

Oil and Natural Gas Systems

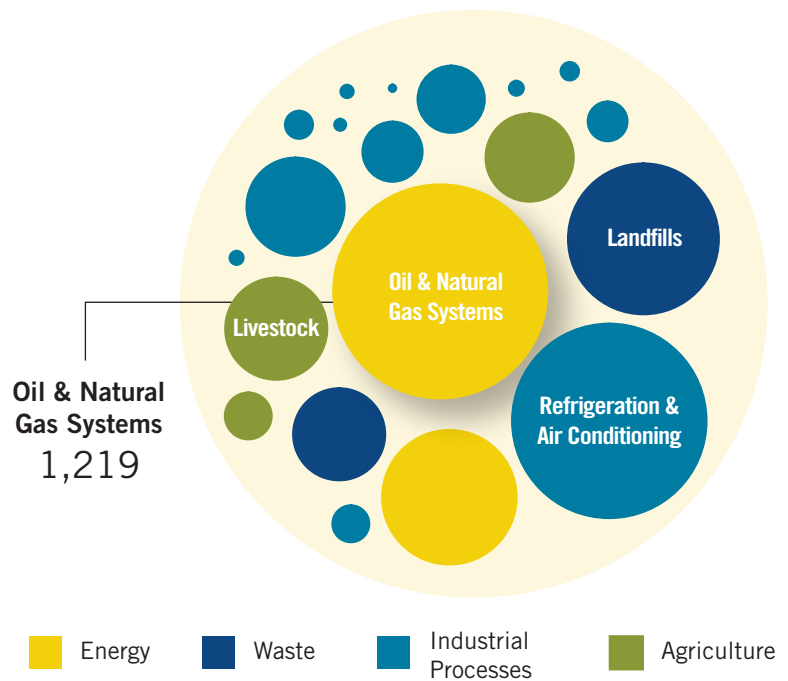
CH₄ Emissions from Oil and Natural Gas Systems

Sector Description

Oil and natural gas systems are one of the leading emitters of anthropogenic CH₄, releasing 1,677 MtCO_{2e}, or 23% of total global CH₄ emissions in 2010. The top five CH₄ emitters from oil and natural gas systems in 2010 were Russia, the United States, Iraq, Kuwait, and Uzbekistan. Global emissions from the oil and natural gas system are projected to grow 26% between 2010 and 2030, with Brazil and Iraq experiencing the highest growth rate at 128% and 100%, respectively.

Emissions Reduction Potential

Assuming full implementation of current technology, emissions in the oil and natural gas systems sector could be reduced by up to 1,219 MtCO_{2e} in 2030. This accounts for 26% of the 4,615 MtCO_{2e} in global reduction potential in 2030.



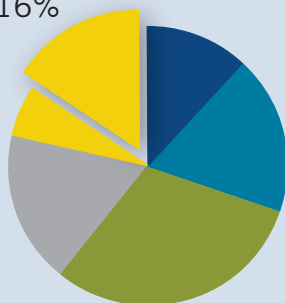
Projected Emissions in 2030

Global Non-CO₂ Emissions

Oil and Natural Gas Systems baseline emissions are estimated to be 1,677 MtCO_{2e} in 2010. In 2030, emissions from this source are projected to be 2,113 MtCO_{2e} or 16% of total non-CO₂ emissions.

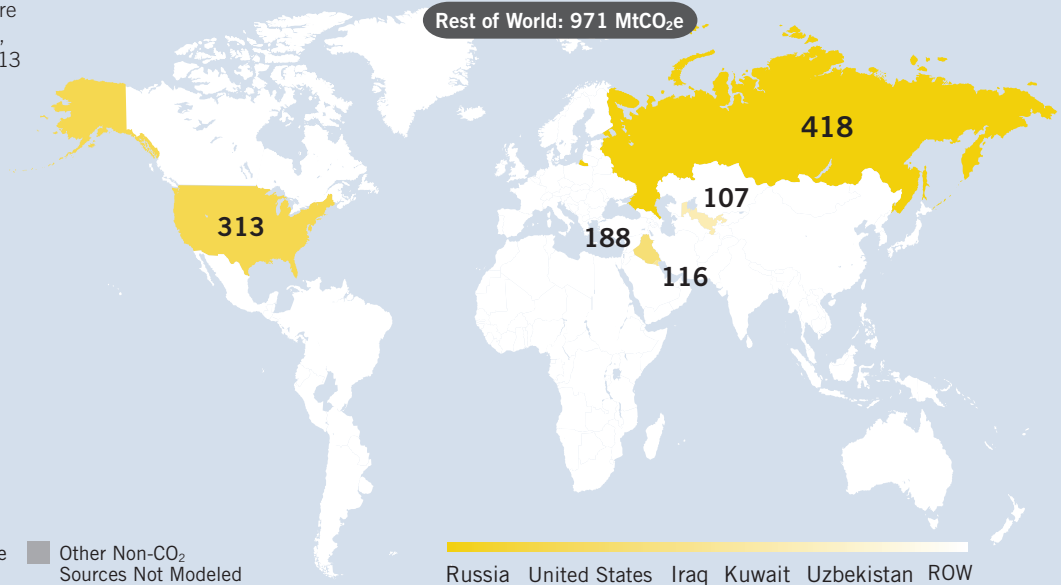
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16%



Emissions from Top 5 Emitting Countries (MtCO_{2e})

Rest of World: 971 MtCO_{2e}



Energy Waste Industrial Processes Agriculture Other Non-CO₂ Sources Not Modeled

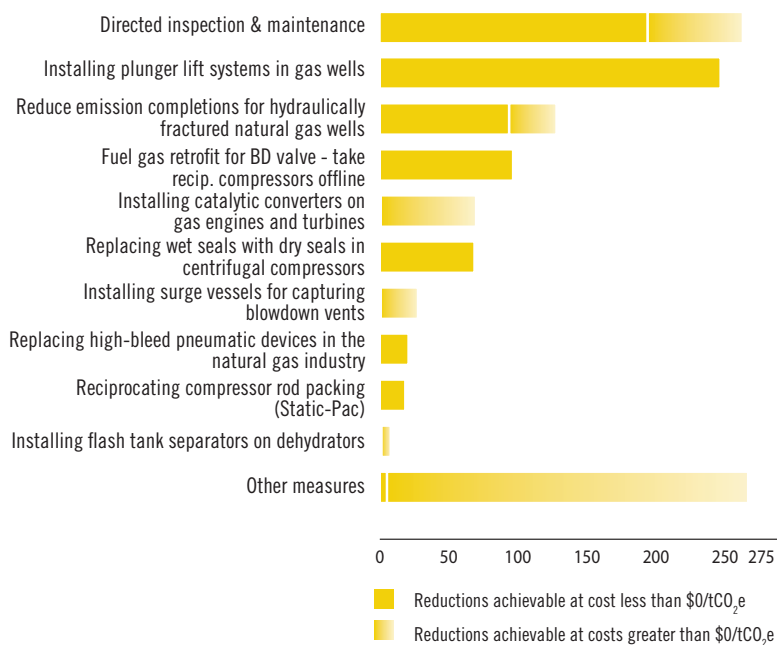
Russia United States Iraq Kuwait Uzbekistan ROW

Key Points

- The technological maximum for emissions reduction potential in oil and gas is 1,219 MtCO_{2e}, approximately 58% of projected emissions in 2030.
- Because of the energy value of the methane captured, EPA estimates that 747 MtCO_{2e}, or 40% of the baseline emissions, can be cost-effectively reduced.
- Over 26% of total abatement potential is achieved by adopting abatement measures in the oil and gas production segments.

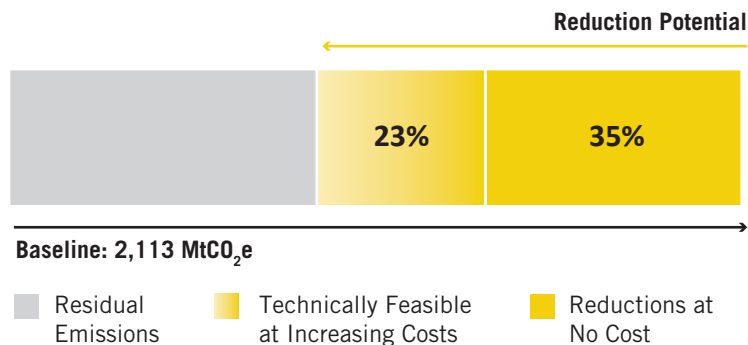
Abatement Measures

Emissions reductions by technology in 2030 at \$0/tCO_{2e} and at higher prices.



Emissions Reduction Potential, 2030

It would be cost-effective to reduce emissions by 35%, compared to the baseline, in 2030. An additional 23% reduction is available using technologies with increasingly higher costs.



Abatement Measures

Numerous abatement measures are available to mitigate CH₄ emissions across the four oil and natural gas system segments of production, processing, transmission, and distribution. The measures may be applied to various components or equipment commonly used in oil and natural gas system segments. The abatement measures typically fall into three categories: equipment modifications/upgrades; changes in operational practices, including direct inspection and maintenance; and installation of new equipment.

Abatement Potential

In 2010, the global abatement potential in the oil and natural gas sector is projected to be 997 MtCO_{2e}, or 60% of total emissions. The abatement potential increases over time growing to 1,103 and 1,218 MtCO_{2e} in 2020 and 2030, respectively. Nearly 70% of the emissions reductions in 2030 are achievable at break-even prices at or below \$5.