



Methane Abatement in Algeria's Oil and Gas Sector

This fact sheet presents findings for Algeria from a broader study assessing the costs and financial implications of methane abatement measures across nine countries in Africa and Latin America. The study aims to support regulators in designing appropriate incentives and policies to guide and prioritize the deployment of abatement technologies.

Estimates of abatement potential and mitigation costs are developed at the country level, accounting for real-world constraints including existing policy frameworks, ease of deployment, and prevailing industry practices. Four key abatement measures were analyzed: leak detection and repair (LDAR) programs, installation of vapor recovery units (VRU) for storage tanks, replacement of natural gas-driven pneumatic equipment with electric or air-driven alternatives, and improved flaring practices. Additional technologies, operational practices, and regulatory approaches can further drive methane reductions but are beyond the scope of this study. The full report, published in June 2026, is available via the QR code.



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FULL REPORT

Key figures

Estimated annual emissions¹

2,304 kt methane

(68.7 Mt CO₂e)

Technical abatement possible from analyzed technologies

41%

of estimated emissions

Emissions analyzed²

1,345 kt methane

(58% of estimated emissions)

Low-cost abatement potential from analyzed technologies³

41%

of estimated emissions

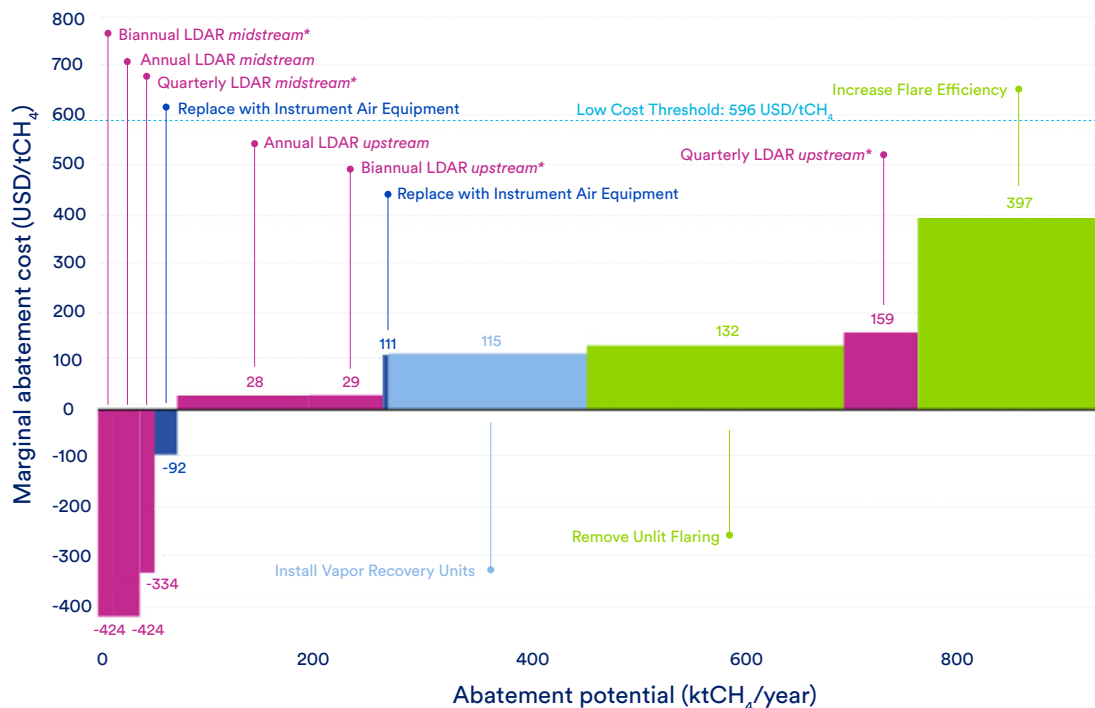
Current policies and practices

Algeria does not have a dedicated methane regulatory framework for the oil and gas sector. Methane control is addressed indirectly through general hydrocarbons laws^{4,5}, notably **restrictions on flaring**. Routine flaring is generally prohibited, subject to authorization⁶, quantitative limits, and a flaring tax, with several exemptions for exploration, start-up, or lack of gas recovery or evacuation infrastructure. In practice, however, exemptions granted based on insufficient infrastructure can weaken the effectiveness of the regulation. By allowing flaring to continue under these conditions, the framework may reduce the incentive for operators to invest in gas capture and transportation infrastructure, thereby limiting the implementation of methane mitigation measures.

Algeria is a **major gas producer and exporter**, with natural gas dominating domestic energy use and power generation⁷. The national oil company, Sonatrach, operates an extensive transmission system, including two export pipelines to Europe and two LNG terminals, although installed capacity is not fully utilized. Persistent flaring occurs in some regions due to **insufficient gas gathering, processing, and compression infrastructure**. At the domestic level, **heavily subsidized gas prices**, well below cost-recovery levels, can weaken incentives to capture and utilize flared gas⁸.

Methane mitigation in Algeria is constrained by several technical and operational barriers, including **infrastructure gaps** that restrict gas monetization and **relatively low domestic gas prices**. At the same time, **external market pressures could become an important driver for mitigation efforts**. The European Union (EU), the largest destination for Algerian gas exports⁹, has strengthened international cooperation with Algeria on methane reduction within its energy partnership, partly to support alignment with the EU Methane Regulation¹⁰.

Algeria Marginal Abatement Cost Curve for Selected Mitigation Options



Abatement technologies

- Leak detection and repair (LDAR)
- Replace natural gas driven equipment
- Improve flaring practices
- Install vapor recovery units (VRU) for storage tanks

*Biannual costs reflect costs of increasing from annual to biannual. Quarterly costs reflect costs of increasing from biannual to quarterly. Based on emissions data from International Energy Agency (2025) Methane Tracker Database - IEA; as modified by Carbon Limits/CATF

Analysis

Mitigation economics largely depends on whether recovered methane can be monetized: when gas can be sold, marginal abatement costs fall, and when it is flared or reinjected, costs rise. This dynamic explains why some measures, such as the implementation of LDAR campaigns in the midstream segment and the replacement of natural gas-driven equipment with instrument air alternatives, show negative abatement costs, as recovered gas generates net savings. These savings rely on assumptions regarding gas marketability and prices. In this analysis, it is assumed that 100% of recovered gas in the midstream segment can currently be brought to market at 10 USD/MMBtu, while 70% of recovered gas in upstream operations can currently be brought to market at 5 USD/MMBtu¹¹.

Under these assumptions, all mitigation measures assessed fall below the low-cost threshold of 596 USD/t CH₄ (20 USD/tCO_{2e}). Within this marginal abatement cost curve (MACC), the elimination of unlit flaring delivers the largest single abatement potential, with approximately 238 kt of methane emissions reductions per year at a marginal cost of approximately 132 USD/t CH₄. Other measures, such as upstream LDAR programs, replacement of pneumatic devices with electric systems, and installation of VRUs, also remain well below the low-cost threshold. Replacing natural gas-driven equipment with air- or electric-driven alternatives shows a relatively low abatement potential, as these technologies are assumed to already be widely adopted by operators.

Higher marginal costs are associated with upgrades to flaring infrastructure, since this measure involves additional investment while gas continues to be flared and does not generate any economic value. Nevertheless, given the significant volumes of gas flared in Algeria, these upgrades still offer substantial emissions reductions at costs that remain below the low-cost threshold. While gas utilization options could present significant additional abatement opportunities in the country, given the scale of flared volumes, they were not assessed in this analysis.

Overall, deploying the full portfolio of considered abatement measures could result in 935 kt of methane emissions reductions per year at a net cost of around USD 116 million/year. *If all recovered upstream gas were assumed to be saleable at 5 USD/MMBtu, net abatement costs could decline to around USD 78 million/year.*

Summary of analyzed mitigation technologies in Algeria

For further details, please refer to the mitigation technology fact sheets for each abatement technology.

Leak detection and repair (LDAR)

Implementation of Leak detection and repair programs at quarterly inspection frequency

Ease of deployment	Current practices	Abatement potential	Marginal abatement cost
Intermediate	Low adoption	312 kt CH ₄ abatable	-15 USD/tCH ₄

- Algeria does not have regulatory requirements mandating LDAR programs, leaving practices largely driven by operator actions. Some operators (notably through partnerships between international oil companies and domestic operators) have started implementing LDAR campaigns across pipelines and facilities, identifying leaks and initiating repairs. Longer-term plans aim to progressively expand LDAR coverage, increasingly supported by satellite-based methane monitoring to help identify and prioritize emission sources.
- Wider deployment is constrained by the absence of regulatory incentives, and competing investment priorities.

Improve flaring practices

Improvement of flaring practices through increased flare efficiency and elimination of unlit flaring

Ease of deployment	Current practices	Abatement potential	Marginal abatement cost
Intermediate	Low adoption	413 kt CH ₄ abatable	290 USD/tCH ₄

- Algeria does not impose strict performance, monitoring, or repair requirements for flaring systems. Regulation is limited to restricting routine flaring under petroleum legislation, with flaring permitted mainly for exploration and start-up activities, operational safety, or in areas where gas recovery or evacuation infrastructure is unavailable or limited.
- In this regulatory context, operators prioritize reducing flared volumes rather than optimizing flare performance, investing instead in gas utilization or monetization solutions. Several flare-capture projects have been commissioned in recent years, such as flare gas recovery projects at the Hassi Messaoud and Ohanet fields¹².

Install vapor recovery units for storage tanks

Installation of vapor recovery units (VRUs) on storage tanks

Ease of deployment	Current practices	Abatement potential	Marginal abatement cost
Intermediate	Low adoption	183 kt CH ₄ abatable	115 USD/tCH ₄

- There are no regulatory requirements mandating the installation of VRUs on storage tanks. Deployment therefore depends on operator investment decisions and the availability of gas utilization pathways.
- Adoption remains limited, with key barriers including high upfront capital costs, uncertain returns where gas cannot be readily monetized, and limited regulatory signals prioritizing tank emissions. Opportunities are more favorable in fields located near gas processing or export infrastructure, where recovered gas can be economically utilized.

Replace natural gas driven equipment

Replacement of natural gas-driven pumps and controllers with electric or air-driven alternatives

Ease of deployment	Current practices	Abatement potential	Marginal abatement cost
Easy	High adoption	26 kt CH ₄ abatable	-52 USD/tCH ₄

- Algeria does not impose specific regulatory requirements targeting methane emissions from natural gas-driven pneumatic equipment, leaving technology choices to operators. In practice, natural gas driven equipment is not widely used in the oil and gas sector, with most assets already relying on electric or instrument-air alternatives.

Legend

Ease of deployment: indicator of how easily an abatement measure can be deployed at scale, considering regulatory, logistical, and infrastructure constraints.

Current practices: indicator of the level of existing deployment of an abatement measure in the country.

Policy recommendations

Algeria has not established a dedicated methane regulatory framework, with existing provisions largely limited to restrictions on routine flaring under petroleum legislation. This regulatory gap may create growing exposure as the EU Methane Regulation extends to imports from 2027 onward, directly impacting Algeria, whose gas exports are predominantly destined for the EU. Within this context, **near-term priorities could focus on introducing an initial regulatory framework that targets the most cost-effective mitigation opportunities, while aligning monitoring, reporting, and verification practices with EU methane requirements** to help safeguard continued market access. Several measures, notably LDAR and the elimination of unlit flaring, show large abatement potential at low or negative marginal costs. Establishing minimum LDAR standards alongside flaring control requirements to prevent unlit flaring would provide a high-impact entry point for methane regulation. **Effective implementation and enforcement** will then be essential to translate these provisions into tangible emissions reductions on the ground, which will require institutional and technical support.

Over the medium term, Algeria could expand methane regulation by introducing targeted requirements for additional mitigation measures, such as VRUs on storage tanks. **Targeted financial instruments**, such as concessional loans or fiscal incentives, could further support the deployment of more capital-intensive technologies, including improving flaring efficiency.

In the longer term, addressing structural barriers through **continued development of gas gathering, processing, and transmission infrastructure** would improve gas monetization opportunities and further strengthen the economics of methane mitigation. In parallel, **reviewing domestic gas pricing arrangements** could help improve the economic viability of certain methane mitigation options.

Methodology

This study estimates methane abatement potential and costs using a bottom-up marginal abatement cost curve (MACC) approach. The analysis covers four emission sources in the oil and gas sector (flaring, fugitive equipment leaks, tanks, and natural gas-driven pneumatic equipment) and evaluates a set of abatement measures for each source.

Abatement potential and costs were refined through twelve interviews with technology and service providers operating in Algeria. These interviews were complemented by a comprehensive literature review and informed assumptions on technology deployment, applicability, performance, implementation costs, and operational practices, ensuring the analysis reflects local conditions. Where recovered gas can be sold, revenues are deducted using local gas prices where available, or international benchmark prices adjusted to netback values. Country-specific MACCs were then developed using local discount rates to reflect national investment conditions and financial risks.

While this study focuses primarily on abatement costs, methane mitigation is driven by a broader set of benefits, including improved operational safety and asset integrity, enhanced local air quality, immediate climate gains due to methane's high short-term warming potential, reduced social costs of methane emissions, improved operational excellence or international regulatory compliance.

Scan the QR code at the start of this document for a full description of the methodology and key assumptions. Disclaimer: The figures presented in this fact sheet are based on national-level estimated data and analytical assumptions from 2025. Actual emissions, abatement potential, and costs may vary due to data limitations, site specific conditions, operational constraints, and cost structures. This document is intended for informational purposes only and should not be relied upon as the sole basis for investment, operational, or policy decisions. Regulators are invited to reach out to CATF for further discussions on understanding the assumptions underlying the cost curves and for guidance on the adoption and implementation of methane regulation.

- 1 Based on data from International Energy Agency (2025) *Methane Tracker Database* - IEA; as modified by Carbon Limits and CATF. For further details, please refer to the methodology report.
- 2 Emissions analyzed refer to the share of total methane emissions impacted by the abatement measures studied.
- 3 Low cost refers to a cost less than 596 USD/tCH₄ (20 USD/tCO₂e using GWP 100)
- 4 People's Democratic Republic of Algeria. (2005). Law No. 05-07 – *Law concerning hydrocarbons*. Available at: https://www.arh.gov.dz/media/file/114/loi_n005_07_hydrocarbures_62e7e3759ec966.16641299.pdf
- 5 People's Democratic Republic of Algeria. (2019). Law No. 19-13 – *Law governing hydrocarbon activities*. Available at: <https://www.joradp.dz/FTP/JO-FRANCAIS/2019/F2019079.pdf>
- 6 People's Democratic Republic of Algeria. (2021). *Executive Decree No. 21-330 of 25 August 2021 establishing the conditions for granting exceptional authorizations for gas flaring*. Available at: https://www.arh.gov.dz/media/file/44/de_n0_21_330_du_25_aout_2021_fixant_les_conditions_doctroi_de_lautorisation_exceptionnelle_de_torchage_de_gaz_62a73ed006ca37.99240929.pdf
- 7 International Energy Agency (IEA). (2023). *Algeria – Natural gas*. Available at: <https://www.iea.org/countries/algeria/natural-gas>
- 8 Columbia Center on Sustainable Investment & Capterio. (2025). *Igniting Action to Reduce Gas Flaring – Country Case Study: People's Democratic Republic of Algeria*. Available at: <https://ccsi.columbia.edu/sites/ccsi.columbia.edu/files/content/docs/publications/CCSI-Capterio-Flaring-Case-Study-Algeria-June-2025.pdf>
- 9 European Commission. (2026). *Union for the Mediterranean*. Available at: https://energy.ec.europa.eu/topics/international-cooperation/key-partner-countries-and-regions/union-mediterranean_en
- 10 Directorate-General for Energy, European Commission. (2026). *Strategic partnership between the People's Democratic Republic of Algeria and the European Union in the field of energy: High-Level Annual Meeting*. Available at: https://energy.ec.europa.eu/news/strategic-partnership-between-peoples-democratic-republic-algeria-and-european-union-field-energy-2026-02-12_en
- 11 Assuming all marketable recovered gas is sold on export markets.
- 12 Sonatrach. (2024). *Climate: a linchpin of our strategy*. Available at: https://sonatrach.com/wp-content/uploads/2025/06/Brochure_HSE_ENG_2024.pdf