



German gov' delays decision on new H2-ready gas power plant

Legislation to support H2-ready capacity in Germany has to be figured out and agreed by a new government in its first 100 days. Build-out of dispatchable capacity remains an "extremely critical issue," BDEW head Kerstin Andreae stressed, though the outgoing economy minister sees little chance to get the law adopted prior to general elections in February.

The Conservative CDU/CSU opposition party indicated it will not support the Power Plant Security Act in parliament, meaning the minority government of Social Democrats and the Green Party lack the number of votes to get the law passed and enacted.

"We will now focus on what is possible," the economic and climate ministry said, explaining the construction of backup plants – estimated to cost up to €17 billion through to 2045 – has already been agreed with the European Commission.

Funding for H2-ready power plants in tatters

Germany's broken coalition government had been working on a levy to fund hydrogen-ready gas power plants, but these plans are now on hold. The new tax was meant to support an initial ten plants with 5 GW capacity combined, expandable to 12.5 GW at a later



Render of RWE's H2-ready CCGT in Werne

stage – but the break of the coalition leaves the realisation of these ambitious plans in limbo.

Auctions for the new H2-ready gas power plants were planned to be held in the first half of 2025, with the intention to get the first plants into operational by 2030. But according to the Berlin-based daily paper 'Tagesspiegel', "these targets are no longer viable."

And as H2-ready gas power plants are supposed to replace the gradual phase-out of Germany's ageing coal power units, the timeline of Germany's coal exit is impacted by the delay.

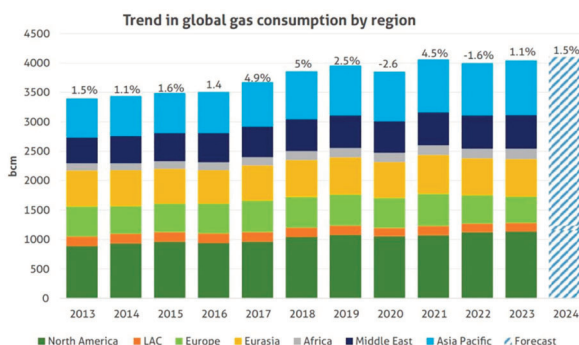
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EU's rising gas-burn, electrification spurs global demand growth

Gas consumption in the EU has been rising by 12% to 35 billion cubic metres (bcm) in 2024, as demand recovered after seven months of decline, which the Gas Exporters Countries Forum (GECF) expects will push up global gas use by over 2.4% this year. Electrification, rising gas demand for heating following an early-November cold spell, and low wind power output were the main demand drivers.

Similarly, gas use in the United States staged a modest year-on-year increase of 0.3%, reaching 79 billion cubic metres (bcm), while China's apparent gas demand in October, 2024 rose by 13% year-on-year to 35.4 bcm, fuelled by increased LNG demand for trucks and higher gas-burn in the power sector.

Looking at upstream gas production, the GECF projects growth for 2024 at 2.5%, the same as the previous forecast. In November, 2024, US gas production continued to fall to 88.9 bcm, down 2.1% year-on-year. Analysts noted the decline reflects the "combined effect of Hurri-



Source: GECF Secretariat based on data from Cedigaz; GECF's estimate for 2023 and forecast for 2024

cane 'Rafael' on Gulf of Mexico operations and production cuts in response to low Henry Hub prices."

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According to findings by the regulator BNetzA, over 20 GW of additional dispatchable power gen capacity would be needed to balance growing volumes of intermittent electricity supply from wind and solar energy sources. Economy minister Robert Habeck had to admit that not all of this elec-

tricity can come from gas or hydrogen – so coal-fired power plants will likely be on stand-by for longer.

The government had agreed an end to coal-fired power production in western North Rhine-Westphalia (NRW) by 2030, well before the official 2038 deadline

and the Essen-based utility RWE made plans to build at least 3 GW of new hydrogen-ready gas power capacity. For eastern Germany, the government expects carbon pricing to make coal plant operation economically unviable before the deadline. ■

Cross-border CCS gains traction in Asia

Cross-border carbon capture arrangements are gaining traction across the Asia Pacific as there are many high-emitting nations in the region which have the technology to capture CO₂ but lack the geological capacity to store it. Utilities and industries hence strive to set up value chain to capture, sell and store emissions abroad in a bid to decarbonise operations.

“Asia Pacific has enormous storage potential – perhaps as much as 3 Giga-tonnes per annum by 2050 – but the development of cross-border CCS has been restricted so far by the lack of a common understanding and alignment of the required regulatory framework and policies to guide agreements,” said Paul Everingham, head to the Singapore-based Asia Natural Gas & Energy Association (AGEA).

In fact, CCS has been widely recognised as a technology that is critical for global net zero aspirations.

Responding to this trend, AGEA together with Boston Consulting Group has set out overarching set of principles to help parties navigate the requirements for cross-border CCS arrangements. In a study, both partners reviewed and applied international standards – including those from the IPCC, the EU CCS Directive, and the London Protocol – in the Asia Pacific context.

Recommendations for sellers and buyers

of CO₂ include:

- Define and agree on ownership rights to the emission reductions.
- Agree to share data for emission reduction certification.
- Agree on jurisdictional accountability for emission reversals from leakages and acceptable mechanisms for the adjustment of such reversals.
- Agree on regulatory jurisdiction during CO₂ transportation.

- Agree on dispute resolution mechanisms, including arbitration forums.

“CCS in Asia Pacific is entering an exciting phase with countries exploring bilateral arrangements for cross-border emissions capture and storage,” said Boston Consulting Group’s Senior Partner and Head of Energy Practice for Asia Pacific, Asheesh Sastry said, stressing: “Realising its full potential requires clarity on bilateral and commercial agreement issues.” ■

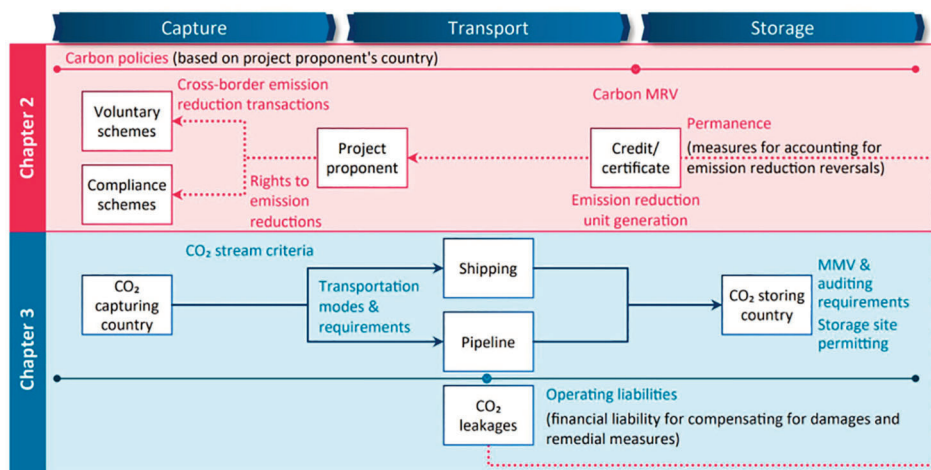


Figure 1-1: Scope of the cross-border CCS study

Continued from page 1

Europe’s gas production was up 1.5% year-on-year in October, reaching 15.7 bcm which was mainly supported by higher Norwegian output and limited maintenance.

As for Asia-Pacific, gas production was estimated to have risen by 0.5% year-on-year, driven by significant Chinese production growth of 9.7%, however this regional effect was countered by the reduction of some other major Asian gas producers’ outputs.

LNG trade up 2%

Global LNG trade was on track to grow by 2% this year, driven mainly by stronger imports in Asia/Pacific, which offset a sharp decline in Europe. In November, global LNG

imports fell by 3.4% year-on-year to 34 mill tonnes – the lowest level for the month since 2021.

According to the GECF, this was caused by “a sharp year-on-year reduction in LNG cargo floating storage in October, as the steep price contango observed in October, 2023 was less pronounced this year.” This dynamic led to a spike in imports in October, followed by a decrease in November.

Europe accounted for the majority of the decline, with LNG imports falling by 14% year-on-year to 9.1 million tonnes. In contrast, Asia/Pacific LNG imports rose slightly by 0.2% year-on-year to 22.9 million tonnes, the weakest monthly level since June 2024, due to tight LNG supply. ■

Gas to Power Journal

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Europe-wide CO₂ market can save 20% in storage costs

Setting up a pan-European market for transporting and storing industry and energy-related emissions in the North Sea could slash storage costs. Modelling by Xodus Group finds emitters using UK offshore CO₂ storage could save 20%, or €11/t of stored CO₂ and with the market set to grow to 243 million tons by 2040, this would represent €2.7 billion in annual savings.

EU emitters would receive the bulk of the savings, with an average cost reduction of 28% or €16/tCO₂, amounting to €2.6 billion per year in 2040.

Fundamentally, the savings stem from reducing the transport distance for CO₂ headed to offshore storage. The economies of scale caused by the largescale storage in the UK and Norway have not been incorporated, researchers noted.

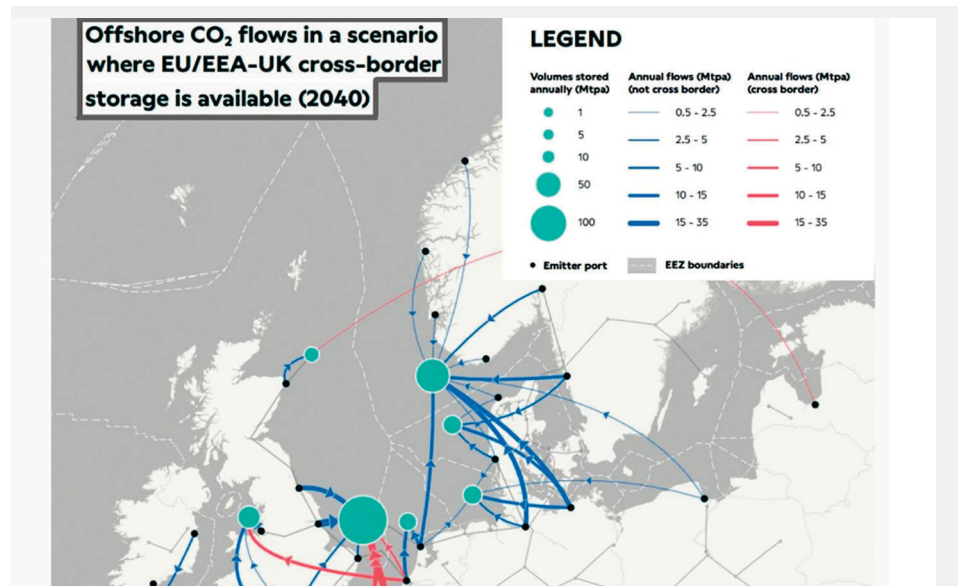
Huge storage potential under UK North Sea

The UK's offshore CO₂ storage potential is estimated at 78 billion tonnes, almost one third of Europe's geological storage capacity. Meanwhile, in countries across Europe, there is often a mismatch between the amount of industrial CO₂ that will need to be captured, and the amount of CO₂ storage resource available to prevent it reaching the atmosphere.

By storing captured carbon in the UK North Sea, emitters in the EU-27 countries could, on average, save €16 per ton or 28% reduction in transport and storage costs. With the EU alone projected to need 164 MtCO₂ of offshore CO₂ storage by 2040, this would represent €2.6 billion in annual savings, analysts noted.

Conflicting regulatory regimes

As of today, however, conflicting policy remains the largest obstacle to transporting CO₂ across the EU-UK border which would



otherwise be technically feasible. To facilitate cross-border CO₂ transport and storage, the European Commission and the UK Government are urged to "take concrete actions" to harmonise policies and regulations.

Necessary steps include: setting up a bilateral trade agreement to enable mutual recognition of each jurisdiction's CCS regime. Amending existing trading in Europe and the UK schemes to accommodate CO₂ storage outside the EU and EEA.

Need to harmonise policies, and trade

As CCUS projects progress in the EU, Norway and the UK – first Carbon Capture Utilisation and Storage (CCUS) sites will begin

operations in as soon as 2026. Hence, facilitating cross-border CO₂ transport and storage are vital to make these systems more attractive and resilient.

"We need to act quickly before higher-cost options are locked in and the opportunity is lost," said Olivia Powis, head of the Carbon Capture and Storage Association (CCSA). A Europe-wide CO₂ market is within reach, but policies are standing in the way.

"We can cut storage costs by 20% and save billions annually if the EU and UK break down these barriers, and make cross-border CO₂ storage happen now," she said, suggesting the future of the European industry and its clean energy transformation depends on it. ■

Scaling up CCS capacity by linking it to liquefaction

Juxtaposing the carbon capture and storage (CCS) capacity with LNG production illustrates of the scale of the ambition for CCS, Wood Mackenzie says, comparing the growth of two large industrial systems

handling gas in a cooled liquid state. "Even in the delayed energy transition scenario, CCS capacity is expected to be three times greater than LNG supply volumes by 2050, while in the base case, it will be four times greater," analysts noted.

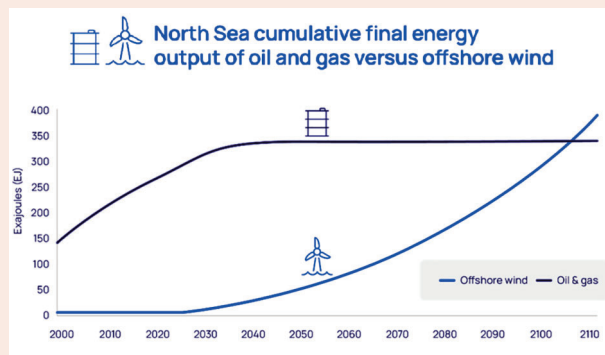
Hydrogen is yet another transformative driver to watch out for in 2025, considering that offshore wind power output is forecast to grow by 2% annually.

Europe is at the forefront of repurposing its energy infrastructure through CCS, hydrogen and the renewables build-out. The North

Sea, once a significant source of oil and gas, was at the vanguard of the offshore wind sector. Wood Mackenzie's chart plots oil and gas against offshore wind by quantifying the cumulative final energy output.

Offshore wind capacity stands at 36 GW today and is projected to exceed 240 GW by 2050.

"Even so, it will be past the end of the century before offshore winds cumulative energy output surpasses oil and gas," said WoodMac's vice president Upstream and Carbon Management consulting, Malcolm Forbes-Cable, who spent a number of years on rigs in the North Sea and says he was "always curious as to the energy output from above and below the sea." ■



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Digital workforce management enhance safety and profitability

For industry and electrical power producers, the need to optimize safety, productivity and compliance has a direct impact on profitability. But, there is one factor that plays a greater role than any other — the human factor, which is why Honeywell set up solution for a digitalized workforce management.

Companies in the LNG industry and in the downstream power sector have unique workforce requirements across a wide range of gas production, storage and transportation operations. They must train and certify plant staff to do their jobs the right and safe way, make sure contractors are duly managed and accountable; determine if employees are safe, fit for work via effective fatigue management and reliable mustering control.

Operational challenges

LNG sites and power stations face a host of workforce-related challenges, and frequently rely on manual efforts and processes, which can lead to an increase in safety incidents and non-compliance—resulting in penalties, reduced work hours and financial losses.

However, many energy businesses lack real-time enforcement of company policies and compliance status, and don't receive immediate notification of non-compliance. They also suffer from a loss of on-site productivity by employees, not to mention excess work hours billing by contractors.

Access to some LNG sites is inadequately controlled, while plant managers can only do basic mustering with limited functionality. Their efforts rely on non-integrated point solutions. Customized software for these ap-

plications is costly and tedious to maintain, with limited functionality. Furthermore, the software can be difficult to scale across sites or the entire organization.

Leveraging AI

LNG companies are now collaborating with leading automation suppliers to leverage the power of digitization to better manage their industrial workforce. Honeywell's end-to-end workforce management, for instance, offers seamless integration with the company's control system, enterprise resource planning and HR systems. The web-based system enabling drives visibility and measurability to a single pane of glass.

By employing Honeywell's innovative solution to digitize workforce management, LNG operators are able to reduce site-mustering time from hours to minutes, implement real-time compliance status monitoring and enforcement, improve fatigue monitoring and random substance testing with a view to increase productivity and reduce overbilling of contract work hours.

Site operators can reduce the risk of penalties and reputational damage through increased compliance and a lower probability of safety incidents. They can also achieve



an 80% reduction in mustering time. For companies with a distributed workforce, Honeywell's digitized solutions can save time in compliance management, and minimize lost work hours. ■

NEWS NUDGES

Product certified through digital twin

For the first time, an industrial product has been certified for the United States after parts of the required tests were conducted through digital simulation and later validated by physical testing. To make this possible, Siemens collaborated with UL Solutions, a leader in applied safety science.

AI accelerates the energy transition

DNV, an international registrar and certification body, has called on the energy industry to overcome its lack of trust in artificial intelligence (AI). The latest suite of 'digital twins' practices, recommended

by DNV, now covers AI-enabled systems that help manage power generation assets and connected infrastructure in the face of the industry's vulnerabilities to cyber threats.

Digitalisation of CHPs essential

The digitalisation of combined heat and power (CHP) plants via sensors, IoT connectivity and AI algorithms is essential for decarbonising the district heating sector, the International Energy Agency (IEA) said. District heating and cooling sector accounts for more than half of total energy consumption in many industrialised countries and is hence a central area for decarbonising the wider energy system.

Siemens teams up with NVIDIA

Siemens will work with NVIDIA to deliver physically based visualization for product lifecycle management. The German technology conglomerate and California-based NVIDIA announced plans to enhance Siemens' Xcelerator platform, including the Teamcenter Digital Reality Viewer powered by NVIDIA Omniverse.

The aim is to bring physically based visualization directly into the product lifecycle management system. The digital twin environment will be linked to live 3D data, reducing errors and data discrepancies while streamlining workflows and decision-making.

The use of Siemens' hardware and software, enhanced by NVIDIA AI and accelerated computing will lower costs and accelerate time-to-market for customers, the two partners said. They estimate the new offering will bring 25-fold acceleration in AI execution to the shop floor. ■



GE to step up HA gas turbine repair capabilities in Asia

GE Vernova has signed contracts for 9 GW of gas turbine reservations in the past month, amid rising demand from data centre campuses, some of scheduled to be in operation as early as 2028. According to CEO Scott Strazik, big tech companies are reserving turbines for a planned 5 GW of data centre campuses.

The latest investment in GE's Advanced Manufacturing Repair Technology (AMRT) follows a 2019 announcement to spend up to US\$60 million over 10 years to make to strengthen current HA repair capacity in Asia. Now, the company seeks to enhance its repair capabilities by introducing robotic technologies that leverage artificial intelligence, lean methodologies. To that end, the US company wants to hire of over 100 technical staff over the next five years.

In focus are technology development and repair for high-efficiency, air-cooled (HA) gas turbines. Over one-third of GE Vernova's HA gas turbines are located in, or are on order for the region as of today. Looking ahead, Asia's projected steady growth trajectory

means the percentage of HA turbines in the region is expected to grow, Ramesh Singaram, President and CEO, Asia at GE Vernova's Gas Power indicated.

Shift to clean gas and hydrogen

Natural gas is going to play an "incredibly important role this decade" – especially in the Asian power gen sector.

"A dollar invested in gas isn't a dollar in-

vested in carbon forever," said Ramesh Singaram, President and CEO, Asia at GE Vernova's Gas Power noted, given that GE's gas turbine technology is engineered to support the path towards decarbonization by adopting pre- or post-combustions solutions. "Owners of HA gas turbines in Singapore and the wider region in Southeast Asia will benefit from improvements to lead time and delivery of repair components in support of their outage needs," he said.

A typical H-Class combined-cycle power plant made by GE Vernova is engineered to be "the most responsive and flexible in the industry," the company claims. This enables grid operators to dispatch electricity quickly as a complement to intermittent electricity generated renewables, notably wind and solar power sources.

Currently, HA gas turbines can burn up to 50% by volume of hydrogen when blended with natural gas, and the aim is 100% hydrogen combustion in the years after 2030. ■



GE Vernova's Global Repair Service Singapore

Wärtsilä engines to power 120 MW plant in Kazakhstan

Kazakhstan Caspian Offshore Industries (KCOI) has handed an order to Wärtsilä to supply equipment for a new 120 MW power plant, currently under construction and due onstream in mid-2026. KCOI is the main contractor for a hybrid power project in the Mangystau region, whereby gas-fuelled gensets complement a 77 MW of wind power and 50 MW of solar PV capacity.

When completed, the project will supply electricity to oil and gas facilities in the Mangystau region, where the Kazakh government plans to develop and aviation hub and enhance railway infrastructure with a view of attracting investors to expand the Seaport Aktau special economic zone.

More than 14 projects have been launched at Seaport Aktau in 2024, and another 19 in the manufacturing industry, totaling 1.5 trillion Kazakh Tenge, equalling approximately US\$8 billion are at the development stage. In the first 10 months of last year, the volume of transportation along the Trans-Caspian International Transport Route grew by 70%, and container shipments increased almost threefold. 2.3 million tonnes of cargo were transported by rail and 6.3 million tonnes by sea.

Wärtsilä has been doing business in

Kazakhstan since the early 1990s. The 120 MW plant in the Mangystau region will be first hybrid project of its type to be implemented in the country.

Delivery of the engines and related equipment is scheduled for the end of 2025,

and the project is expected to be

fully operational before summer next year. "The engine power plant is essential to enable a stable and reliable supply of electricity, and the Wärtsilä engines will efficiently regulate the frequency and voltage



Render of Wärtsilä-built hybrid power plant

to ensure this reliability is achieved," says Mirko Borghesi, chief executive of Kazakhstan Caspian Offshore Industries (KCOI), the contractor and future operator of the plant. ■

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