

# Planning to Reduce Methane Emissions

from the Oil and Gas Sector



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Methane Abatement for Oil and Gas: Handbook for Policymakers

# About the Handbook

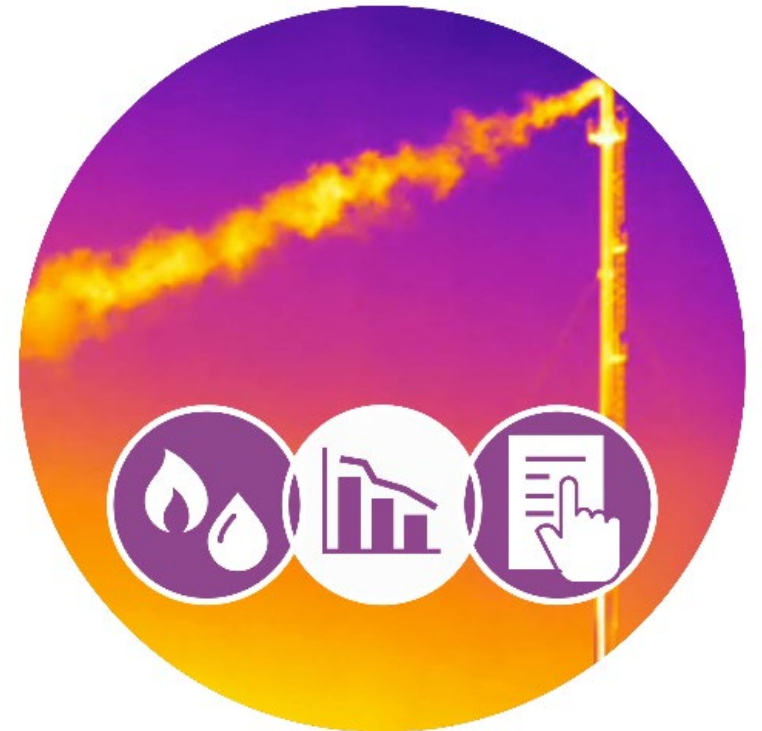
A ‘how-to’ action guide to empower legislators, ministries, regulators, and NOC officials to adopt and enforce legal instruments that will rapidly and effectively reduce methane emissions from the oil and gas sector.

Available here:

<https://cldp.doc.gov/methane-abatement-resources>

## Methane Abatement for Oil and Gas

Handbook for Policymakers



Methane Abatement for Oil and Gas: Handbook for Policymakers

# About the Handbook (continued)

- Sponsored by **U.S. Department of State, Bureau of Energy Resources.**
- Drafted in an intense one-week session with 13 expert co-authors.
- Co-written by authors representing:
  - Government (U.S., Sri Lanka, and Bangladesh)
  - NGOs
  - Multilaterals
  - Industry
  - Academia



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## Planning to Reduce Emissions from the Oil and Gas Sector

# Key Takeaways

- Dozens of countries have adopted or are developing methane action plans, with high-level targets across sectors.
- Governments developing national action plans and sector-specific measures can look to other jurisdictions for useful examples of what can be included.
- Development partners have resources for developing methane abatement plans, detailed roadmaps, and specific regulations.
- When developing a methane abatement policy covering the oil and gas sector, policymakers and regulators should tailor the policy to their circumstances.
- Methane abatement options depend on the three industry segments — upstream, midstream, and downstream.



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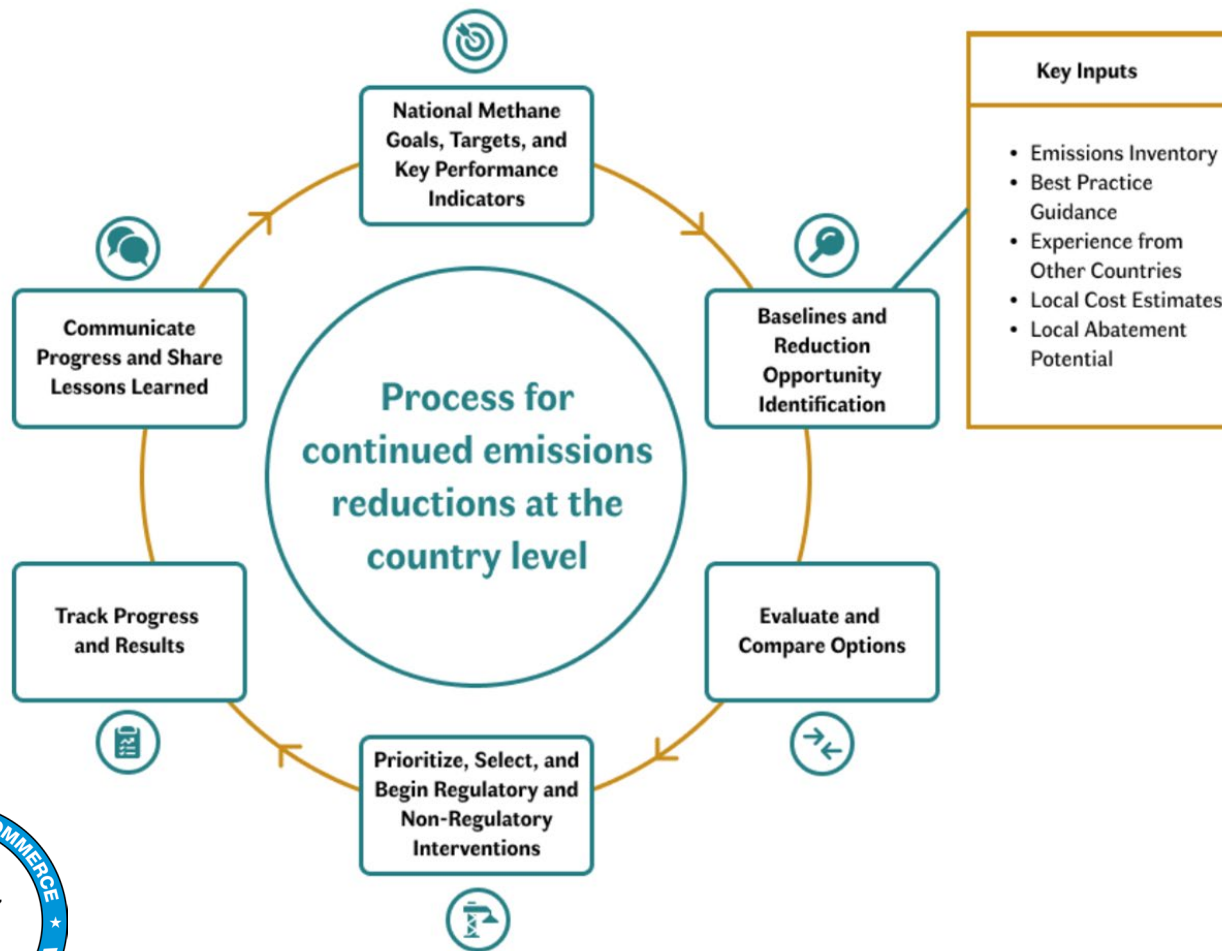
## National Methane Action Plans

- National methane action plans set forth economy-wide ambitions for controlling emissions
- A national action plan is a good place to set high-level targets and goals for methane across all sectors, including Oil and Gas, Coal, Waste, and Agriculture.
- Plans may include high-level numerical targets, a list of specific mitigation measures that the government will take, or both
- As countries track progress toward their policy goals, they can revise targets and plans to reflect new learning.
- Countries developing new action plans can look to other countries for useful examples of what can be included.
- As of May 2023, an estimated **50 countries** have adopted or are working on methane action plans.



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# Process for continued emissions reductions at the country level



Other resources available to assist in creating an action plan include Climate and Clean Air Coalition's (CCAC) Methane Roadmap Action Program (M-RAP).



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## National Methane Action Plans

### Ghana's National Action Plan to Mitigate Short-Lived Climate Pollutants (2018)

- identifies specific measures to reduce methane and other pollutants across all sectors.

### United States Methane Emissions Reduction Action Plan (2021)

- details several regulatory and non-regulatory steps the government is taking to reduce methane from oil and gas, landfills, coal mines, agriculture, and other industries and buildings.

### Norway's National Methane Action Plan (2022)

- does not establish a separate target for methane but instead notes that methane is covered by Norway's overarching GHG emissions reduction goal of 55 percent by 2030 and 90-95 percent by 2050 (compared to 1990 levels)

### Canada's Methane Strategy (2022)

- outlines abatement measures and supporting programs to reduce domestic methane emissions by more than 35 percent by 2030 (compared to 2020).





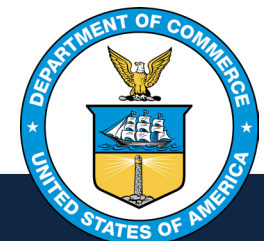
## Planning to Reduce Emissions from the Oil and Gas Sector

# Case Study: Vietnam



### Methane Action Plan 2020

- Vietnam's Methane Action Plan 2030 establishes targets to reduce overall emissions by at least 30 percent below 2020 levels by 2030, with specific targets for the agriculture, waste, and energy sectors.
- Vietnam's Methane Action Plan requires that methane emission reductions be based on cost-benefit analysis and promote innovations serving Vietnam's sustainable socio-economic development.
- This roadmap includes provisions to:
  - Promote technology transfer to support methane abatement.
  - Set up the regulatory framework for managing carbon credits from methane reduction.
- The Plan also mandates that actions to curtail methane align with existing policies, instructing ministry officials to include methane emissions reduction in climate change response strategy, national green growth plan, and sectoral



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# Abatement Plans

The IEA has developed a Regulatory Roadmap and Toolkit to assist policymakers by identifying the steps governments can take to design and implement new methane policies and regulations.

### Understanding the Setting

1. Understand the legal and political context
2. Characterise the nature of your industry
3. Develop an emission profile

### Regulatory Design

4. Build regulatory capacity
5. Engage stakeholders
6. Define regulatory objectives
7. Select the appropriate policy design
8. Draft the policy

### Implementation

9. Enable and enforce compliance
10. Periodically review and refine your policy



# Evaluating Methane Abatement Costs and Benefits

- Oil and gas sector methane abatement targets and plans can prioritize the most significant sources of emissions or the most cost-effective abatement options.
- The International Energy Agency (IEA) has developed a Global Methane Tracker which provides estimates of methane emissions, abatement options, and costs on a country-by-country basis.
  - This information can help identify the areas with the most mitigation potential, even without detailed country-level information. Over time, countries can work towards country-specific information on potential emissions sources and costs.
- The Clean Air Task Force has developed a Country Methane Abatement Tool (CoMAT) to aid regulators in developing estimates of emissions and the abatement potential of various policy options.



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# Making a Marginal Abatement Cost Curve

- A country-level marginal abatement cost curve (MACC) shows the abatement opportunities in relation to cost, which can inform choices about what mitigation options to prioritize.
- Many tools are available to help develop MACCs and experts from organizations such as CATF and others can advise on properly creating them.
- A MACC may change as technologies evolve and become more widely available. New monitoring technologies are still being developed, which may reduce the cost of finding and repairing fugitive emissions.

### Key inputs of this process

- The annual amount of emissions reduced by the opportunity, typically expressed in tons of methane or CO equivalent emissions.
- Capital cost estimates.
- Annual recurring costs for activities, including labor or maintenance.
- A discount rate to help determine a net present value or other economic indicators considering the relative value of current versus future spending.
- Considerations regarding the useful life of the equipment.
- The value of cost savings, such as lower maintenance costs for interventions, including the potential value of recovered natural gas.



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# For Policymakers: Global Warming Potential

- Global Warming Potential (GWP) expresses a ton of GHG emitted in CO - equivalent terms.
- The IPCC has indicated “a GWP for methane between 84-87 when considering its impact over a 20-year timeframe (GWP20) and between 28-36 when considering its impact over a 100-year timeframe (GWP100). Accordingly, one ton of methane can be considered equivalent to 28 to 36 tonnes of CO if looking at its impact over 100 years.”
- Under the UNFCCC, Parties agreed to use 100-year GWPs (or GWP100) for national reporting and tracking progress, while Parties may also use other metrics in addition, such as GWP20.



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# Tailoring Methane Policy to Local Contexts

An oil and gas methane policy will be most effective if it is tailored to a jurisdiction's local situation, including the **maturity of the country's oil and gas sector**

### Different Starting Points

#### New producers

Countries with no or limited current production may develop regulations simultaneously as they develop their understanding of oil and gas operations.

#### Early- and mid-stage producers

Circumstances vary based on the scale and complexity of the industry. For example, an island nation with a single offshore field vs. countries with onshore, offshore, conventional, and unconventional gas production.

#### Late-stage producers

May need ongoing production, and wells approaching decommissioning or abandoned.

### Opportunity for Methane Avoidance and Abatement for Countries

Require new facilities to be designed to a near-zero methane emissions standard — getting it right at the outset can avoid more costly retrofits and work best practices into the design phase.

Focus first on the largest emitters (super-emitters) to get the most reductions with the lowest possible investment. Prioritization can be designed with a focus on cost-effectiveness.

Seek continuing abatement opportunities for active production, which may require going further than initial regulatory measures. Policies can develop programs for properly plugging and abandoning wells to mitigate potential methane emissions.



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# Tailoring Methane Police to Local Contexts

## Local considerations

- The costs of goods or equipment may significantly differ worldwide.
- Similarly, goods and services may be subject to local content requirements that may not have the manufacturing capacity for specific methane abatement technologies.

## Local services and training

- For certain types of methane abatement opportunities, operators and contractors will need training on procedures or maintenance practices to reduce methane emissions effectively.
- Local availability of maintenance personnel and ongoing sourcing of replacement parts and materials is vital for effectively implementing other abatement options.





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# Tailoring Methane Police to Local Contexts

## Supply chains and logistics

- Several countries are adopting methane regulations and control requirements. While the market will ultimately balance supply and demand for these technologies, there may be short-term challenges in obtaining specific equipment, possibly necessitating phase-in timelines.

## Resilience to local weather conditions

- Local weather conditions, such as extreme temperature or precipitation levels, will affect the design standards for equipment.
- Case studies and reduction solutions developed for one operation or location may not apply to another.



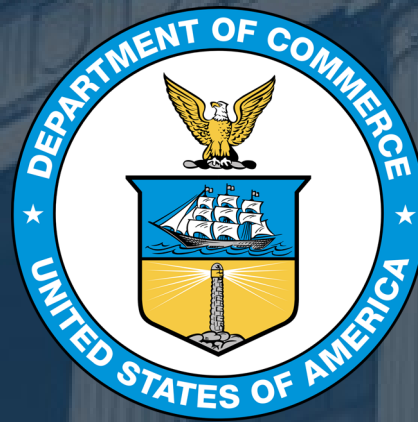


# Tailoring Methane Police to Local Contexts

## New versus existing sources

- The costs of methane emission controls in designing new facilities may be lower than for retrofitting existing sources for various reasons. For example:
  - ensuring that on-site power generation is sized for the electrical load associated with air compressors or vapor recovery units
  - availability of deck space on an offshore platform for an additional process unit needed for methane abatement.
- New producers can leverage local and international partners and adopt best regulatory practices from more established markets, adapting to local circumstances.
- If new facilities are designed with the best available mitigation technologies, it is possible to attain near-zero methane emissions.





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