

and can be rescinded by a new president. The EOs represent the most likely consequential government actions in the short and medium term towards achieving net zero emissions, in addition to the already booming market for renewable energy in the US

Deployment of wind and other renewables towards net zero emissions is already strongly

underway thanks to non-governmental market forces in the US where wind has been growing relentlessly in recent years. This is expected to continue for the foreseeable future. Some of the actions in EO 14008, dated 27 January 2021, that will promote deployment of wind and other renewables include:

Overview of US's Net Zero Plans	
Net zero target, if any	<ul style="list-style-type: none"> Carbon pollution-free power sector by 2035 and a net-zero economy by 2050
Status of the legislation	<ul style="list-style-type: none"> Not enshrined in binding legislation yet.
Public investment announced alongside the net-zero target	<ul style="list-style-type: none"> See EO 14008 points
NDC, as of February 2021	<ul style="list-style-type: none"> The Biden administration will upgrade its NDC from the previous target 26% emissions reductions by 2025 compared to 2005 levels.
Renewable energy targets	<ul style="list-style-type: none"> No current federal renewable energy mandate or target 30 states plus DC and Puerto Rico have a Renewable Portfolio Standard (RPS), with targets ranging from 10-100% and 14 states or territories now have targets of 50% or more 100% clean energy standards now implemented in 5 states – CA, NM, NV, WA, NY Seven East Coast states have set a target of over 27 GW of offshore wind cumulatively
Installed wind capacity as of end of 2020	<ul style="list-style-type: none"> 122,426 MW of onshore wind and 42 MW offshore wind
Key technology strategy on energy transition	<ul style="list-style-type: none"> Rapid growth and large-scale deployment of wind and solar energy, with a wind energy pipeline of 34.8 GW under construction or in advanced development as of December 2020 Offshore wind is in advanced development in the East Coast Solar systems incorporating BESS storage to smooth output
Other drivers of clean energy transition	<ul style="list-style-type: none"> Net-zero emissions will rely on market forces, advancing technology, regulation and tax incentives Biden Administration to establish interagency working group on coal and power plant communities and economic revitalisation brought by clean energy

● **Federal Clean Electricity and Vehicle Procurement Strategy:**

Directs the Council on Environmental Quality (CEQ), Office of Management and Budget (OMB) and other agencies to create the Federal Clean Electricity and Vehicle Procurement Strategy, to achieve a carbon pollution-free electricity sector no later than 2035.

○ The EO could include increasing congressional appropriations and extending the ability for most federal agencies to enter into Power Purchase Agreements (PPAs) for durations greater than 10 years. That present limitation has stifled the use of renewables by the federal government because most wind and solar PPAs are 20-year contracts.

● **Renewable Energy on Public Lands and in Offshore Waters:**

Directs the Department of the Interior (DOI) to review siting and permitting processes on public lands and in offshore waters to identify steps that can be taken to increase renewable energy production.

● **Fossil Fuel Subsidies:** Directs federal agencies to eliminate fossil fuel subsidies and identify new opportunities to spur clean energy technologies and infrastructure.

● **Sustainable Infrastructure:** Directs CEQ and OMB to take steps to ensure that federal infrastructure investment reduces climate pollution, and to require that federal permitting decisions consider the effects of greenhouse gas emissions and climate change.

Renewables have been a great success story in the US and the good news is that market forces, not government mandates, are the largest contributor behind renewables being deployed at higher rates than fossil fuels in coming years. Wind and solar costs in the US have fallen 70% and 90% respectively over the last decade (and similar rates in other countries), making them the most affordable new electricity sources in most of the US. Wind power will play a foundational role, but increasingly solar coupled with battery energy storage systems (BESS), will play a big role in reducing carbon emissions in the electricity sector.

Wind energy's role on the road to net zero

UK

With input from: RenewableUK

The UK is the global leader in offshore wind with more capacity installed than any other country (10.4 GW). The UK Government has set the industry a target of reaching 40 GW by 2030, which represents a near-quadrupling of offshore wind capacity over the course of this decade. The industry is confident that this can be achieved, as the current total offshore wind pipeline already extends to more than 41 GW. The UK Government also recently set out a target of at least 1 GW by 2030 for floating wind.

Certainty is provided by the landmark Offshore Wind Sector Deal announced in 2019, in which the industry and Government set out a series of joint commitments aimed at maximising industrial and economic benefits of the sector. An example of this is the Offshore Wind Growth Partnership (OWGP), funded by the industry, which is investing £100m in building a strong UK supply chain over the course of this decade.

Prime Minister Boris Johnson has called for a Green Industrial Revolution after the pandemic and has set out a Ten Point Plan to achieve this, with offshore wind at

the top of the list. This chimes with wider Government policy; in 2019, the UK was the first country to adopt a legally-binding target of net zero greenhouse gas emissions by 2050, compared to 1990 levels. The UK's NDC under the Paris Agreement is to reduce emissions by at least 68% by 2030.

Reaching net zero emissions as fast as possible will require significant investment in electricity infrastructure. Investment in a smart, flexible grid is vital and RenewableUK is urging the UK regulator Ofgem to put net zero at the centre of every decision it makes, to benefit current and future consumers.

This year the UK has a golden opportunity to highlight its role as global leader in renewable energy as host of COP26 in Glasgow. Government policy supports the development of renewables, especially by backing auctions for contracts to generate clean power, known as Contracts for Difference (CfDs). Although onshore wind was excluded from these auctions in 2015, it will take place in the next round to be held before the end of this year, following campaigning by RenewableUK to highlight its role as one of the

cheapest forms of new power.

In its Sixth Carbon Budget published in December, the Government's adviser, the Climate Change Committee, suggested almost doubling UK onshore wind capacity to 25-30 GW by 2050. The industry believes it can reach 30 GW sooner, given the current pipeline. Overall, the industry expects that this year's CfD auction will support up to 12 GW of new renewable capacity, unlocking over £20bn of new investment in the economy.

Looking ahead, green hydrogen generated by offshore wind will become a significant new power source alongside innovative technologies such as floating wind, provided that the Government's policy framework encourages the deployment of these technologies. The UK already has the world's largest floating wind farms with 30 MW of operational capacity in Scotland and a further 150 MW in the pipeline in Scotland and Wales. The industry believes it can exceed the Government's target of 1 GW of UK floating wind by 2030, and is aiming to install 2 GW by 2030 and at least 20 GW of floating capacity by 2050.

Overview of UK's Net Zero Plans

Net zero target, if any	<ul style="list-style-type: none"> • Net zero GHG emissions by 2050
Status of the legislation	<ul style="list-style-type: none"> • Legally-binding commitment passed by UK Parliament
Public investment announced alongside the net-zero target	<ul style="list-style-type: none"> • Ten Point Plan of the Green Industrial Revolution includes £12 billion of government investment • Aims to mobilise triple that amount from private investment, to support up to 250,000 green jobs
NDC, as of February 2021	<ul style="list-style-type: none"> • Reducing GHG emissions by at least 68% by 2030, compared to 1990 levels
Renewable energy targets	<ul style="list-style-type: none"> • 40 GW of offshore wind installed by 2030, including 1 GW of floating wind • Government adviser the Climate Change Committee suggests almost doubling UK onshore wind capacity to 25-30 GW by 2050 • 5 GW of low-carbon hydrogen production by 2030 • 13,740 MW of onshore wind and 10,415 MW of offshore wind
Installed wind capacity as of end of 2020	
Key technology strategy on energy transition	<ul style="list-style-type: none"> • Offshore wind will be the backbone of the UK's energy system by 2030, alongside green hydrogen generated from offshore wind, onshore wind and floating wind • Smart, modernised grid for power flexibility
Other drivers of clean energy transition	<ul style="list-style-type: none"> • Clarity on carbon pricing mechanisms • Shift to electric vehicles • Greener buildings and improving energy efficiency • Other measures captured in the Ten Point Plan

South Africa

With input from: South Africa Wind Energy Association (SAWEA)

As a signatory to the Paris Agreement, South Africa has committed to reaching peak GHG emissions by 2025, whereupon it outlines that emissions should plateau and decline. The energy sector contributes close to 80% of the country's total GHG emissions, of which 50% are from electricity generation and liquid fuel production alone.

In 2020, the South African Government approved the Low Emission Development Strategy (LEDS), which commits to various interventions which ultimately move towards a goal of net zero carbon emissions by 2050. President Cyril Ramaphosa reaffirmed this commitment in his State of the Nation address in February 2021, when he stated that national utility Eskom, the country's largest GHG-emitter, has committed in principle to net zero emissions by 2050 and to increasing its renewable capacity.

The increase in renewable energy capacity is prioritised in South Africa's key planning documents, including the National Development Plan which commits

to 30 GW of renewable energy by 2030. It is supported by the Integrated Resource Plan (IRP) 2019 which prioritises renewable energy, energy efficiency and public transport, and specifically targets 20.4 GW of renewable energy (14.4 GW of wind and 6 GW of solar PV) by 2030.

The key consideration for South Africa's net zero trajectory is the reduction of demand for coal resources, which has provided an economic anchor for provinces like Mpumalanga. The IRP 2019 stipulates that, to ensure a socially just transition, an engagement process must mitigate against adverse impacts of plant retirement on people and local economies.

Wind energy will have a significant role to play in achieving the country's net zero commitments. Due to cost-competitiveness and reduction in tariffs over the past decade, the technology has been allocated 14.4 GW in IRP 2019, which translates to about 50% of the new generation capacity planned for this decade and about 18% of the total installed capacity by end of 2030. South Africa is currently undergoing an energy crisis, resulting in part from reduced energy availability due to the

existing fleet of coal power stations nearing end of life. Without additional capacity, Eskom estimates an electricity supply shortfall of between 4-6 GW over the next five years.

Currently, energy planning in South Africa is such that annual build limits are imposed on renewable energy, in order to facilitate a gradual and just energy transition. This will restrict the cumulative renewable installed capacity and the energy mix for this period. Moreover, IRP 2019 tested a scenario with no annual build limits on renewables and established that this scenario provides the

least-cost option by 2050.

Although IRP 2019 extends to 2030, it is assumed that wind power will constitute an even larger share of new generation capacity beyond this decade. To meet the net zero target by 2050, energy planning policy will need to be implemented consistently. This goal will require action and coordination from private and public sectors to be successfully realised. Necessary actions from government include easing of the regulatory environment, implementation of approved policies and creating a conducive environment for private-sector investment.

Overview of South Africa's Net Zero Plans

Net zero target, if any	<ul style="list-style-type: none"> Vision to reach net zero carbon emissions by 2050.
Status of the legislation	<ul style="list-style-type: none"> Not yet enshrined in law Related Climate Change Bill is drafted and awaiting passage into legislation
Public investment announced alongside the net-zero target NDC, as of February 2021	<ul style="list-style-type: none"> Specific net-zero investment strategy not yet announced.
Renewable energy targets	<ul style="list-style-type: none"> Limiting GHG emissions 17-78% above 1990 levels by 2030 Reach peak, plateau and decline of GHG emissions by 2025 14,400 MW new onshore wind capacity between 2022 and by 2030 (cumulative wind capacity would be 18% of the total power mix by 2030) 6,000 MW new solar PV capacity by 2030
Installed wind capacity as of end of 2020	<ul style="list-style-type: none"> 2,495 MW onshore wind
Key technology strategy on energy transition	<ul style="list-style-type: none"> An energy mix of onshore wind and solar PV, supplemented by battery storage and gas.
Other drivers of clean energy transition	<ul style="list-style-type: none"> Energy efficiency, clean transport and solar water heaters Carbon taxation and budgets Sectoral-based emission targets REIPPPP programme to raise climate finance Municipal green bonds released by Cape Town and Johannesburg, and other green finance innovative mechanisms

4. Oil and gas producers: The path to net zero

There is clear and unequivocal agreement that oil and gas consumption needs to be steadily and sharply reduced over the next three decades for the world to reach an energy pathway compliant with 1.5 °C and 2 °C scenarios.

“Peak demand” for oil has arguably arrived. In its annual report about the future of energy in 2020, BP affirmed that worldwide demand for oil may have already peaked and that the fossil fuel

industry now faces a slow but inevitable decline over the coming decades. Demand for hydrocarbon-based fuels has been the hardest hit by COVID-19. By October 2020, the IEA assessed that global energy demand was set to drop by 5% in 2020, with estimated falls of 8% in oil demand and 3% in natural gas demand standing in sharp contrast to a rise in the contribution of renewables.

The climate imperative is permeating the investment

community, shareholder actions, policymaking and regulation, meaning that companies traditionally focused on oil and gas production need to transition their business models to maintain a license to operate in a carbon-neutral future. The need to rapidly reallocate investment from hydrocarbon exploration and refining to renewable energy production, and in particular power generation, poses strong challenges for oil and gas companies.

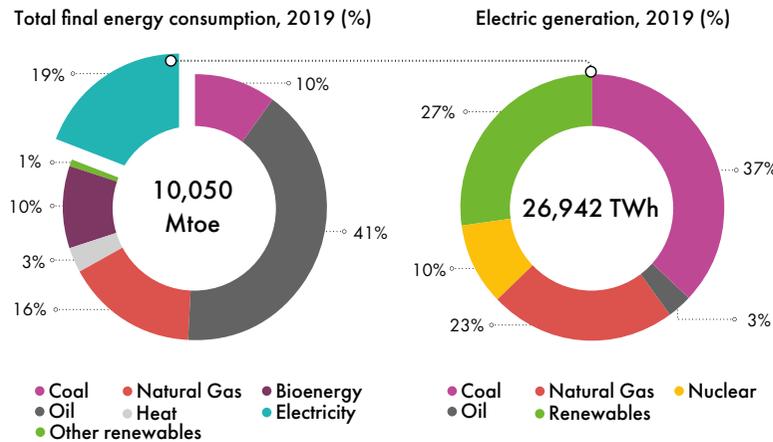
Why set carbon neutrality targets?

The global energy system is still based on fossil fuels, despite GHG reduction and climate change mitigation becoming increasingly central focal points for global political action since the Kyoto Protocol was signed in 1997. Since the 2015 Paris Agreement, energy-related CO₂ emissions have risen by around 4%; the IEA even found that energy-related carbon emissions fully rebounded from the impacts of the pandemic, with December 2020 emissions 2% higher than the same period in 2019.

But this transition presents equally significant opportunities. Over the last few decades, many leading players had amassed positions in renewable power generation and either shifted their focus away due to insufficient maturity or profitability, or maintained relatively small positions in their overall portfolios. Now, however, all the major oil and gas companies – with the exception of US-based outliers Exxon and Chevron – are seeking to shift capex investments into renewable energy and electrification, or renewable energy plus hydrogen businesses.

According to the IEA's World Energy Outlook 2020, oil and gas remain the world's two primary energy sources, accounting for more than half of total primary energy demand in 2019. Oil and gas extraction and processing, and the subsequent transport of oil and oil products to end-use consumers, were responsible for nearly 15% of global energy sector GHG emissions in 2019. The oil and gas sector is a key contributor of CO₂ and methane (CH₄) emissions which are accelerating global warming. To reach carbon

Global final energy consumption in 2019



Source: IEA World Energy Outlook 2020

neutrality, we need a systematic and radical energy transition from fossil fuels to renewable energy and low-carbon solutions. It is crucial and urgent for oil and gas companies to make credible net zero commitments, participate and even lead this transition.

How can oil and gas producers participate in the path to net zero?

As highlighted in the "Wind energy in long-term energy scenarios" section of this report, net zero and IPCC-compliant scenarios can only be realised through significant energy system changes (a major ramp-up in efficiency and fuel-switching to low-emission electricity and low-carbon fuels) and behavioural changes. The power sector will provide the bulk of emissions reductions via electrification, which will in turn drive the decarbonisation of end-use sectors like industry, short-duration transport and buildings. Renewable energy sources such as onshore and offshore wind shoulder much of the responsibility for large-scale green power generation and displacing fossil fuels-based generation, such as coal, oil and gas.

While efficiency gains and electrification deliver most of the reductions in energy-related CO₂ emissions in the industry sector, green hydrogen also makes a significant contribution. Alongside a shift in road transport from fossil fuels to battery-based and fuel cell-based electric vehicles, as well as extensive use of biofuels for aviation and shipping, these innovations will converge to deliver cross-sector GHG emissions reductions – and each transition area presents opportunities for oil and gas companies to participate.

Challenges and opportunities of oil and gas companies in transition

The transition from hydrocarbon exploration and refining to renewable energy poses strong challenges for oil and gas companies:

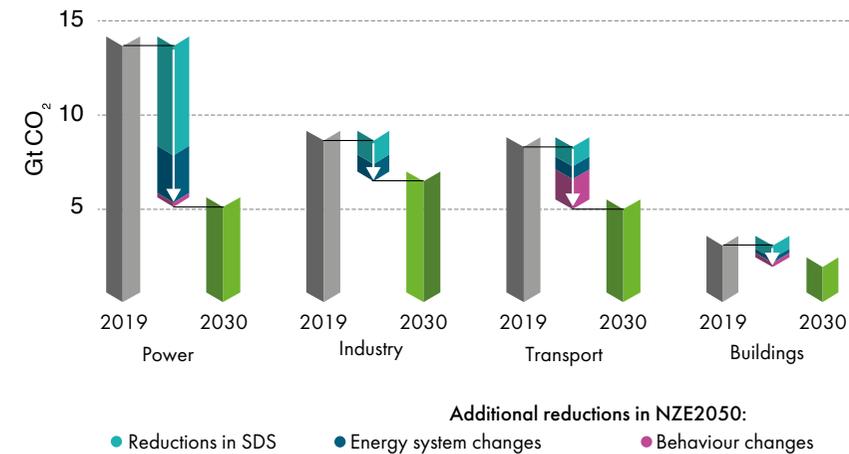
- **Shareholder expectations** based on previous cyclical high margins which have so far not been met by "utility" type returns from long-term investments in renewable power generation – although one should note that return expectations of investors from oil and gas are falling and could arguably fall to "zero".

- **Businesses models** which are driven and calibrated on redundant metrics, most notably hydrocarbon reserves and the

ratio of company hydrocarbon reserves to annual production.

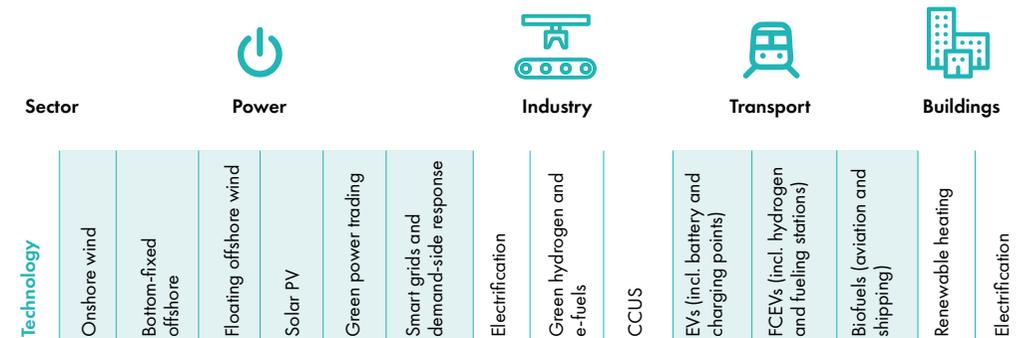
- **Scalability:** Despite many oil

CO₂ emission reductions by sector in the IEA's NZE2050 scenario, 2019-2030



Source: IEA World Energy Outlook 2020

Technologies and low-carbon solutions contributing to net-zero



Source: GWEC Market Intelligence, March 2021



Case study: Leveraging Oil and Gas experience to build the talent pools of the future

Provided by: NES Fircroft

NES Advantage (part of NES Fircroft) has had a long-standing partnership with Aker Solutions and is their staffing partner of choice, enabling Aker to achieve its strategic objectives by supplying highly skilled engineering and technical personnel across all parts of the business. Aker Solutions has an outstanding pedigree in the Oil and Gas market, and in recent years it has begun to leverage its experience and capabilities in this sector to transition the business to support sustainable energy production. In 2020 Aker tasked NES Advantage with sourcing staff that could support their renewables division, as they began to apply their long experience, together with their strong platform for project execution, to chase potential wind projects in Norway, the US and the UK.

As an example, Aker Solutions is already in the execute phase of the Hywind Tampen project in Norway, designing and building floating concrete hulls which will carry wind turbines. The project scope also includes assembly site management and installation of the floating wind turbine units offshore. Whilst the source of power may be different from Oil and Gas Industry, Aker has the necessary experience and expertise to build and install offshore structures.

NES Advantage is experienced in both the traditional and new energy markets and could apply their recruitment expertise combined with their global reach to quickly build a talent pool of suitable candidates for the Hywind Tampen project, with skill sets in project management, process engineering and planning, which could be applied to new sustainable projects. Campaigns focused on sourcing local talent as much as possible and mobilising specialist skillsets from around the world where needed.

This approach to talent management was complemented by upskilling the existing workforce to ensure Aker's talent is retained and the Group is perfectly positioned to deliver on its commitment to finding solutions which bring energy resources safely and cost effectively into production, whilst minimising the environmental footprint.

Aker Solutions has found they are well placed to act as the integrator on large wind projects, and with the support of NES Advantage the company has been able to build a team with skillsets sourced from both the Oil and Gas and the Renewables industries, supporting Aker's vision to #powerthechange to sustainable energy production.

and gas companies being rich in terms of financial resources, assets and revenue generation, it is not easy to scale organically in the renewable generation business due to the structural problems of growth addressed elsewhere in this report, and they will thus be pushed into the M&A space if they are to achieve rapid reallocation of capital. This, in turn, can produce strong competition for assets and inflation in company valuations and asset prices.

- **Competition from established renewables players**, including the new “renewable energy supermajors”. A number of established utility-scale wind producers have been achieving scale, sometimes over two decades, formidable skills, operational teams and capex resources, built on a sustainable structure of shareholdings and margin expectations.
- **Credibility**: Oil and gas majors must also ensure net zero strategies avoid increasing fossil fuel extraction in the near term, while heavily depending on carbon removal technologies

and offsetting to meet long-term targets.

Nevertheless the clean energy transition brings equally significant opportunities, value creation and socioeconomic benefits. Looking at the technological solutions on the road to net zero, some oil and gas companies have extensive relevant knowledge, know-how and experience which complements the need for renewable energy development. For example:

- **Offshore wind**: where foundation design and manufacturing, offshore construction and installation, vessel operation and subsea O&M are similar to the oil and gas industry. The economic effects of the transition into renewables through support of re-skilling and workforce development programs will not only outweigh the net loss of jobs in the oil and gas sector, but will bring sustainable value to society.
- **Floating offshore wind**: The current three basic floating base types used for floating offshore wind are derived from oil and gas industry, so investment into this particular sector can

accelerate the pace of commercialisation and industrialisation of floating wind.

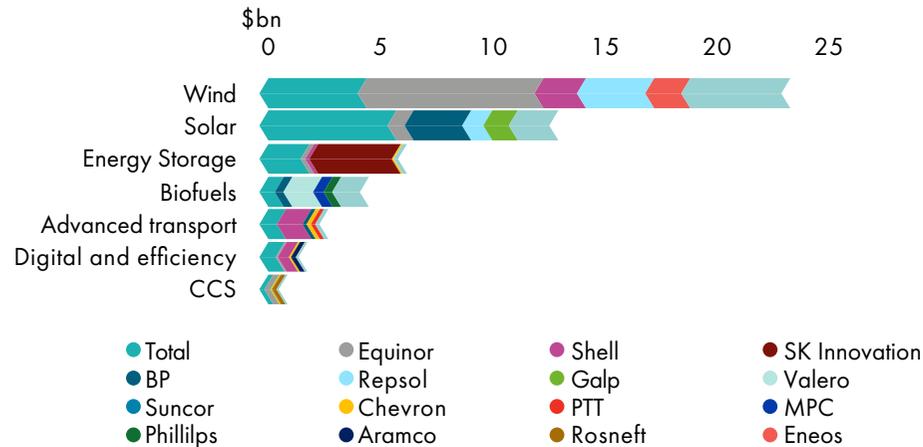
- **Large project engineering, delivery and budget control**: Oil and gas companies hold unparalleled skills in delivering huge engineering projects, which can help to ensure utility-scale wind projects are delivered safely and on budget.
- **Global scale, capex and ability to raise finance**: Major oil and gas players can leverage their financial strengths such as the strict financial hurdle rate, which is equal to the company's costs of capital, to improve the returns on renewable investments.
- **Hydrogen**: Oil and gas producers have been providing blue hydrogen as feedstock to the industries like chemicals production and will know how to blend green hydrogen into existing gas pipelines for transport to end-users.
- **Power-to-X**: Major oil and gas companies can view the energy spectrum holistically and adopt system-wide approaches such as Power-to-X solutions which use renewable energy to



Photo Credit: Principle Power

Wind energy's role on the road to net zero

Oil and gas sector investment in low-carbon technologies, 2015-2020



Source: BloombergNEF, company reports

decarbonise industry and transport.

● **Experience in global operations, energy production, trading, services and networks:** Major oil and gas companies have a “deep” spread of operations across energy production, trading and retail, with customer relations and brand reach to billions of consumers. Their global footprint and public affairs capability can be brought to bear to accelerate a clean energy transition. Some Europe-based actors are transforming themselves into electricity or energy companies with green power and hydrogen

as green commodities. Big oil and gas producers also operate fuelling stations across the world, offering networks and experience which can be transferred to electric vehicle charging and fuel-cell electric vehicle hydrogen-fuelling.

Recent BloombergNEF data shows that wind energy received US\$22 billion in investment from a green push by oil and gas companies between 2015 and 2020 – a great deal more than any other low-carbon technology during this period. Still, only 4.3% of total oil and gas sector capex was invested in low-carbon assets and technologies in 2020 – a more meaningful reallocation of investment will be needed to for the global oil and gas sector to truly pivot to clean.

Commitments made by leading oil and gas producers

Under the environmental, social and economic pressures from growing net zero momentum and the COVID-19 pandemic, an increasing number of oil and gas producers are changing corporate growth strategies and investment portfolios.

There is still a concern about whether growth and emissions reduction targets are achievable;

Oil and gas companies' net zero commitments and renewable targets		
Selected companies	Climate change targets	Renewable investment targets
BP	<ul style="list-style-type: none"> Net zero by 2050 Carbon intensity 50% lower in 2050 compared to 2019 levels 	50 GW renewable installations by 2030
ENI	<ul style="list-style-type: none"> Carbon intensity 50% lower in 2050 compared to 2018 levels 	4 GW renewable installations by 2024, 15GW by 2030 and 60 GW by 2050
Equinor	<ul style="list-style-type: none"> Net zero by 2050 Reduce net carbon intensity to zero by 2050 	4-6 GW renewable installations by 2026 and 12-16 GW renewable installations by 2035
Repsol	<ul style="list-style-type: none"> First oil and gas company to target net zero by 2050 Carbon intensity 20% lower in 2030 and 40% lower in 2040 compared to 2016 levels 	7.5 GW low carbon power capacity by 2025, and 15GW by 2030
Shell	<ul style="list-style-type: none"> Net zero by 2050 Reduce carbon intensity of energy products by 100% by 2050 compared to 2016 levels 	Investing \$2-3bn a year in renewables and energy solutions including hydrogen, and doubling electricity sales by 2030 from current levels
Total	<ul style="list-style-type: none"> Net zero by 2050 Carbon intensity 60% lower in 2050 	35GW renewable installations by 2025 and 100GW of renewables capacity by 2030
Petronas	<ul style="list-style-type: none"> Net zero by 2050 	3GW renewable installations by 2024
CNOOC	<ul style="list-style-type: none"> Emissions peaking and carbon neutrality plan being drafted 	Clean energy accounts for 60% of its energy mix by 2025

Source: GWEC Market Intelligence, March 2021

some renewable development targets are fairly ambitious compared with current clean energy supermajors such as Enel Green Power and Iberdrola. However, what Ørsted (formerly Danish Oil and Natural Gas, or DONG) has accomplished in the past two decades has proven that a radical energy transition plan can be successfully executed by an oil and gas company.

To reach carbon neutrality, we need a systematic and radical energy transition from fossil fuels to renewable energy and low-carbon solutions.

Aside from technological solutions, large oil and gas companies are increasingly looking to M&A, cooperative projects and joint ventures to build renewable energy positions and expertise. A number of companies have invested large volumes of capex in wind and Power-to-X projects, particularly offshore wind.

Oil and gas companies' net zero targets and increasing volume of transactions in the renewables sector demonstrate willingness to undertake the challenges of the energy business transition. This

shift will be an irreversible one, and will need to accelerate to reflect seriousness about the fundamental changes required for a net zero pathway.

Oil and gas companies' low carbon strategies and solutions										
Companies	Onshore wind	Bottom-fixed offshore	Floating offshore wind	Solar PV	Green power trading	Green Hydrogen	CCUS	EVs	FCEVs	Biofuels
BP	•	•	•	•		•	•	•		•
ENI	•	•		•	•	•	•	•	•	•
Equinor		•	•	•		•	•	•		•
Repsol	•		•	•	•	•	•	•		•
Shell	•	•	•	•	•	•	•	•	•	•
Total	•	•	•	•	•	•	•	•	•	•
Petronas	•		•	•		•	•			
CNOOC		•				•	•	•	•	•

Source: GWEC Market Intelligence, March 2021

Recent wind transactions by major oil and gas companies			
Company	Fixed bottom offshore	Floating offshore wind	Power-to-X
Equinor	<ul style="list-style-type: none"> Portfolio of projects in the UK, Germany, Poland, the US and South Korea Divestment of Dogger Bank A and B stakes in the UK to Eni Divestment of Empire Wind and Beacon Wind stakes in the US to BP 	<ul style="list-style-type: none"> Pioneer in floating wind, with project installed in the UK Building a floating wind farm in Norway to be commissioned in 2022 Development of floating project in South Korea 	Partner of North2 green hydrogen project in the Netherlands
BP	<ul style="list-style-type: none"> Entered offshore wind market with a US\$1.1 billion deal to acquire 50% of Empire Wind and Beacon Wind in the US from Equinor Together with EnBW, selected as big winner in UK offshore wind Round 4 	<ul style="list-style-type: none"> Floating offshore wind opportunities with Equinor in the US 	Partner with Ørsted to develop a hydrogen project in Germany
Shell	<ul style="list-style-type: none"> Majority shareholder of Hollandse Kust farm in the Netherlands Projects in US East Coast through 50:50 joint venture with EDPR 	<ul style="list-style-type: none"> Investment in TetraSpar project in Norway Majority stake of Emerald floating wind project (1 GW) in Ireland Co-developing project with CoensHexicon in South Korea 	Partner of North2 green hydrogen project in the Netherlands
ENI	<ul style="list-style-type: none"> Acquired 20% of Dogger Bank A and B from Equinor and SSE Renewables Cooperation with Equinor on offshore renewable solutions 		Eni and Enel announced cooperation to develop green hydrogen projects
Total	<ul style="list-style-type: none"> Acquired 51% of Seagreen 1 in the UK from SSE Renewables Together with GIG, selected in UK offshore wind Round 4 	<ul style="list-style-type: none"> Purchased 80% of Erebus floating wind project in the UK Co-developing 2 GW floating wind project in South Korea with GIG 	Developing a green hydrogen plant in France with ENGIE

Source: GWEC Market Intelligence, March 2021



Photo Credit: Equinor

Case study: Leading the way in the energy transition

Provided by: Equinor

Equinor aims to be a leader in the energy transition by building the energy industry of tomorrow and becoming a net zero company by 2050. The strategy demonstrates Equinor's continued commitment to long-term value creation in line with the Paris Agreement.

In 2020 Equinor announced its ambition to achieve carbon neutral global operations by 2030 and become a net zero energy company by 2050. The 2050 ambition includes emissions from production and final consumption of energy. To deliver on the ambitions, Equinor will:

- Continue to reduce emissions from oil and gas production
- Grow renewable energy
- Develop low-carbon technologies like CCS and hydrogen

Equinor will maintain its industry-leading role in carbon efficiency by continued reduction of CO₂ from production and achieving carbon neutral global operations by 2030. The main priority will be to reduce GHG emissions from own operations.

In 2026, Equinor expects production capacity from renewable projects of 4 to 6 GW, mainly based on the current project portfolio. This is around 10 times higher than today's capacity, implying an annual average growth rate of more than 30%. Towards 2035, the company expects to increase installed renewables capacity further to 12 to 16 GW, dependent on availability of attractive project opportunities. As a global offshore wind major,

Equinor is building material offshore wind clusters in the North Sea, the US East Coast and in the Baltic Sea. The company is currently progressing the biggest offshore wind farm development in the world, Dogger Bank (3.6 GW) as well as developing Hywind Tampen; the first floating offshore wind farm to supply renewable power to offshore oil and gas installations.

Achieving net zero emissions by 2050 requires a well-functioning market for carbon capture and storage (CCS) and natural sinks, as well as the development of competitive technologies for hydrogen. Equinor is driving the development of these technologies through projects such as Northern Lights, which aims to store CO₂ from industrial sites across Europe. The project will be developed in phases where the first phase includes capacity to transport, inject and store up to 1.5 million tons of CO₂ per year. Equinor is also engaged in developing the hydrogen value chain through participation in several project partnerships with the aim to realize the development of value chains for both "green" and "blue" hydrogen. In 2020 Equinor joined Europe's biggest green hydrogen project, the NorthH2 project which aims to produce green hydrogen at large scale using renewable electricity from offshore wind off the coast of Netherlands.

Climate change is a shared challenge. The combined efforts of governments, industries, investors and consumers are crucial to reaching net zero emissions, for Equinor and for society. Together, we can overcome technological and commercial challenges, cut emissions, and develop CCS and zero-emission value chains for a net zero future.

For more information about Equinor's plans to reach net zero, see: <https://www.equinor.com/en/how-and-why/climate.html>