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The road to a net zero North Sea basin

The UK's offshore oil and gas industry has committed to halving operational emissions in the next decade, confirming its pathway to becoming a net zero emissions basin by 2050.

A report published by industry body OGUK, *The pathway to net zero: Production emissions targets*, outlines how targets will be achieved through changes to operations, progressive reductions in flaring and venting, and major capital investment programmes aimed at using electricity rather than gas, to power offshore facilities.

The targets are a key part of a transformational sector deal that industry is now formally discussing with the UK government. With jobs the supply chain and energy communities at its core, the sector deal will consider how the UK's oil and gas industry can support a green recovery. This could see the sector support wider UK efforts to decarbonise, using its skills and infrastructure to develop critical carbon – cutting solutions such as industrial scale carbon capture, use and storage (CCUS) and the use of hydrogen for heating and heavy transport.

UK Minister for Energy Kwasi Kwarteng comments: 'The offshore oil and gas sector's commitment to halving operational emissions over the next decade is a welcome step for an industry that has a vital role to play in our energy transition in the years to come. The UK government will continue to work tirelessly with all partners to deliver a dynamic sector deal. This will further support the industry in becoming more sustainable, as we work towards achieving net zero emissions by 2050.'

Report author and OGUK Emissions Improvement Manager Louise O'Hara Murray says: 'These targets would remove over 9mn tCO₂eq greenhouse gas emissions from our operations over the next decade; the same as taking nearly two million cars off the road for a year... Many of the major capital investment projects which will help our sector to decarbonise, including the powering of assets with electricity instead of hydrocarbons, the development and deployment of carbon capture and storage (CCS) and hydrogen both on and offshore, will need to be developed at scale to help other industries accelerate their own efforts to reduce emissions.'

Offshore wind capex set to match upstream oil and gas by 2021

The oil market collapsed by the COVID – 19 pandemic is set to delay several oil and gas developments in Western Europe, putting capital expenditure (capex) in the offshore sector on a continued downwards trajectory through 2022, reports Rystad Energy.

In light of the postponement of multiple final investment decisions (FIDs) on projects and lower investments in offshore oil and gas, coupled with increasing activity in the offshore wind sector, the market analyst expects that the two markets will reach parity as soon as 2021. Indeed, it anticipates that capex on offshore wind will surpass upstream oil and gas spending in Europe in 2022.

Capex towards offshore wind in Europe surpassed the \$10bn mark in 2015 and has since hovered in the range of \$10 -15bn / y. Annual capex levels are expected to rise from around \$11.1bn in 2019 to around \$13.8bn in 2020, \$18.2bn in 2021 and more than \$22bn in 2022.

The abundant oil supply and reduced demand have taken their toll on the oil price, and consequently annual capex towards upstream offshore oil and gas in Europe is expected to decline from more than \$17bn in 2022, predicts Rystad.

'Offshore wind development in Europe is expected to flourish in the coming years as countries strive to reach their ambitious 2030 targets – and large investments will be required,' says Alexander Flotre, Rystad Energy's Project Manager for Offshore Wind.

Historically, Europe has been the key market for offshore wind development, accounting for almost 80% of global installed capacity at the end of 2019. While strong growth is expected in China, South East Asia and the US in the years to come, Europe is expected to maintain its number one position through 2025 in terms installed capacity.

From an installed base of 21.9 GW in 2019, European capacity is expected to increase to more than 5. GW by 2025, constituting an annual growth rate of 16%. The UK is the largest country in Europe in terms of offshore wind capacity and is expected to drive a big portion of the growth towards 2025, with mega – projects such as Dogger Bank, Sofia and additional Hornsea phases currently on the cards, among others. Other established countries such as the Netherlands, Germany, Belgium and Denmark are also expected to contribute to the increased spending levels, while newcomers such France and Poland will add to the growth in the 2023 to 2025 period.

'Many service companies have already transitioned towards concentrating increasingly on offshore wind activities, compared to their legacy oil and gas business. For these players, the growth in the offshore wind market provides a will – timed cushion that softens the blow of declining investments in the traditional oilfield services sector,' Flotre concludes.

Sleipner field centre to be partly electrified

Equinor and partners Var Energi, Lotos and kufpec have made an investment decision to partly electrify the sleipner field and are submitting a revised plan for development and operation (PDO) to the Norwegian authorities.

'This investment will contribute to further develop the Norwegian Continental Shelf (NCS) toward the goal of zero greenhouse gas emissions in 2050,' says Anders Opedal, Equinor's Executive Vice President for Technology, Projects and Drilling. He also adds that the broad political agreement recently reached on temporary adjustments in Norway's petroleum tax 'will provide the industry with the predictability it needs to continue work on planned projects that will stimulate new investment maintain activity in a challenging period.'

A new power cable is to be laid from Sleipner to the Gina Krog platform, which will be tied into power from shore in the Utsira High area. During periods when the power need is greater than the system's capacity, Sleipner will use gas turbines, like it does today, to cover the power need.

Emissions savings from all the fields connected to power from shore in the Utsira High area are estimated at around 1.15mn tCO₂ on average annually. Sleipner's share of this reduction is expected to be more than 150,000 t/y of CO₂.

'Sleipner has been at the very forefront of technological development and innovation, in part through capturing, injecting and storing more than 20mn tonnes of CO₂ since 1996. Therefore, it is extremely gratifying that the partners in the Sleipner licence have decided to further develop the field in line with our ambitious plans to reduce greenhouse gas emissions on the NCS,' says Arne Sigve Nylund, Executive Vice President for Development & Production Norway.

In other news, Equinor has also entered into an agreement with Aker Bp on commercial terms for a coordinated development of the Krafla, Fulla and North of Alveheim (NOA) licences on the NCS. Equinor is the operator of the Krafla licence and Aker BP is the operator of the NOA and Fulla licences.

The area consists of many licences and complex reservoirs that contain several oil and gas discoveries with total recoverable resources estimated at more than 500mn boe, with further exploration and appraisal potential identified.

The proposed development concept for the area consists of a processing platform in the south operated by Aker BP and an unmanned processing platform in the north operated by Equinor, with the potential for several satellite platforms and tie – backs to cover the various discoveries.

The OPEC+ producer group agreed in early June to approve a one-month roll – over of the 9.7mn b/d cut in production agreed in April 2020. Under the original agreement, production had been set to increase in steps after June. Saudi Arabia, the United Arab Emirates and Kuwait also announced their decision to halt in July the extra set of voluntary cuts they had imposed on top of the OPEC+ requirements in April.

Total is to acquire from SSE Renewable a 51% stake in the 1,140 MW Seagreen 1 offshore wind farm project for an upfront payment at closing of £70mn and earn – outs up to £60mn in aggregate subject to performance conditions. The 1,140 MW project has just reached a final investment decision and financial close. Located 27 km from the coastline Scottish waters of UK North Sea, Seagreen 1 is designed to cover the energy needs of around 1mn homes and will start producing renewable electricity from the end of 2022. Once completed, it will be Scotland's largest offshore wind farm.

Nigeria's Department of Petroleum Resources (DPR) has launched a new marginal field bid round. A total of 57 marginal fields have been made available, comprising a mix of onshore, swamp and shallow – water offshore fields. The DPR has also released new guidelines covering the bid process, the award and farm – out of marginal fields and their operation.

Rystad Energy's first report ranking the world's oil and gas producers by how much CO₂ is emitted in connection with their upstream activities shows that the US was the world's top emitter from upstream oil and gas producing activities in absolute terms in 2018, releasing a total of 133mn tonnes of CO₂. It was followed by Russia (116mn tonnes) and Canada (114mn tonnes). When it comes to CO₂ intensity per produced boe, Norway shows the lowest upstream CO₂ footprint among the top 10 producing countries, with approximately 7 kgCO₂/boe produced. Norway introduced a CO₂ pricing mechanism in the early 1990s, while also adhering to the EU carbon trading system, which has motivated operators in the country to put extra emphasis on emission – reducing measures and technologies, comments the market analyst.

Germany unveils green rescue plans

The German government has unveiled a rescue package to help fight the worst economic shock in decades and transform the economy to make it greener and stronger. Under the plan €2.2bn will be spent on incentivising electric cars and car fleet, supporting auto industry jobs and helping the sector to decarbonise. It also includes €7bn in hydrogen investments, €2.5bn for electric vehicle (EV) recharging infrastructure and battery manufacturing, €1.2bn for clean buses and trucks, €5bn for the German railway company deutsche Bahn, and €2bn for energy – efficient housing.

There had been intense pressure by car manufacturers to introduce a so – called scrappage scheme for diesel and petrol cars, but the €6,000 state – funded premium will be limited to electric models only.

‘This sets an important precedent for governments everywhere trying to support the car industry,’ according to environmental group Transport & Environment (T&E). ‘After France, now Germany is pointing the way forward with massive investments in electric cars, recharging infrastructure and railways. This is exactly what is needed to support jobs and help us emerge stronger and greener from the COVID crisis. The plan isn’t perfect, but it should be a wake – up call for the [European] Commission and other European countries,’ comments Stef Cornelis, T&E Germany Director.

However, T&E says the plan to spend €1bn of taxpayers’ money on new aeroplanes is ‘misguided’, stating that airlines ‘should pay for them out of their own pocket’. It believes that Germany ‘should go all in on greener jet fuels, such as synthetic fuel, which actually have the potential to substantially reduce aviation emissions’.

T&E also welcomes the investment in shore – side charging for ship, but calls for the German government to re-think its support for LNG ship infrastructure. In addition, it says that no public money should be used for subsidizing diesel trucks, noting that the German government intends to use EU recovery funds to provide up to €15,000 in subsidies for trading oil diesel trucks for new EURO VI models.

Cornelis notes: ‘Germany is about to take over the presidency of the EU... It must use its leadership to make sure the Commission’s big recovery plan is used to strengthen and green the economies of countries like Spain and Italy.’

China and the US are expected to lead capacity growth in the global LNG liquefaction and regasification sectors from planned and announced (newbuild) projects between 2020 and 2024, according to GlobalData. Its latest analysis reveals that China leads globally in terms of regasification capacity growth from planned and announced projects, with 2.9tn cf of capacity expected to come online by 2024. India and Pakistan follow, with regasification capacities of 2.1tn cf and 1.4tn cf, respectively by 2024. Equinor is planning to halve maritime emissions in Norway by 2030, compared to 2005 emissions, by escalating its production and use of low carbon fuels; and to halve global emission by 2050, compared to 2008 emissions, though an increase in production and use of zero emission fuels. The maritime sector represents 6% of total green house gas emissions in Norway and 2-3% of global emissions.

Total has joined the Getting to Zero Coalition to support the decarbonisation of the maritime industry by collaborating with companies across the maritime, energy, infrastructure and finance sectors. The Coalition’s goal is to help achieve that target set by the International Maritime Organisation (IMO) to reduce emissions of greenhouse gases from shipping by at least 50% by 2050, compared to 2008 levels, by getting commercially viable deepsea zero emission vessels powered by zero emission fuels into operations by 2030.

The UK government is increasing the country’s climate ambitious with proposals showing how a new UK – wide Emissions Trading System (ETS) would work – putting a cost on carbon pollution to encourage polluters to reduce the amount of greenhouse gases they emit. The system would form a crucial step towards achieving the UK’s target for net zero carbon emissions by 2050. It includes plans to reduce the existing emissions cap by 5%, going further than the current EU system. The new scheme would replace the EU ETS, which the UK will leave at the end of this year as the transition period ends.

BP is to cut its global workforce of 70,000 by 10,000 as part of a restructuring to make the company more integrated, flatter and smaller, actions it says have been accelerated and amplified by the need to respond to market conditions and reduce its costs. The roles affected will be office – based, not front – line operational roles. The changes are expected to significantly impact senior levels in the company – for example, it expects the number of group leaders (the top 400 in BP) to be reduced by a third. The company later announced it will write down as much as \$13-17.5bn on the value of its assets when it reports its second quarter results.

The COVID – 19 pandemic has set in motion the largest drop in global energy investment in history, with spending expected to plunge in every major sector this year – from fossil fuels to renewable and efficiency – the IEA 2020 report. At the start of 2020, global energy investment was on track for growth of around 2% which would have been the largest annual rise in spending in six years. But after the COVID – 19 crisis brought large swathes of the world economy to a standstill in a matter of months, global investment is now expected to plummet by 20% almost \$400bn, compared with last year.

Eni has unveiled a new business structure, underpinning its aim of becoming ‘a leader in the energy transition’. The company is creating two new business groups – Natural Resource, ‘to develop the upstream oil and gas portfolio sustainably, promoting energy efficiency and carbon capture’; and Energy Evolution, dedicated to ‘supporting the evolution of the company’s power generation, product transformation and marketing from fossil to bio, blue and green’.

What on earth is hydrogen?

A new resource designed to support everyday understanding about hydrogen has been published by the EI to address concerns that lack of awareness could be a barrier to its deployment in the low carbon energy system.

Energy Essentials: a Guide to Hydrogen is an evidence – based, peer – reviewed resource specifically aimed at those who are not expert in the field. It sets out what hydrogen is, how it is made, transported and used, what the experience would be like in the home, for transport and in industry, and what the future of hydrogen might be.

‘Our response to the climate emergency must put all carbon solutions in the frame and hydrogen has potential as a versatile enabler of decarbonisation across the economy and our way of life,’ said EI President Steve Holliday FREng FEI.

‘Like the unfamiliar application of any technology, hydrogen will need to prove itself in terms of cost, safety and low carbon production, but it’s hard to imagine a net zero future without hydrogen in some form or other.

‘That will mean change, and require a greater level of support to improve the hydrogen literacy of energy users themselves. This new guide has been produced by the Energy Institute as a contribution to that endeavour.’

It is estimated by the Committee on Climate Change (CCC) that more than half (53%) of the emissions reductions needed to reach net zero in the UK will come from behavioural or societal change in combination with low carbon technologies. But studies have raised concerns that the public’s level of awareness about hydrogen and its potential role is lagging behind other low carbon technologies and could pose a barrier to its deployment.

IEA sustainable recovery 'roadmap' would aid economies

Investing \$1tn in green recovery measures annually for the next three years could drive economic growth, create millions of jobs and place CO₂ emissions into structural decline, according to pandemic stimulus guidelines drawn up by the International Energy Agency (IEA)

In its special report on Sustainable Recovery, the agency emphasised that failure to implement green measures in the coming months could lead to the development of new high-carbon infrastructure that puts the goals of the Paris Agreement out of reach.

Accordingly to the IEA, adherence to the Sustainable Recovery plan would add 1.1% to global economic growth each year. It would also boost the annual growth of developing countries by around 1.3% and result in global GDP being 3.5% higher in 2023 than it would have been otherwise. The plan's effect on global employment would also be notable – creating some 9mn jobs per years over the next three years. Bases on detailed assessments of more than 30 specific energy policy measures, the Sustainable Recovery Plan considers cost-effective approaches, the circumstances of individual countries, existing pipelines of energy projects and current market conditions, It cover six key sectors- electricity, transport, industry, building, fuels and emerging low-carbon technologies.

In the electricity industry, the agency recommends expanding and modernizing grids accelerating the rollout of wind and solar PV and maintaining a role for both hydro and nuclear power. Transport measures include the expansion of high-speed rail network and EV charging infrastructure. Meanwhile, the plan says that building would benefits from energy efficiency retrofits, while industry must explore increased electrification.

The IEA notable advocates for the expansion of existing low-carbon infrastructure and approaches, rather than pushing for the creation of novel solution. However, it does say that there are opportunities to scale up clean hydrogen and carbon captured technologies, as well as small modular nuclear reactors. Dr. Faith Birol, the IEA's Executive Director argued that governments are currently presented with the once-in-a-lifetime opportunity' to reboot economies and spur new employment opportunities while setting the stage for a sustainable future.

'This report lays out the data and analysis showing that a cleaner, fairer and more secure energy future is within our reach,' Birol said. 'The Sustainable Recovery Plan would make 2019 the definitive peak in global emission, putting them on a path climate goals.'

The largest portions of jobs created through the recovery blueprints would be in building retrofitting and in the electricity sector- primarily in grids and renewable. Other area that would see higher employment include energy efficiency in industries such as manufacturing food and textiles, as well as low carbon transport infrastructure, says the report.

There was a notable rise in global greenhouse emissions when government worked to bounce back from the financial crises of 2008-2009. However, the costs of clean energy technologies, such as wind and solar, are much lower now than they were 12 years ago. These favorable economics combined with the fact the emissions are said to have flat lined last year, provide a base for putting emission into structural decline.

Renewable nor cheaper than most existing competitors- IRENA

More than half of the renewable capacity added across the world last year achieved lower power costs than the cheapest new coal plants, according to new figures from the International renewable energy agency (IRENA). The data indicates that renewable have almost crossed a crucial price threshold, after which they are less costly than any new capacity from fossil fuels.

In a report, Renewable Power Generation Costs in 2019, IRENA analysts highlight that new onshore wind and solar PV power in cheaper than keeping many existing coal plants in operation. Recent auction results have shown that this trend is accelerating – thereby strengthening the case for phasing out coal altogether. Franerco La Camera, IRENA's Director – General, has argued that the increasingly attractive economic case for renewable should push governments towards green pandemic recovery.

'Renewable offer a way to align short – term policy action with medium and long – term energy and climate goals,' he said. 'Renewable must be the backbone of national efforts to restart economies in the wake of the COVID – 19 outbreak. With the right policies in place, falling renewable power costs can shift markets and contribute greatly towards a green recovery.'

According to the report, up to 1,200 GW of existing coal capacity could cost more to operate than new utility – scale solar PV as early as next year. If the costliest 500 GW of coal were replaced with solar PV and onshore wind next year, power system costs could be reduced by up to \$23bn every year and annual emissions would fall by around 1.8 Gt of CO₂. This transition would also yield an investment stimulus of \$940bn, or around 1% global GDP.

Over the past decade, renewable electricity costs have fallen dramatically, largely thanks to improvements in technologies, increasingly competitive supply chains and expanded developer experience. Utility – scale solar PV has recorded the sharpest cost decline at 82%, followed by concentrating solar power at 47% onshore wind at 39% and offshore wind at 29%.

In May, the IEA predicted that the COVID – 19 pandemic would lead to a reduction in renewable installations worldwide this year – the first annual decline in 20 years. However, growth in the sector is expected to resume in 2021 as delayed projects come online. Recovery will be smoother and faster still if policymakers show support for clean energy in their recovery packages.

The world is set to add 167 GW of renewable power capacity this year, 13% less than in 2019, according to the IEA.

Germany's green recovery centre on hydrogen and EVs

Germany has unveiled plans for what is at present one of the world's greenest stimulus packages as it bids to restart its economy after the pandemic. The country's government has earmarked some €40bn of its €130bn recovery fund for climate – linked measures, including enhancements to public transport and the energy efficiency of buildings.

Lawmakers notably resisted calls from the auto industry to bring in a scrappage scheme that would provide grants for traditional petrol and diesel vehicles, instead, the government has doubled its subsidy for electric vehicle to €6,000. Under its stimulus plan, Germany will spend a total of €2.2bn incentivising electric vehicles and helping its powerful automotive sector to decarbonise.

'After France, now Germany is pointing the way forward with massive investments in electric cars, recharging infrastructure and railways,' said Stef Cornelis, Germany Director with the sustainable transport NEO T&E. 'This is exactly what's needed to support jobs and help us emerge stronger and greener from the COVID crisis. The plan isn't perfect but it should be a wake – up call for the Commission and other European countries ahead of the all – important decision on the EU's €750bn recovery and resilience fund.'

The country has also earmarked €7bn for investing in hydrogen technologies and infrastructure, as well as allocating €5bn for the greening of state railway company Deutsche Bahn. Electric vehicle recharging infrastructure will receive a €2.5bn cash injection and home energy efficiency measures will receive a €2bn investment.

Just days before the recovery package was unveiled, Germany's government attracted the ire of environmentalists as the Datteln 4 coal – fired power station commenced operation. The 1,050 MW plant, owned by power utility Uniper, fired up on 30 May amidst protests. The €1.7bn facility was granted an exemption for the country's plan to exit coal by 2038 after the company argued that it should shutter old capacity with high CO2 emissions to clear the way for state – of – the – art Datteln to operate into the 2030s.

The plant was originally meant to start producing power in 2011, but it was delayed by debates over its climate impact and damages to its boiler during testing.

US grid could be '90% green' by 2035 – if policy favours renewable

The US could achieve 90% clean, carbon – free electricity nationwide by 2035, according to a new report from researchers from the University of California, Berkeley. The 2035 Report uses the latest renewable energy and battery cost data to demonstrate the technical and economic feasibility of achieving the aim.

It claims that the 90% milestone could be reached dependably nationwide, with no extra cost to consumers, and without new fossil fuel plants. However, the US would need to double solar and wind annual deployments through the 2020s. Storage deployment would need to grow 25% year, from 523 MW in 2019 to 20,000 MW in 2035.

In the report's '90% clean' scenario, US electricity demand would be met dependably (every hour of the year) with a 90% clean grid by 2035. Wind, solar and batteries would provide 70% of annual generation. Existing hydropower and nuclear infrastructure would provide 20% and also compensate for very high demand and /or very low renewable generation. Meanwhile, natural gas plants would provide about 10% of annual generation – a figure about 70% lower than in 2019.

The falling costs of renewable energy and battery technology would also see wholesale electricity costs drop by 10% by 2035 under the scenario. But these lower costs would require investment in transmission spurs connecting renewable generation to existing high – capacity transmission lines or load centres.

The report points to substantial benefits under the 90% scenario. It would help to avoid \$1.2tn in health and environmental damages by reducing CO2 emissions by 88%, and exposure to fine particulate matter such as nitrogen oxide and sulphur dioxide by 96% and 99% respectively. The rapid buildout of additional renewable energy would also inject \$1.7tn of investment into the economy and increase energy sector jobs by up to 530,000 per year to 2035.

'We're talking about the ability to achieve near – 100% clean electricity by 2035, in half the time most people are talking about,' said David Woolvey, Professor at the UC Berkeley Goldman School of Public Policy and Executive Director of the Centre for Environmental Public Policy. 'This is exciting, because the 2035 timeframe is actually compatible with climate realities. However, this outcome is not possible without strong policy changes and our hope is this report can help inform the dialogue on federal, state, and corporate policies needed to achieve it.'

The 2035 Report is accompanied by a set of policy recommendations from policy firm Energy Innovation. It suggests establishing a technology – neutral national clean energy standard targeting 90% by 2035 and 100% by 2045. Additional recommendations include offering more liquid incentives for clean energy investment, supporting and retraining coal – dependent communities and addressing wholesale market failures.

Levels of accumulated CO2 hit record during pandemic

Greenhouse gas emissions may have fallen when COVID – 19 lockdowns were in place around the world – but new research shows that atmospheric carbon dioxide concentrations hit a new high this May.

According to figures from California's Scripps Institution for Oceanography and the US national Oceanic and Atmospheric Administration (NOAA), the amount of CO2 in the air in May hit an average of slightly greater than 417 parts per million (ppm). This is the highest total ever recorded and represents a significant increase from 414.8 ppm recorded in May 2019.

Monthly CO2 values at the Mauna Loa observatory-which is located atop the Mauna Loa volcano in the island of Hawaii- first crossed the 400 ppm threshold in 2014. These levels have not been so high for approximately 3 million years. The reason that the temporary drops in emissions brought by the coronavirus has not impacted the CO2 concentration is that the reduction is too small to stand out from natural variability.

Such natural fluctuation-which are caused by the response of plants and soils to variable temperature and moisture factors are large enough that COVID lockdowns have only a minimal impact. According to Scripps scientists, the rate of CO2 increase measured at Mauna Loa would only slow if emissions reductions of 20 to 30% were sustained for six to 12 months.

'Progress in emission reductions is not visible in the CO2 record,' explained Pieter Tans, Senior Scientist with NOAA's Global Monitoring Laboratory. 'We continue to commit our planet- for centuries or longer- to more global heating, sea-level rise, and extreme weather events every year. If humans were to suddenly stop emitting CO2 it would take thousands of years for CO2 emissions so far to be absorbed into the deep ocean and atmospheric CO2 to return to pre-industrial levels.'

The average annual growth in atmospheric CO2 concentrations was 0.8 ppm in the 1960s. This figure doubled to 1.6 ppm per year in the 1980s and remained constant at 1.5 ppm in the 1990s. It surged to 2.0 ppm per year in the 2000s and then to 2.4 ppm per year in the last 10 years.