries	Operatorship role
Upstream E&P	
North Oil Company *South Oil Company* *Missan Oil Company* *Midland Oil Company* *South Gas Company* *North Gas Company* *Oil Exploration Company*	Historically, Technical Service Contracts with minimum 25% stake for state partner, shifted to Exploration, Development, and Production Contract for blocks from Bid Round 5 onwards with flexible terms, and no requirement for minimum state partner stake
Midstream	
Iraqi Oil Tankers Company *Oil Pipelines Company* *Oil Products Distribution Co.*	100% Ministry of Oil
Downstream (refining and petrochemicals)	
Midland Refineries Company *North Refineries Company* *South Refineries Company*	100% Ministry of Oil
Trading	
Basrah Gas Company	JV with South Gas Company (51%), Shell (44%) and Mitsubishi (5%)
State Organization for Marketing Oil	100% Ministry of Oil

Abu Dhabi National Oil Company (ADNOC)

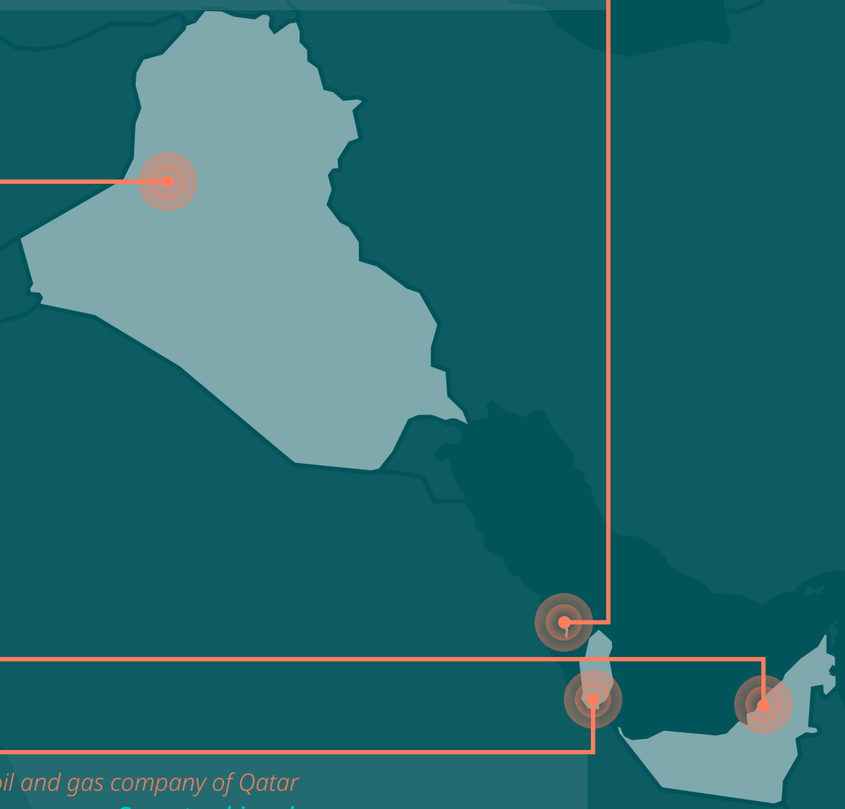
100% state-owned oil and gas company of the UAE

Subsidiaries	Operatorship role
Upstream E&P	
ADNOC Onshore *ADNOC Offshore* *ADNOC Drilling* *Al Yasat Petroleum* *ADNOC Sour Gas*	JV with IOCs, 60% ADNOC stake
Midstream	
ADNOC Gas Processing *ADNOC LNG* *ADNOC Gas* *ADNOC Industrial Gases*	Partnership model with IOCs, with ADNOC retaining majority interest (variable, but never below 60%)
Downstream (refining and petrochemicals)	
ADNOC Refining *ADNOC Fertilizers* *Borouge* *Ta'ziz*	
Trading	
ADNOC Trading	100% ADNOC
ADNOC Global Trading	JV with Eni (20%), OMV (15%), ADNOC (65%)
ADNOC Logistics and Services	Partnership model

Bahrain Petroleum Company

100% state-owned by Bahrain government

Subsidiaries	Operatorship role
Upstream E&P	
BAPCO Upstream	100% Bapco Energies Shareholding
Midstream	
BAPCO Gas	75% Bapco Energies Shareholding
Downstream (refining and petrochemicals)	
Bapco Refining	100% Bapco Energies Shareholding



QatarEnergy

100% state-owned oil and gas company of Qatar

Subsidiaries	Operatorship role
Upstream E&P	
QatarEnergy	100% QatarEnergy
North Oil Company	JV with TotalEnergies, 70% QatarEnergy stake
Midstream	
QatarEnergy LNG *Ras Laffan LNG*	JVs with IOCs, with QatarEnergy majority share (variable, but never below 60%)
Downstream (refining and petrochemicals)	
Qatar Petrochemical Company	JV with TotalEnergies, 63% QatarEnergy stake
Qatar Vinyl Company *Qatar Fuel Additives Company*	100% government-owned
Trading	
Qatofin	JV with TotalEnergies (36%), Qatar (64%)
QatarEnergy Trading	100% QatarEnergy

Table 6. Middle East and North Africa national oil companies' organizational and operating structure

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