CLEAN AIR TASK FORCE

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Methane Abatement in the Oil and Gas Sector: Install Vapor Recovery Units

This fact sheet presents findings for the installation of Vapor Recovery Units (VRUs) on storage tanks from a broader study assessing the costs and financial implications of four methane abatement measures across nine countries in Africa and Latin America. 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. The study aims to support regulators in designing appropriate incentives and policies to guide and prioritize the deployment of abatement technologies.

The full report, published in June 2026, is available via the QR code.

SCAN TO READ FULL REPORT

Overview

VRUs are designed to capture hydrocarbon vapors from storage tanks and other equipment like Vapor Recovery Towers (VRT) that would overwise be vented to the atmosphere. The recovered vapors are then:

1. **Separated** in an inlet scrubber/separator which removes any liquids (e.g., oil, water), protecting downstream equipment and improving the system performance.
2. **Compressed** to increase pressure and temperature for transport or use. Compressor selection depends on vapor composition, discharge pressure, flow variability and site conditions.
3. **Recovered or routed** to sales lines, used on site as fuel or sent to flare when sales or use is not feasible.

VRUs are typically assumed to reduce emissions by around 95%[1], reflecting an estimated 5% annual downtime; when operating, emissions are expected to be negligible. However, their performance depends on several key factors, including the design, the volume and composition of the vapor (including any fluctuations), and maintenance practices, which may also be influenced by external environmental conditions.

This study assesses the installation of VRUs on storage tanks (including crude oil, condensate, and produced water tanks). The analysis considers two scenarios for the captured gas: sale through existing infrastructure or disposal through flaring or reinjection if utilization infrastructure is not available.

1 United States Environmental Protection Agency. (2026). *Vapor Recovery Units.* Available at: https://www.epa.gov/natural-gas-star-program/vapor-recovery-units

Costs range

The table below presents per-equipment costs associated with the implementation of VRUs.

$/equipment	Capital Costs	Operating costs
Vapor recovery units	>$1,000,000	<5% of CAPEX

Cost estimates are indicative and may vary significantly depending on site conditions, local market conditions, labor and logistics costs, regulatory requirements, import fees, supply chain availability, and project-specific factors (e.g., scale, location, and existing infrastructure). This table does not include benefits (e.g., savings from avoided gas losses, gas sales, or avoided penalties).

Current policies and practices

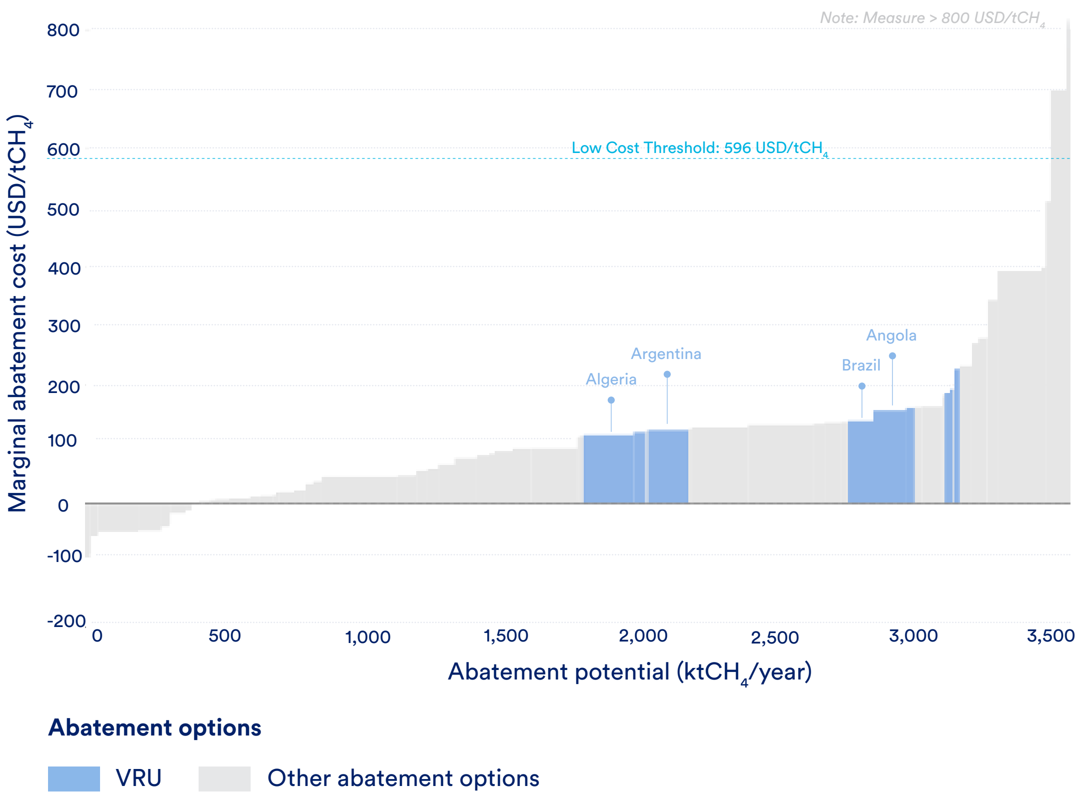
The table below presents the current status of regulatory frameworks and mitigation practices related to the installation of vapor recovery units.

	Algeria	Angola	Argentina	Brazil	Egypt	Ghana	Libya	Mexico	Nigeria
Regulation in place	N	N	N	N	N	Y	N	Y	Y
Current practices	L	L	M	L	L	L	L	L	L

Regulation	Y – Yes (National)	P – Partial (Subnational)	N – No
Practices	H – High adoption	M – Medium adoption	L – Low adoption

For further details, please refer to the individual country fact sheets.

Marginal Abatement Cost Curve for Selected Mitigation Options



Note: In this marginal abatement cost curve (MACC), abatement options are disaggregated by country and abatement options. Marginal abatement costs are aggregated at the country–technology level using a weighted average based on abatement potential, combining different segments (e.g. upstream, midstream) and locations (e.g. onshore, offshore).

Based on emissions data from International Energy Agency (2025) Methane Tracker Database - IEA; as modified by Carbon Limits/CATF

Analysis

The installation of VRUs generally results in positive abatement costs, despite revenues from captured gas. This reflects the fact the high upfront CAPEX requires sufficiently large volumes of captured gas to achieve full cost recovery. Nevertheless, in this analysis, VRUs remain well below the low-cost threshold of 596 USD/tCH_4 (20 USD/tCO_2e) for all countries.

A key driver of cost-effectiveness is the volume of methane emitted per site, which determines the emission reduction potential at the site level. Abatement costs are not proportional to emission reduction, as VRUs involve largely fixed equipment costs regardless of captured volumes. As a result, higher abatement costs on average are observed in countries with lower emissions per site (e.g., Brazil, Angola), where limited recovery volumes constrain the ability to amortize fixed investment costs compared to countries with relatively high emissions per site and favorable access to infrastructure (e.g., Algeria, Argentina). However, in some cases, certain sites are designed as centralized facilities collecting production from multiple nearby wells, resulting in higher volumes that may improve the cost-effectiveness of VRU deployment.

Additional variation arises from country-specific factors such as local cost structures, import requirements, and industry practices.

Challenges and barriers to wider deployment

Adoption of this mitigation practice remains very limited, reflecting several persistent challenges and barriers, even in countries with existing regulatory frameworks:

- **Complex installation and retrofit.** VRU deployment increases operational complexity, particularly offshore or at aging infrastructure, where retrofitting often constrained by space, weight and safety requirements.
- **High upfront costs.** Installation requires significant capital investment, especially for older and offshore facilities. Combined with uncertain returns, this leads to selective, project-by-project deployment rather than systematic rollout. Projects are typically only viable where recovered gas can be effectively utilized or commercialized.
- **Limited infrastructure and market conditions.** Gaps in gathering, processing, and export infrastructure can undermine the business case, particularly in contexts where gas monetization options are limited (e.g., Mexico, Egypt). Offshore facilities face additional constraints related to the feasibility of gas export solutions, such as pipeline connections or floating LNG units.

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.