

Speech: Towards a sustainable future for the North Sea

Theodor Kockelkoren, Inspector General at State Supervision of Mines (SodM) delivered the opening speech of 'methane emissions in the North Sea' symposium. Symposium took place 13 & 14 November 2025, Railway Museum in Utrecht.

Context:

Theodor Kockelkoren (Inspector General of State Supervision of Mines, SodM) delivered the opening speech of a two day symposium which is part of a joint research project by SodM, TNO and Nioz into methane emissions in the North Sea. This project, which has been running since 2020, has provided insights into the possible causes and extent of methane leaks. It has also looked at ways in which precautionary and follow-up measures can be organised. The aim of the research project is to contribute to minimize methane emissions from abandoned wells to secure a sustainable future for the North Sea.

Speech:

Good morning, ladies and gentlemen,

On behalf of TNO, Nioz and State Supervision of Mines, I welcome you all to the two-day methane symposium at this special location: the Railway Museum in Utrecht.

Standing here among some icons of the steam age, we are reminded that progress has always been driven by energy — and by our ability to measure, control, and eventually transform it. The engines around us once symbolised innovation, yet they also remind us how profoundly our relationship with energy has changed. Today, the challenge is no longer about moving trains faster, but about moving data, science, and policy faster — to trace the invisible gases that warm our planet.

Methane, though less visible than steam, is a powerful driver of climate change: its power is 28 times stronger than CO₂ and it is responsible for roughly a third of the current global warming. Understanding where it escapes, in what quantities, and how we can stop it, requires the same ingenuity and precision that once powered the railways. Over the next days, we will explore how science, technology, and regulation come together to achieve exactly that. We will focus on a very specific source: abandoned gas wells on the seabed of the North Sea.

Since 2020, the State Supervision of Mines, TNO and Nioz have been conducting research into methane emissions in the North Sea. The questions that are central to the research are simple to ask, but complex to answer: Do these emissions contribute substantially to the greenhouse effect? What do the latest scientific insights say about the nature of these emissions? And what does this mean for policy, regulation and implementation?

I would like to share two initial results of the joint research being conducted by SodM, TNO and Nioz into methane emissions in the North Sea.

The first initial result regards our approach to measuring and monitoring methane emissions at sea. As you can imagine this is quite different from doing so on land. Onshore, we can install instruments in fixed locations, collect data continuously, and accurately determine both the amount and composition of emissions. Offshore, this becomes far more challenging — you need a research vessel, often under demanding weather and sea conditions, and sometimes underwater robots to reach the seabed.

Yet even in this complex environment, gas escaping from the seabed can be remarkably visible. Methane that seeps out forms small bubbles that rise through the water —

bubbles that we can literally see when conditions allow. To detect them systematically, we use sonar instruments that can register even the tiniest bubble streams. These sonar measurements tell us where emissions occur and give an indication of their relative size, although they are less precise when it comes to quantifying the exact flow rate.

When we see no bubbles at all, we know that emissions must be extremely small — likely negligible, though our teams are still refining the initial estimates. Within a few months, we expect to complete that analysis and hope to reach more solid conclusions.

The second initial result regards the potential source of the emissions. A key question is whether these emissions are primarily related to human activity, such as old, abandoned wells, or to natural geological processes.

The data gathered during our latest research campaign seems to support the hypothesis that methane seeps mainly where shallow layers of natural gas — so-called “shallow gas” — are present beneath the seabed. In the last campaign we observed no gas bubbles in areas with no shallow gas, even above abandoned wells. Conversely, where shallow gas occurs, we consistently detected emissions, even in places entirely unrelated to wells. We still have to analyse all data thoroughly over the next couple of months, so we can't draw definite conclusions. At the same time, an early picture seems to be emerging.

This picture suggests that most of the methane we observe at the seabed in our part of the North Sea seems to originate naturally, seeping through the sediment from shallow gas reservoirs rather than leaking from human-made structures.

Sometimes, a small discovery changes the big picture. When Galileo Galilei improved his telescope in 1610, he discovered that four points of light were revolving around Jupiter and changing position. A small observation with major consequences: the sun, not the Earth, turned out to be the center of the solar system.

In a similar way, our initial observations on methane at sea may well challenge our initial assumptions. When we first began studying emissions on the seabed, it seemed logical to link them to man-made structures — to old wells that might be leaking. But just as Galileo's telescope revealed that the center of motion lay elsewhere, our measurements may possibly be pointing to a different source. A finding that might in the end shift our understanding — from a story of technical failure to one of natural processes — and one that may actually reshape how we think about monitoring, mitigation, and focus in the years ahead.

Climate change is and remains one of the most important issues of our time. And science provides us with the required strong foundations to tackle climate change. Methane emissions are one of the key topics.

At this point I would like to stress that, now that the oil and gas sector in the Netherlands is in the process of decommissioning many installations, it is of utmost importance that wells are properly sealed. Also, it is imperative that we continue to monitor whether this has been done properly.

I also would like to stress that State Supervision of Mines as designated supervisory authority in the Netherlands for the mining and energy industry, we are committed to focus on manmade methane emissions in a risk based way. The goal of the European Methane Regulation, which has been in force since last year, is clear: to reduce these methane emissions. We will contribute to that goal by focusing on the biggest risks and employing supervisory interventions delivering the biggest impact.

I would like to thank you all very much for coming and for your contributions.

I look forward to the results of this symposium and to what we can continue to learn together.

Thank you very much.