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Decision Support and Innovation to Understand Risks and Opportunities

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Measuring, reporting and verifying (MRV) product sustainability metrics

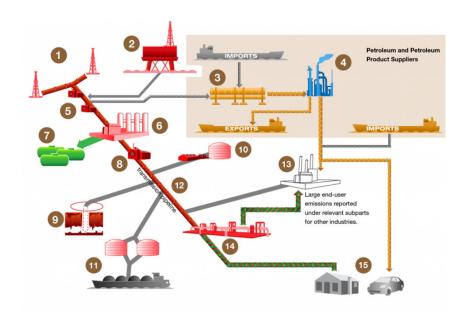
A case study of natural gas differentiated based on the greenhouse gas emissions associated with its production and delivery

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MRV for differentiated natural gas

Global marketplaces, particularly the EU, are demanding natural gas produced with low greenhouse gas emissions, with a focus on methane emissions



Source: EPA

Why methane?

~2% of methane, a potent greenhouse gas, is emitted between production at the wellhead and burner tip; emissions are highly variable by region

Eliminating 100 Tg/yr of methane emissions from the global oil and gas sector is equivalent of removing the carbon dioxide emissions from billions of cars



Challenges with labeling for supply chain emissions

- No measurable feature of the end product verifies a low emission supply chain
- Emissions have high spatial and temporal variability

but

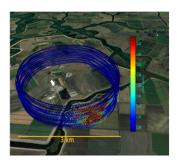
 Rapid advances in remote sensing and data analytics make global scale, high resolution measurements and reporting possible



Allen, et al., Environmental Science & Technology, 51, 12016-12026 (2017).

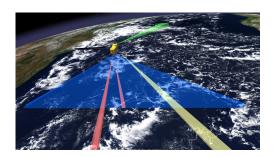




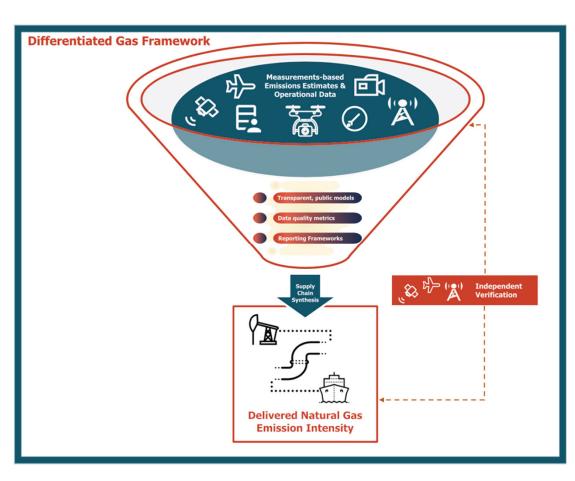










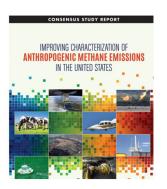


Ravikumar, et al, Nature Energy, in press (2023)

What's needed in an MRV program?

Who leads a global reporting initiative?

Department of Energy is launching a joint effort of natural gas importing and exporting countries that will establish guidelines for a global reporting framework



NASEM reports make key contributions to the structure of MRV systems

Greenhouse Gas Information for Decision-making (2022)

