SOCIETY OF PETROLEUM ENGINEERS
SPE NEWS
COPENHAGEN SECTION

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# FROM THE SECTION CHAIRMAN

## DEAR SPE MEMBERS AND STUDENTS,

In late February, the government announced that it will strengthen the supply of oil and gas and initiate a process that could extend the licenses required for oil and gas production in the North Sea. The current policy is that Denmark should stop producing oil and gas in 2050. This may now change. This is good news for SPE members and students in Denmark, as it could increase activity and the need to develop existing fields using new technologies, ensuring production is as efficient as possible with the lowest energy footprint per produced barrel (or per volume of gas). SPE is not a political organization, but we welcome this potential policy change because it aligns with SPE's mission of exchanging knowledge, innovating, and advancing exploration, development, and production of oil and gas to achieve a safe, secure, and sustainable energy future. You can read more about it here: *Regeringen vil styrke Europas forsyningssikkerhed*.

### Next SPE Meeting on March 17

We are looking forward to the next SPE meeting on March 17, where BlueNord has invited us to a meeting at Vibenhuset. The meeting will feature two presentations: one by Joachim Kjendlie from Rystad, who will share a view of what is shaping the energy markets right now and where oil and gas demand and supply are headed. This will be followed by BlueNord's Lucile Franoux, who will provide a practical breakdown of Scope 1, 2, and 3 emissions—what counts (and what doesn't). If you have been following the news about the Hejre Development, activity was stopped due to a decision in Energiklagenævnet. The decision required that the environmental impact assessment also include Scope 3 emissions. It seems these impact assessments will matter in the future, and we look forward to learning what is important and what counts.

### BlueNord's 2026 Strategy for the Danish Subsurface

BlueNord, which owns CarbonCuts, is also doing significant work on $CO_2$ storage in Project Ruby. I encourage you to read the article in this newsletter about the latest developments in 2025 and what they plan for 2026. Thanks to Mathilde Byrgsen from BlueNord for giving us the opportunity to feature this interesting project in SPE Copenhagen's newsletter. It will most likely help ensure Denmark can store millions of tonnes of $CO_2$ safely and securely in the Danish subsurface.

### SPE Copenhagen Tours NOV's Advanced Production Systems in Brøndby

I would also like to give a special thanks to NOV's Subsea Production Systems in Brøndby for giving us the opportunity to see state-of-the-art test facilities and laboratories for materials used in flexible pipes, built to withstand extreme offshore conditions and challenging reservoir fluids, including high $H_2S$ and $CO_2$ environments. Thank you to Ricardo Caldeira de Oliveira, Jakob Bay Jakobsen, Visweswara Gudla, and Carsten Lumholtz from NOV.

### Celebrating Our Own: SPE Copenhagen Faculty Chair Wei Yan Appointed Professor at DTU

On behalf of the SPE Copenhagen Section, I would like to congratulate Wei Yan, who has been appointed Professor at DTU Chemistry. Wei Yan's inaugural presentation was held at DTU in Building 101 on February

18, and it was an excellent presentation with many SPE members in attendance. I had the pleasure of receiving feedback from Wei Yan during my master's thesis back in 2008 at DTU. It has been a pleasure to follow your research since then, and we wish you all the best in your future work. We are honored to have you as Faculty Chair on the SPE Copenhagen Board, with your expertise in thermodynamics, fluid modeling, CCS, and outstanding experimental work.

## Celebrating 20 Years of the SPE Student Chapter

Finally, it has been 20 years since the SPE Student Chapter was established, and we are planning to celebrate this achievement later this year at DTU.

**Warm regards,**

**Peter Tybjerg**
Section Chair
SPE CPH



Peter Tybjerg
SPE Copenhagen Section Chair

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# THE GREAT VENEZUELAN OIL RESET

*BY HANS HORIKX*

There is a lot of interest in what is going on in Venezuela these days, and some hype but little factual information in legacy media. This editorial analyzes the state of the oil sector in Venezuela, and what changes can realistically be expected. It is in part based on a JPT article of January 13th 2026 (see reference below).

*"Following the capture of Venezuelan President Nicolás Maduro in early January, the US has outlined initial elements of its Venezuela oil policy. Discussions started on 9 January, when US President Donald Trump met in Florida with executives from more than a dozen of the largest US oil and gas companies to determine their interest in deploying capital in Venezuela. President Trump said he expects $100 billion in private investment to flow into the country to rebuild its long-struggling oil sector, but not all oil and gas companies present were convinced that conditions are right to help fund the restoration of the country's oil sector. Independent analysis suggests the country needs more than $180 billion over the next 15 years to return to the 3 million bbl/d level achieved in the mid-2000s."*

*"The largest US oil company represented at the meeting was ExxonMobil. CEO Darren Woods said the supermajor has no near-term plans to deploy capital in Venezuela. He noted that ExxonMobil's history in the country stretches back to the 1940s and that its operations have been taken over by the state twice, and that "to re-enter a third time would require some pretty significant changes from what we've historically seen here and what is currently the state. If we look at the legal and commercial frameworks in place today in Venezuela, today it's uninvestable," said Woods."*

*"Estimates of Venezuela's current oil production range from about 800,000 bbl/d to 1.1 million bbl/d. The country reports a reserve base of roughly 300 billion bbl, the largest in the world. However, that figure has drawn scrutiny from analysts and industry specialists, who have argued that it is unaudited and has not been fully recalculated in more than a decade."* This editorial will assess how realistic these reserves estimates are.

First thing to note is that Venezuelan estimates of oil reserves are based on SPE guidelines, which are significantly more lenient and easier to satisfy than the stringent SEC criteria used by all American oil companies and most major international firms. SEC guidelines require a firm commitment to invest, such as a Final Investment Decision (FID), before oil-in-the-ground can be categorized as reserves. This would eliminate most of the 300 bln bbl from Venezuela's reserves category, and reclassify them as contingent resources according to SEC criteria. In contrast, OPEC countries such as Venezuela use SPE guidelines as the basis for allocation of OPEC production quota and reserves reporting, and these guidelines do not require firm investment as a condition for reserves classification. Since much of Venezuela's oil volumes are technically recoverable, even while being marginally economic, the SPE guidelines do allow classification of financially less mature oil volumes as reserves, enabling Venezuela to report inflated reserves volumes to OPEC.

The question is not whether the oil is in the ground, but rather what it takes to produce it, get it to the market, and how efficiently that can be done.

Most of Venezuela's undeveloped oil resources are in the Orinoco belt, a giant accumulation of heavy crude at shallow depth. It contains circa 1.3 trillion barrels of oil-in-place (STOIIP) at depths of 400-1200 metres, where temperatures are relatively low (45-62 °C) and crude oil is '*heavy*', which is a way of saying that it has a high viscosity. In the reservoir this heavy crude is as viscous as honey (2,000-5,000 cP) but when it cools down on surface it flows as poorly as peanut butter (35,000-100,000 cP). This necessitates high costs for heating and mixing with diluents to keep the crude oil flowing once on surface.

Oil from the Orinoco belt can be recovered using natural drive mechanisms, a combination of rock compaction and solution gas drive, which allows a recovery efficiency of circa 10%, resulting in some 130 bln bbls of *'reserves'*, less than half of what Venezuela has booked. This technique is called '*cold production*' and meets SPE criteria for categorization as reserves. More sophisticated production



The author at the lake of Maracaibo, with multiple production wells and rigs of the Lagunillas field (Bolivar coast complex) in the background.

techniques such as steam, gas or polymer injection could lift recovery efficiency to circa 20%, but these are considered Enhanced Oil Recovery (EOR) techniques, and do not meet commerciality or commitment criteria for categorization as reserves in Venezuela at current oil prices, neither under SPE nor SEC guidelines. So, no more than 130 bln barrels of reserves should be quoted for the Orinoco belt using SPE criteria, rather than the 270 bln barrels reported by Venezuela. And if SEC criteria were used the numbers would be considerably lower still.

For comparison, shale oil-in-place volumes in the US (Permian, Bakken and Eagle Ford) are comparable to those in the Orinoco belt at 0.9-1.6 trillion barrels, of which also some 10% can be recovered after mobilization with hydraulic fracturing and a combination of compaction and solution gas drive. However, only 25 billion barrels of these volumes have been reported as reserves under SEC guidelines, limited by the absence of contractual and financial commitment. The same reasoning is expected to be applied by American oil companies to Venezuela's oil reserves. In addition, the government take through royalties and taxes in Venezuela is currently some 80-95%, much higher than the 25-40% government take (state, federal and local) in the US. Unless changed this will repel investments in the Venezuelan oil sector and shrink reported reserves.

There is still considerable opportunity for increasing oil production in Venezuela. Low hanging fruit consists of power grid repair, well workovers, and infrastructure repairs that together with infill drilling can restore the country's oil production from 1 mln bbls/d to 2 mln bbls/d in the short term for some $55 billion, according to Rystad Energy, in addition to a similar amount of spending over the next 15 years just to prevent current production from declining further.
Even after adding the costs of diluent, heating, processing and upgrading required for the heavy crude a breakeven price of circa 55 US$/bbl is possible for the better parts of the Orinoco accumulation on 'cold production', which is similar to the costs of shale oil production in the US. However, high taxes, high legal/fiscal risks and poor infrastructure in Venezuela make the country less attractive for international investors than nearby alternatives such as Guyana or Suriname. Significant changes in Venezuela's legal and commercial frameworks are required to make it able to compete with oil developments elsewhere in the world, as Mr. Woods had pointed out to the US president earlier in January.

The Venezuelan oil industry is currently at a historic crossroads. Following the seismic geopolitical events of early 2026—including the U.S. military operation and the capture of Nicolás Maduro—the "most likely" scenario is a gradual, multi-year recovery rather than a rapid boom. This will require a significant inflow of financial and human capital, and a level of stability that hasn't been seen for years. Most majors are cautious, wary of repeating a past mistake, and will only commit small amounts of capital rather than massive new development projects until the rule of law is fully proven.

***Hans Horikx*** **-** the author of this article worked for Shell in Venezuela from 2000 to 2005, helped develop its production, reported the affiliate's reserves, and witnessed the early overtures in the forced restructuring of Shell's assets.

**Note:**

***SPE*** *= Society of Petroleum Engineers, a global professional organization. The SPE developed the PRMS (Petroleum Resources Management System), which is the "gold standard" for technical resource classification. The SPE guidelines are a technical standard for engineers.*

***SEC*** *= Securities and Exchange Commission, the U.S. government agency that regulates the stock market. For energy companies, the SEC dictates exactly what they are allowed to tell the public in their official financial filings. SEC guidelines are a legal requirement for investors.*

Reference: ***"US Pushes for $100 Billion Oil Investment in Venezuela", Journal of Petroleum Technology, 13th Jan 2026."***
https://jpt.spe.org/us-pushes-for-100-billion-oil-investment-in-venezuela

# SPE Meeting

## European perspective on the movements shaping the global energy markets by Rystad & BlueNord

SPE Copenhagen is teaming up with BlueNord and Rystad for a meeting at BlueNord. Rystad Energy's Joachim Kjendlie will present a view of the key geopolitical movements and fundamentals shaping global energy markets where oil & gas demand/supply is headed, plus emerging trends in renewables and low-carbon energies.

BlueNord's Lucile Franoux will give a practical breakdown of Scope 1, 2 and 3 Emissions, what counts (and what doesn't), and why it matters, explained with simple examples and real-world meaning.

**Speaker : Joachim Kjendlie**



Joachim Kjendlie is an economist with 20-years of experience in the global energy sector, spanning roles in strategy, portfolio management, decision analysis and business development across Europe, United States, and Asia. Joachim established the Rystad Energy office in Copenhagen in 2022 and currently serves as Head of Nordics where he works closely with clients to provide clarity on energy market developments, energy transition pathways, and investment strategy. Prior to joining Rystad Energy, Joachim spent 15 years at Chevron, holding senior roles in corporate strategy and investment analysis. During this time, he supported enterprise-level capital allocation and portfolio management decisions within a large, global energy company, developing deep insight into the strategic trade-offs required to balance returns, risk and long-term competitiveness in an evolving energy system.



**Speaker : Lucile Franoux**

Lucile joined BlueNord in 2024 and is currently Head of Sustainability. She has also been a member of CarbonCuts' board of Directors since July 2025. She started her career as a petroleum engineer at Maersk Oil, where she worked for 12 years. She then moved into a technical director role at the French bank BNP Paribas, first in the RBL team and later in the Low Carbon Transition Group, supporting CCS developments. She holds an MSc in applied Geology from École Nationale Supérieure de Géologie and an MSc in Petroleum Engineering from Imperial College.

BlueNord

RystadEnergy

**17:00 Social Hour**
**18:00 Presentation by Joachim Kjendlie from Rystad Energy**
**19:00 Dinner and after-dinner presentation by Lucile Franoux**
**20:30 End of Meeting**

## TUESDAY, 17 MARCH

Please sign-up no later than 12 March 2026

Register HERE

**BLUENORD | VIBENHUSET, LYNGBYVEJ 2 | 2100 KØBENHAVN Ø**

# ONSHORE $CO_2$ STORAGE: A STATUS UPDATE ON PROJECT RUBY




Figure 1: Ruby Project activity area

This article provides a status update on Project Ruby, an onshore $CO_2$ storage project led by CarbonCuts, a subsidiary of BlueNord. It outlines the key activities completed in 2025 and how new data have advanced the project toward the next steps in the exploration phase.

2025 was an important year for the Ruby carbon storage project. A 3D survey was acquired over the main structure, and a successful logging campaign was performed in one of the legacy wells.

The first wells in the Rødby structure were drilled in 1952 as part of an exploration program targeting the formations down to Rotliegend. The locations were supported by a few 2D seismic lines. As no oil nor gas was encountered, the exploration was deemed unsuccessful, and the wells were hastily abandoned. The exploration found that no source was present, eliminating the hope of finding oil or gas in Lolland. Little subsurface activity took place after 1953 in the region apart from an exploration well in Søllested, which was drilled north of the regional fault from the Rødby structure in 1982.

When a screening of potential sites for $CO_2$ storage was carried out by GEUS, the area became of interest again. The structure is well defined as an anticlinal dome pushed up by an underlying salt pillow. CarbonCuts was awarded the exploration/appraisal license in 2024 and 2025 became the first year of activities.

The Ruby project is different from other onshore CCS projects in Denmark as it targets the Bunter formation. The Gassum formation is too shallow in the region to be considered for carbon storage. The Bunter formation

contains three sand levels in the region. Despite their thinner nature, there is a significant upside in the permeability due to the aeolian nature of the deposition.

In 2025 two activities took place: Acquisition of 3D seismic survey covering the main structure and rig entry into one of the two legacy wells.

A 3D seismic survey was acquired in the first part of 2025 with the following processing and analysis. The result validated a soft domal structure with a peripheral closing with the regional fault passing to the north of the structure.

The successful entry into the old Rødby-2 well was a significant milestone. It allowed a significant acceleration of the appraisal program. The old legacy wells represent a storage integrity risk. But the entry into Rødby-2 demonstrated that hole was preserved all the way down to the base of the Bunter formation. This and the successful execution of two extended leak off tests have given confidence in the integrity of the storage site and the maximum pressure limitation.

The entry into the old well was problematic. The hole had been used for waste and contained some difficult intervals which required significant fishing operations to recover the metal debris.

Extended leak-off tests are normally executed in open holes. In Rødby-2, the cement was adequate to support two tests in the seal above the Bunter formation. These measurements tie to the geomechanics interpretation and provide an upper pressure limitation for the assessment of capacity.

An MDT was carried out in the lowest Bunter sand, the Volpriehausen and was used to acquire fluid samples. The fluid samples have exhibited high salt content. The main salt is Halite.

The 2025 data which were acquired successfully validated key assumptions in early work, justifying the drilling of the first exploration well in 2026. The key objectives from the 2026 activities are the acquisition of modern openhole logs and the testing of the formation conductivities in the Bunter sands.



Figure 2: Rødby-2 re-entry operation

# SPE Meeting

## Pioneering the Danish North Sea on the Path to a European CCS Hub

Interested in how Carbon Capture and Storage (CCS) is developing in the Danish North Sea and what it means for the region's energy transition? Join this upcoming SPE event for an overview of current CCS activities and future perspectives for offshore $CO_2$ storage.

Esbern Hoch, Asset Manager for Bifrost Phase 2 & Midstream at TotalEnergies Denmark, will share insights into the newly awarded Inez license and its role in advancing Denmark's CCS ambitions. The presentation will highlight key developments in offshore $CO_2$ storage, including project maturation, collaboration across the CCS value chain, and the broader vision of positioning the Danish North Sea as part of a European CCS hub.

The session will provide valuable context on how industry, regulators, and operators are working together to move CCS projects forward and support large-scale emissions reduction.



**Speaker : Esbern Hoch**

**Esbern Hoch has more than 30 years of international experience in the oil and gas industry, including over 20 years in project leadership and business development. He has worked on international projects across Europe, the Middle East, Asia, and Africa, primarily with Mærsk Oil and, since 2018, with TotalEnergies. In 2024, he transitioned from international oil and gas to help build Denmark's emerging Carbon Capture and Storage (CCS) business. From early 2026, he has served as Asset Manager for Bifrost Phase-2 and CCS Midstream.**
**Esbern holds an MSc in Geology from the University of Copenhagen, complemented by professional training in project and business management.**

TotalEnergies

**17:00 Networking and drinks**
**18:00 Presentation**
**19:00 Dinner**

## THURSDAY, 23 April

**TOTALENERGIES | AMERIKA PLADS 29 | 2100 KØBENHAVN**

# SELECTED UPCOMING SPE EVENTS

**21 April 2026**
**Bergen, Vestland, NOR**

SPE Europe Subsurface Conference



**20 - 21 May 2026**
**Ardoe, Scotland, GBR**

SPE Scale Symposium



**23 - 25 Jun 2026**
**Istanbul, TUR**

SPE Europe Energy Conference and Exhibition



**15 - 16 September 2026**
**London, ENG, GBR**

IADC/SPE Managed Pressure Drilling & Underbalanced Operations Conference & Exhibition



# EVENT CALENDAR

**17 March | 17:00 - 20:30 | Face to Face**

| | |
|---|---|
| TOPIC | European perspective on the movements shaping the global energy markets by Rystad & BlueNord |
| Speakers | Joachim Kjendlie & Lucile Franoux |
| HOST | BlueNord \| Vibenhuset, lyngbyvej 2 \| 2100 København Ø |

**23 April | 17:00 - 20:00 | Face to Face**

| | |
|---|---|
| TOPIC | Pioneering the Danish North Sea on the Path to a European CCS Hub |
| Speakers | Esbern Hoch |
| HOST | TotalEnergies \| Amerika Plads 29 \| 2100 KØBENHAVN |

**10 June | 17:00 - 20:00 | Face to Face**

| | |
|---|---|
| TOPIC | Carbon Storage Risks and Costs: Busting Perceptions and Myths |
| Speakers | SPE DL Diego A. Vazquez Anzola |
| HOST | INEOS \| Teknikerbyen 5 \| 2830 VIRUM |




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