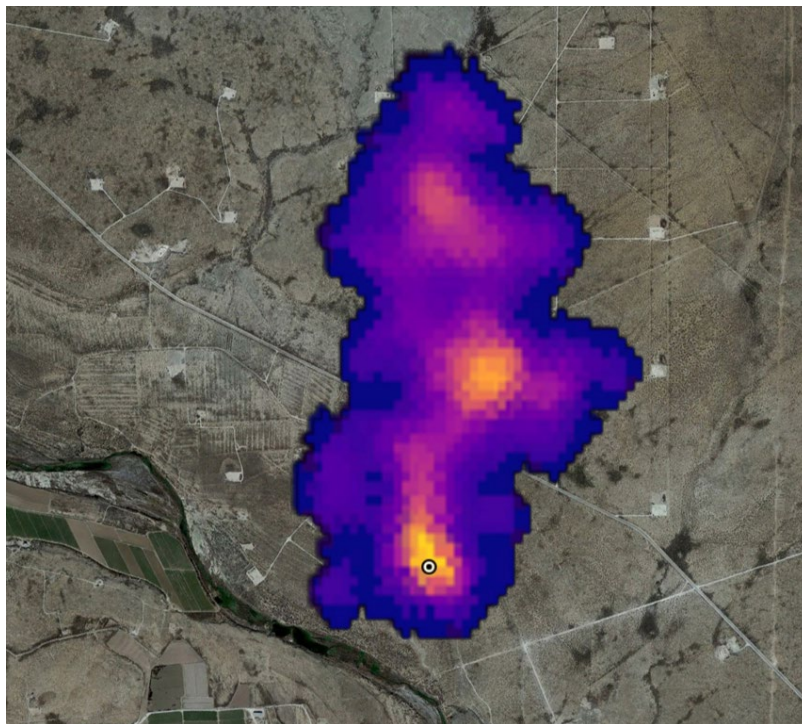


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A Whole New World: Certified Natural Gas Takes Center Stage

Push to Reduce GHG Emissions Drives Development of Differentiated Market



- Natural gas will continue to play a significant role in a lower-carbon economy.
- Regulators, producers pushing to improve environmental profile.
- Primary aim is to reduce methane emissions, which have outsized climate impact.
- Demand has been increasing for ‘certified’ gas with low methane intensity, or MI.
- Climate-related regulations will accelerate demand growth for certified gas.
- Market players should track efforts to reduce methane emissions, certify gas.

1. Introduction

Even as many countries and companies around the world continue to ramp up their use of wind and solar power and explore the potential for a variety of renewable, low- or no-carbon fuels, there’s a growing acknowledgment that natural gas — imperfect though it may be from a climate perspective — is a readily available and relatively clean source of energy and that it will remain a significant part of the global energy mix for decades to come. A lot of this rethinking is tied to energy security. Russia’s February 2022 invasion of Ukraine provided a stark reminder to climate-minded Europe (and the rest of us, too) that while the shift to a lower-carbon economy is important it needs to be carefully paced — that it won’t do anyone any good to have an entirely “green” grid that produces only a fraction of the energy the world needs.

With all that in mind, there are a variety of efforts underway to make the natural gas piece of the global energy puzzle as clean as it can be. A primary focus of these efforts is on reducing as much as possible the amount of methane (CH₄) — the main ingredient in natural gas — that is released into the atmosphere along its route from the production well to the end-user’s burner tip. There’s good reason for zeroing in on methane emissions. Methane is a particularly potent greenhouse gas (GHG), with 84 times the atmospheric heat-trapping effect of carbon dioxide (CO₂) over the short term (five to 20 years). That means reducing methane emissions along the gas value chain has quick and very positive climate effects.

Which brings us to certified gas — that is, gas that an independent third party has verified as being produced, gathered, processed, transported and/or distributed in a way that meets higher environmental standards or, more specifically, has a demonstrably lower methane intensity, or MI. For the most part, the certified gas movement has focused on the upstream end, namely where gas is produced, either in gas-focused plays like the Marcellus/Utica and the Haynesville or crude-oil-focused plays like the Permian and the Bakken, where large volumes of associated gas (a mix of methane, NGLs and various impurities) emerges from wells with crude oil.

The global push to slash methane emissions from upstream operations (and, to a lesser extent so far, from midstream and downstream operations) and certify gas as having significantly lower MI has been accelerating and broadening. It now seems possible that within a couple of years the majority of gas produced in the U.S. will be certified as being low-MI, and that increasing numbers of gas buyers — power generators, industrials, LNG exporters and local distribution companies (LDCs) among them — will be insisting on certified gas, or at least moving toward doing so. Further, a certified gas market is developing (a handful of trading platforms have already been launched), as are tracking systems to ensure that gas sold as certified is fully accounted for and legit, with no double-counting or fuzziness.

We should acknowledge three things up front. First, for either certified or plain-old natural gas, the volumes of CH₄, CO₂ and other GHGs generated from the production wellhead to the point where the gas is to be burned pale in comparison with the massive volumes of GHGs released by the combustion of that gas by end-users. For that reason, many environmental activists openly question the real value of certified gas. (Some also question the efficacy of various methane-detection devices.)

Second, there's the reality that while a producer, a pipeline company, and an LNG producer or LDC may reach a deal to supply, deliver and receive X amount of certified gas per day, that lower-MI gas is blended in the pipeline with "non-certified" gas from other sources and the end-user in fact receives a mix of certified and non-certified gas molecules. The situation is similar to electricity customers who agree to pay a premium to receive green power from their supplier. In fact, the electrons that make it to their homes and businesses are from a broad mix of regional generation sources, including (depending on the location) plants powered by uranium, coal and natural gas, as well as from hydroelectric plants, wind farms and solar facilities.

Third, while the International Energy Agency (IEA) says the U.S. oil and gas industry emits more methane into the atmosphere than its counterparts in any other country (blue bars and left axis in Figure 1 on the following page), the MI of its operations (gold dots and right axis) are among the lowest, in part because of concerted efforts by U.S. producers to detect and repair leaks and maximize the amount of gas that can be sold.

Oil & Gas Industry's Methane Emissions and MI by Country

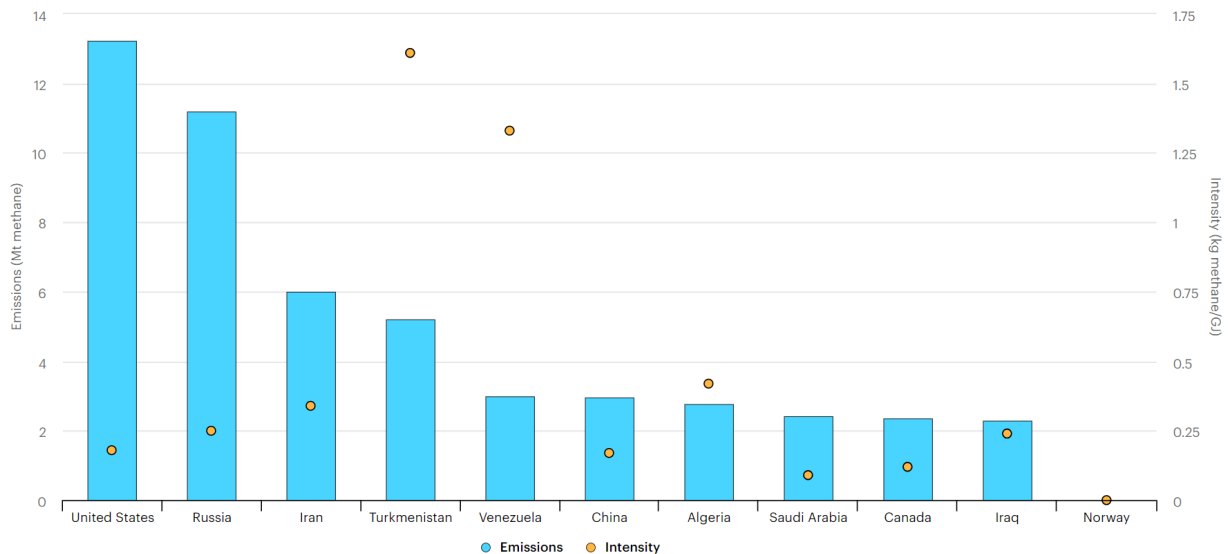


Figure 1. Oil & Gas Industry's Methane Emissions and MI by Country (2023). Source: IEA

There's so much more to think about and discuss. For example, what drives a gas producer to seek certification for its gas, or a gas-pipeline owner or LNG producer to monitor its methane emissions? Why would an LNG producer, an LNG consumer, an LDC or a large industrial company want to buy certified gas? Does everyone agree on the standards used in certification? (Spoiler alert: No.) Are there regulations in the works to govern gas-certification standards? Is there a market in place for trading certified gas, or a mechanism for verifying and tracking certified gas and avoiding double-counting? And what sort of price premiums are being paid for certified gas?

There are no quick-and-easy answers — it's a complicated topic, with differences of opinion and a number of things that still need to be worked out. Our aim in this Drill Down Report is to provide what you might call a comprehensive overview, a drone-level view of Certified Gas World.

It's probably best to start with motivations. Many policymakers in the U.S., Canada, the European Union (EU) and other developed parts of the world see the potential for carefully structured, aggressively managed certified-gas efforts to significantly reduce methane emissions within the not-so-distant future. As we said earlier, methane is a whopper among GHGs, having a rapid and outsized — albeit relatively short-lived — effect on the atmosphere's heat-trapping ability. (CO₂, in contrast, has a slower but more lingering effect, lasting hundreds of years.) According to the IEA:

- Methane emissions are responsible for about 30% of the rise in global temperatures that is attributable to human activities since the Industrial Revolution.
- The energy industry accounts for an estimated 40% of the methane emissions tied to human activities.
- If all the methane that leaked from global oil and gas operations in 2023 were captured and sold, natural gas supplies would have increased by nearly 20 Bcf/d.
- And "rapid and sustained reductions in methane emissions are key to limiting near-term global warming."

At the United Nation's Global Climate Change Conference in Glasgow, Scotland, in November 2021, the U.S. and the EU initiated the Global Methane Pledge, which has to date been signed by more than 155 countries. Signing countries committed to work together to collectively reduce methane emissions by 30% below 2020 levels by 2030. (That may not sound like much of a cut, but it's said to have a similar climate impact as the entire global transportation sector adopting net-zero emissions technologies.) Then, in June 2022, a subset of the signers — including the U.S., the EU, Canada, Mexico, Japan, Argentina and Nigeria

— launched the Global Methane Energy Pledge Pathway to take the further step of committing to capture “the maximum potential of cost-effective methane mitigation” in the oil and gas industry and to eliminate routine flaring “as soon as possible, and no later than 2030.”

As for natural gas producers and others along the gas value chain, their motivations for reducing methane emissions and certifying their gas are varied and multifaceted. For many, meeting certain GHG-reduction targets is part of their broader efforts around ESG (environmental, social and governance) initiatives. For others, the main driver may be more economic — gas molecules that escape into the atmosphere represent lost revenue, and certified gas can sell at a small premium (typically a couple of cents per MMBtu). And, from a practical standpoint, if increasing numbers of gas buyers want to buy certified gas, doesn't it make sense for a producer to give the market what it wants?

And there's regulations and requirements. For example, in December 2023, the U.S. Environmental Protection Agency (EPA) issued a final rule on reducing methane emissions from the oil and gas industry. The rule, which is being challenged in court, is aimed at significantly reducing methane emissions from both new and existing sources. In all, the EPA expects the rule to prevent an estimated 58 million metric tons (MT) of methane emissions from 2024 to 2038 — the heat-trapping equivalent of 1.5 billion MT of CO₂, or nearly as much as all the CO₂ emitted by the U.S. power sector in 2021. In 2030, by which time all of the rule's requirements will have kicked in, the expected methane reductions are equivalent to 130 million MT of CO₂, or more than the annual emissions from 28 million gasoline-powered cars and SUVs. (More on the rule in Section 5 of the Drill Down Report.)

More recently, in May 2024, the 27-member EU formally approved the European Union Methane Regulation (EUMR), legislation that among other things establishes methane emission reporting requirements for EU energy producers and LNG importers and sets a timeline for setting an MI target for imported LNG. Most important — at least initially — the methane regulation will require the U.S. and other LNG exporters to provide upstream monitoring, reporting and verification (MRV) information on methane emissions to EU LNG importers. (Again, more on this later in this report).

Put simply, the stars have been aligning for “a whole new world” of methane monitoring and measuring at oil and gas production sites; expanded methane leak detection and repair (LDAR) programs; gas certification programs; and regulatory mandates that methane emissions be reduced and that only lower-MI gas be exported to the EU (and, likely, other end-use markets too). All of this has broad implications for gas producers, gas marketers, midstreamers that process and transport gas, utilities and other gas-consuming companies, LNG exporters and LNG importers.

In this Drill Down Report, we will discuss the certified gas topic from a variety of angles, beginning with a look at how methane emissions are monitored and measured and how natural gas is certified (Section 2). We'll follow that up with discussions on oil and gas companies at the forefront of the certified gas movement (Section 3); U.S. industrial companies and utilities that have purchased certified gas (Section 4); the EPA's new methane rule and its potential impacts (Section 5); and the EU's methane rule and what it may mean for U.S. LNG exporters (Section 6).

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