

Oil and Gas Methane Framework

The Methane Framework Series

When released into the atmosphere, methane causes intense but short-term warming, with immediate effects more than 80 times greater than that of carbon dioxide. Due to this gas's powerful warming effect and short lifetime, cutting methane emissions is critical to slow the climate crisis and limit global warming to 1.5 degrees Celsius. Recognizing this opportunity, more than 110 countries have endorsed the Global Methane Pledge, which aims to cut worldwide methane emissions by at least 30 percent by 2030, compared to 2020 levels. The Methane Framework series serves as a guide for local, provincial, and regional governments to commit to methane emission reduction, rapidly scale up jurisdictionally appropriate action, and join a coalition with other leading governments across each of the three largest sources of human methane emissions: agriculture (e.g. cattle and rice production), energy (e.g. natural gas, coal, and oil), and waste (e.g. landfills and wastewater).

The Oil and Gas Methane Framework is a guide for tracking, managing, and reducing methane emissions from oil and gas facilities at the local, state, or regional level. Oil and gas facilities are responsible for approximately 25 percent of global emissions of methane—one of the most potent climate-warming greenhouse gases—and present a key opportunity for near-term emission reduction. These emissions, which result from intentional activities like gas venting, flaring and operational design, as well as unintentional leaks from damaged or malfunctioning equipment, are largely avoidable through use of appropriate technology, diligent application of best practices, and regulatory enforcement. Reducing oil and gas methane emissions benefits climate change mitigation, improves local air quality, and conserves valuable gas that companies can use onsite or sell, while also building momentum to address other major sources of methane, such as agriculture and landfills.

The six components of the Oil and Gas Methane Framework—inventorying emission sources, inventorying emissions, setting an emission reduction target, requiring leak detection and repair, implementing performance standards, and information and technology sharing—enable jurisdictions to require facility-level action to cost-effectively minimize emissions. The actions outlined below are not a sequential process and may be pursued simultaneously. Endorsers to the framework commit to implementing all jurisdiction-appropriate components described below in order to scale global action to address oil and gas methane emissions.

Technical appendices to this framework provide detail for implementation.

Inventory oil and gas facilities, operations, and equipment that are sources of methane emissions and compile a jurisdiction-wide, active database.

Identify and create an inventory of all oil and gas facilities/operations and equipment and components at those facilities/operations that could be subject to regulation in the jurisdiction, from production wells to end-use distribution systems. The inventory includes accurate and complete data on equipment types, locations, oil/gas ratios, production and flow/use rates at facilities, and other information pertinent to emissions and emission reduction, and is actively updated to include new facilities and equipment. Regulators should make the data publicly available in an easily accessible and analyzable form.

Inventory total methane emissions from oil and gas sources and develop an emissions baseline.

Require facility reporting and regulator verification of methane emissions from all equipment/components at facilities and operations included in the facility/operations inventory. The inventory is comprehensive, including all emissions associated with venting, flaring, and leaks, and is based on actual measurement of emissions at the component and facility level. Initial reporting can be used to develop a current baseline for emission reduction targets, or a historical baseline can be developed with modeling techniques based on criteria pollutant emissions, total production, and other data. The inventory should be reviewed regularly to reflect actual reductions and technological developments, and regulators should make the data publicly available in an easily accessible and analyzable form.

Set a jurisdiction-wide emission reduction target and direct a regulator to implement and enforce regulations in order to achieve it.

Set a methane emission reduction target based on the composition of facilities, current emission levels, and broader climate change mitigation targets to provide clarity on regulatory goals. The target should be ambitious, technologically and economically feasible, and structured as a percentage reduction based on a current or historical baseline or as a total mass-based emission level—such as the targets set forth by the Global Methane Alliance for a 45% reduction by 2025 and a 60-75% reduction by 2030. The target date should reflect both the urgency of the problem (methane emissions are an estimated 84 times more potent than carbon dioxide over a 20-year period) and the potential solutions (rapid implementation of LDAR and equipment replacement can significantly reduce emissions). Yearly emission reduction goals and a process for regular reevaluation are critical. The law setting the target should direct jurisdiction regulators to adopt rules or regulations to meet the goal, with regulatory flexibility and enforcement authority.

Require owner/operators to conduct leak detection and repair (LDAR) that is comprehensive, regular, and facility wide.

Leak detection and repair (LDAR) requirements are an essential piece of effective regulations for oil and gas. LDAR should be required as a first step in mitigating methane emissions. No data is needed to fix leaks and the surveys themselves will improve the overall understanding of the emissions from the system. Unintentional oil and gas equipment leaks (distinct from intentional venting) can occur at facility components like valves, connectors and flanges, and vessel or pipe walls due to age, corrosion, wear, damage, human error, or structural/installation flaws. Leaks can occur at any time and at any place in the system, and in some cases can constitute super-emitters. LDAR can also help identify equipment that is excessively venting due to faulty operation or improper design. LDAR requirements are applied to all regulated facilities to ensure maximum tracking and reduction of fugitive leaks. Core elements of LDAR include identifying all facility components in the jurisdiction, requiring regular facility inspections and/or continuous monitoring, requiring repair of detected leaks, conducting regulator inspections, and enforcing documentation and reporting requirements.

Implement performance standards and/or regulations for individual components and equipment, applicable as necessary in the jurisdiction.

Establish requirements for facility and equipment owners/operators to ensure that emission reduction actions are implemented at all current facilities and any new facilities later built in the jurisdiction. Each inventoried source is subject to emission reduction actions, though different requirements apply to different infrastructure types, and a phase-in or ramp-up period may be permitted. The requirements should include reporting, enforcement, and penalty provisions to ensure compliance. Potential regulatory actions include vapor collection and control requirements, venting and flaring restrictions, equipment retrofit and replacement requirements, monitoring and management plans, measurement and reporting, and leak detection and repair. Jurisdictions will deploy some or all of these measures as appropriate for the facilities they host. Market-based pricing schemes and voluntary efforts can complement, but should not supplant, performance standards.

Participate in information and technology sharing forum.

Framework endorsers participate in a forum to share policy best practices and technological developments. The forum provides model provisions for legislators and regulators. The forum also serves as a working group to develop parallel frameworks for agricultural and landfill

emissions, building from the structure and membership of the Oil and Gas Methane Framework.