Pauline Morrice, Senior Communications Advisor, UK and Steve Kemp, Senior Director of Customer Success, Project Canary, USA, consider why the measurement economy is changing the methane emissions game.

For midstream oil and gas companies, leaks and fugitive emissions from gas pipelines have long been a scourge. They are a source of wasted product and revenue loss, they pose safety risks, and cause damage to the environment that can adversely affect company finances through hefty fines or compensation.

Only now is the extent of the damage caused by methane leaks from pipelines being understood. Research from the Laboratory of Climate and Environmental Sciences found that during 2019 and 2020, over 1800 large bursts of methane occurred, often releasing many tons of methane each hour. It's estimated that these large releases of methane are responsible for 8 - 12% of global methane emissions from oil and gas infrastructure.

Finding a solution that seals this problem for midstream operators might not just be a logical next step, but soon a mandatory one. In the US, the Pipeline and Hazardous Materials Safety Administration (PHMSA) is preparing to issue proposed standards that will require operators to use commercially available advanced leak detection technology to detect and fix leaks, and other countries are likely to follow.

This is not only the right thing to do both for the environment and companies' bottom line, but an easier thing to do now than even a few years ago. Modern technology advancements have resulted in a step change occurring in leak detection methods. Legacy methods were imprecise, time consuming, outdated, impractical and resource intensive, such as inspecting pipeline right of ways for visual signs of disturbance, walking lines with portable gas sensors, and monitoring for changes in pipeline pressure.

EMBRACING THE MEASUREMENT ECONOMY

Today's marketplace is embracing the measurement economy – measuring environmental performance and identifying verifiable climate attributes using real-time data and analytics – that is now being used by companies to minimise waste, cut costs, reach climate targets, and protect the public.

Harnessing climate-tech with the measurement economy

Last winter, Kellas Midstream entered a partnership with Project Canary®, a US-based climate and emissions data firm, to install 12 high-fidelity continuous methane monitoring sensors at its Teesside Central Area Transmission System (CATS) terminal in northeast England. The sensor array relies on technology that can detect methane down to <0.1 g/sec. and report this data to a cloud-based dashboard every 60 sec. for advanced continuous monitoring and insights. This level of fidelity is unparalleled and consequently provides precise accuracy and granularity of data in real-time that has never been seen before in molecule tracking. The 'measurement economy' means that technology is advancing; and as the technology advances, so has Kellas Midstream's ability to advance methane emission detection, monitoring, and measurement to become even more accurate than its competitors and take immediate action on any methane leaks.

This capability to detect and make rapid interventions on any leaks ensures that gas moving through its pipelines is transported with the highest level of reliably accurate accounting of methane and now, Verified Climate Attributes™, while helping to fortify its standing as an ESG leader in the sector. Ultimately, utilisation of this pioneering technology is raising the bar for midstream operators, and sending a message to the market that the new gold standard is now measurement of emission profiles minute by minute for immediate action. Quarterly or monthly emission profiles are not an assessment of methane leaks but merely a guess that in many cases can be off by up to 40%, which is sure to catch the eye of shareholders and environmental groups.

Figure 1. Kellas Midstream installs Project Canary continuous emissions monitoring at Teesside CATS Terminal.

Figure 2. A Kellas Midstream employee demonstrating continuous emissions monitoring in real-time.

Oil and gas companies operate in a fast-changing landscape, and companies that can identify emerging legislation that is waiting on the horizon hold a competitive advantage over their competitors. In the UK, the country's 'Net Zero Strategy: Build Back Greener' indicates that midstream operators are expected to minimise pipeline gas leakage and associated emissions. This means that as the UK enacts further regulatory and legislative policies to reduce its emissions in its push to reach its climate commitments under the Paris Agreement, forward-looking companies such as Kellas that have stayed ahead of the curve have future-proofed themselves against any potential disruptive emerging legislation.

Today, companies have a duty to be good neighbours to the communities they operate in, and for companies in heavy-emitting sectors such as oil and gas, this responsibility is even more pertinent. Methane leaks are not only a potent source of climate pollution, but they are also a health and safety hazard, and nuisance to nearby communities. Although rare, explosions that are dangerous to both people and property can result from gas leaks. Likewise, leaking methane can create a foul odour and harm nearby vegetation. Kellas has long demonstrated a commitment to being socially responsible in the communities it operates in and, by prioritising advanced leak detection through its partnership with

Project Canary, Kellas has reaffirmed its dedication to being a good neighbour. Additionally, by putting environmental stewardship first, Kellas has protected its strong relationship with the community in Teesside while also leading the way to a lower-carbon future.

Indeed, much has been made about the rapid uptake of responsible, low emission production in the upstream natural gas market, with estimates projecting that supply of producer-certified responsibly sourced gas (RSG) will soar from 8.7 billion ft^3/d last year to surpass 20 billion ft^3/d by the end of the 2022. But as the RSG market continues its tremendous growth with sustainability top of mind in the business arena, and ESG continuing to gain prominence in financial markets, there will be more and more value placed on low emission transportation of natural gas. This means midstream companies have an opportunity knocking on their door to seize this growing market by demonstrating their commitment to environmental stewardship with auditable third-party data.

Top of the agenda: managing methane emissions

There's no denying it, the oil and gas industry has a methane problem. The sector is responsible for 82 million t, which is roughly 15% of global methane emissions. And given that methane is over 80 times more potent than carbon dioxide, this is a problem we cannot afford to run away from.

Figure 3. Kellas Midstream installs Project Canary's sensors at multiple points throughout the terminal to precisely detect, monitor, and measure methane emissions in real-time.

But there is no need for the oil and gas sector to run away from this issue or bury its head in the sand. We have the tools and technology available to measure and manage methane leaks right now, and an increasing number of companies in the sector are realising this, as witnessed by RSG's phenomenal growth.

It's not too much of a stretch either to acknowledge that oil and gas companies' long-term viability depends on addressing methane leaks. Last year, more than 100 countries signed the Global Methane Pledge at COP26, promising to reduce methane emissions by 30% by 2030, compared with 2020 levels, with the initiative emphasising making cuts by tackling methane leaking from oil and gas wells.

While net-zero by 2050 is the final destination, natural gas can serve as a 'bridge fuel' to transport us along the journey in the energy transition if we can guarantee that its production, gathering, processing, and transmission have been carried out with the highest level of sustainability standards. Indeed, signs point to a day in the not-too-distant future where certified natural gas is the industry standard.

Natural gas companies will continue to play a crucial role in the energy mix for decades to come, but only ones that place value on sustainability are likely to thrive long-term, considering that a generation of millennials and Gen-Z have turned their back on fossil fuels. With oil and gas companies experiencing a cash windfall from record oil prices, the time is right to invest some of that free cash flow into a more future-looking business model that allocates greater importance to ESG while reducing exposure to climate risk.

Ultimately, it is gas buyers that establish the standards. But as pressure mounts on utilities to prove their ESG credentials, midstream operators can improve the attractiveness of their product by demonstrating their ability to transport gas safely with the highest environmental standards used. Project Canary's continuous methane monitoring sensors provide the data that allows ESG-leading midstream operators such as Kellas to deliver credentialed gas to buyers and validate their commitment to sustainability.

Governments have shown that they are not afraid to block energy deals if there are concerns around the environmental impact. In 2020, the French government stepped in to annul a US$7 billion deal between NextDecade and French utility Engie over concerns regarding methane emissions and other environmental impacts. However, following NextDecade's decision to source 100% certified RSG for its planned Rio Grande Texas LNG export facility, Engie secured a 15 year contract.

Certainly, pressure is mounting from politicians, regulators, the public and investors for oil and gas companies to better manage methane leaks. Pakistan's devastating floods this summer show that the consequences of failing to act on climate change can have catastrophic consequences. Advances in continuous monitoring technology means RSG has the ability to be the cleanest carbon on the planet, and tackle natural gas' brand problem. The oil and gas sector has the tools at its disposal to be part of the solution in solving the climate conundrum by curbing methane emissions, and with strong balance sheets now the onus is on companies to demonstrate that they have the will.