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Winter 20/21

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James Hambro
& Partners

Focus feature

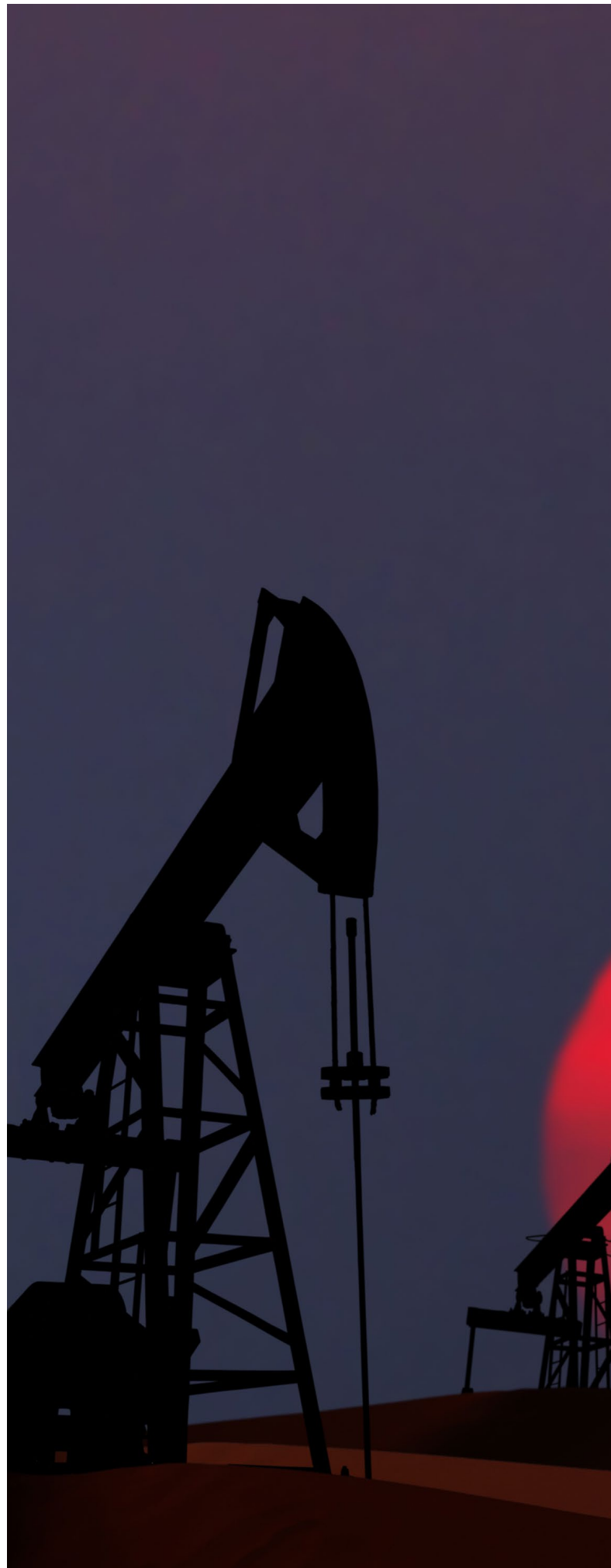
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Where next for big oil?

With many countries around the world targeting net-zero by 2050, have we already reached peak oil? What's the future for big oil companies?



Patrick Trueman
Portfolio Manager





“As governments introduce regulations to start driving the necessary change, individual companies are quickly declaring their own targets.”

The long-term investment case for owning integrated oil companies – those that operate across the entire petroleum value chain from rig to pump – is fraught with challenges.

In the wake of the Covid-19 pandemic, global oil demand is expected to have fallen last year by a record 9.3 million barrels a day. That is the equivalent of India's total annual consumption.¹

China recently pledged to be carbon neutral by 2060. Other countries around the world are targeting carbon neutrality by 2050 – including, most recently, Japan and Korea. The US remains an outsider – but a different incumbent in the Oval Office could change that. Joe Biden has pledged to invest \$1.7 trillion in making the US a 100% clean energy, net-zero-emissions economy by 2050.

As governments introduce regulations to start driving the necessary change, individual companies are quickly declaring their own targets.

This should lead to lower fossil fuel consumption, you might think. But forecasts for oil demand vary greatly.

Drilling down

Many believe that demand will actually carry on rising through the next 20 years, driven by growing demand in developing countries, if the world returns to its pre-Covid path.

The International Energy Agency (IEA) says that even if governments take the necessary radical measures to achieve their ambitious 2050 net-zero goals, it will still be a few years before we see a peak in global oil demand. It will take time for new technologies and energy-saving initiatives to kick in. The IEA forecasts that demand will then fall by more than 50% in advanced economies by 2040 and by 10% in developing economies.²

But it is interesting to see how BP's own forecasts have changed in just a couple of years. In its 2018 outlook, its forecasts for fossil fuels concluded that demand would rise for a few more years.³ Interviewed by the *Financial Times* in May, BP's new CEO, Bernard Looney, was asked: “Could it be peak oil?” His conclusion: “Possibly, possibly. I would not write that off.”⁴

In its most recent official forecasts, published in September, BP mapped out three main scenarios. ‘Rapid’ is based on a series of aggressive policy measures, led by a significant increase in carbon prices. ‘Net zero’ assumes that big shifts in societal behaviour reinforce the policies. ‘Business as usual’ assumes that regulations, technology and social preferences evolve at the rate witnessed in the recent past. In the first two scenarios we are past peak oil. In the third we are very close to it.⁵

Tides of change

Historically, ‘peak oil’ meant when supply would peak. Our concerns were that we would run out of oil. Today the debate has shifted to demand.

A growing proportion of the global demand for energy is now being satisfied by renewable energy. The UK's renewable electricity capacity exceeded the total from fossil fuels in the second quarter of this year,⁶ rising to a 44.6% share of electricity generation (though this was a period distorted by Covid, with electricity consumption generally down 12%). Overall, low-carbon electricity (including nuclear) accounted for 62.1% of electricity generated. Coal generation fell to record low levels – there was a 67-day coal-free period in Great Britain between March and June, the longest since the 19th century.

Almost half the demand for oil in the OECD comes from road transport.⁷ It will be some time before electric and hydrogen vehicles replace this, but as the transition

Total solar power plant in Nuevas Energías, Chile
Total Media



happens the demand for electricity is likely to rise, and renewables will play a vital role in satisfying that demand if we are to move away from coal generation.

Most of the increase in renewables came from offshore wind – 2,292 turbines in 39 projects are now generating sufficient energy to power over 18 million homes.⁸ And more are planned. Solar generation is also at record levels.

Spencer Dale, BP's Chief Economist, says that wind and solar power, bioenergy and geothermal energy could account for as much as 60% of primary energy by 2050. He says: "Renewables are penetrating the energy system more quickly than any fuel ever seen in history."⁹

Few doubt, therefore, that oil will be left untapped. And shrinking demand usually means shrinking prices.

Sinking oil prices

This year the price of Brent crude has dropped to around \$40 a barrel. At that rate it is unprofitable to extract half the planet's remaining oil reserves. Most of the oil majors are bracing themselves for permanently low prices. Shell, which in its most recent annual report assumed \$60 a barrel, now forecasts \$40 in 2021 and \$50 in 2022.¹⁰ BP is working on an average of \$55 from next year until 2050 (down from \$70).¹¹

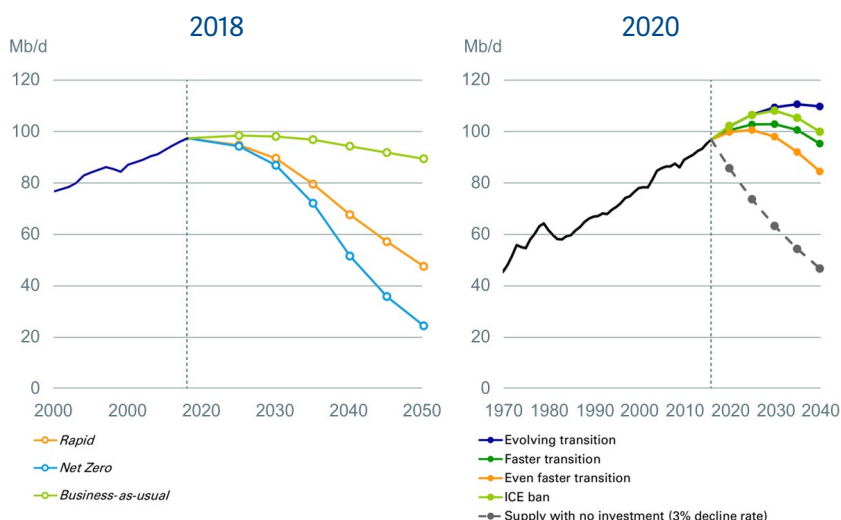
With tight oil (extracted from oil shale) offering an abundant source of supply that is relatively easy to extract, companies are jettisoning unprofitable oil fields around the world. In July, BP and Shell announced write-downs of up to \$17.5 billion¹² and \$22 billion¹³ respectively on assets.

Some analysts believe this may result in a short-term squeeze on demand. Research company Bernstein warns: "Small imbalances between supply and demand of a few percent can result in large price swings in Brent." It argues that an effective Covid vaccine would be an obvious catalyst. That may be the case, but this feels like a swan song for the commodity.

Impact on share prices

Last year BP and Shell both saw their share prices fall by over 60%.¹⁴ Meanwhile, clean power stocks rose 45%, according to the *Economist*.¹⁵

Figure 1:
How BP's forecasts for oil demand have changed in two years



Source: BP: *Energy Outlook*, 2018, 2020

For decades the oil majors have been stalwarts within many investor portfolios because of their ability to generate cash, distributed in the form of generous dividends. In April, Shell cut its dividend for the first time since the Second World War – slashing it by two thirds. In August, BP halved its dividend on the back of heavy losses and announced 10,000 job cuts. That same month, in the US, Exxon Mobil – once the world's largest company – was ejected from the Dow Jones Industrial Average, an index of 30 of America's biggest companies.

A glimmer of hope?

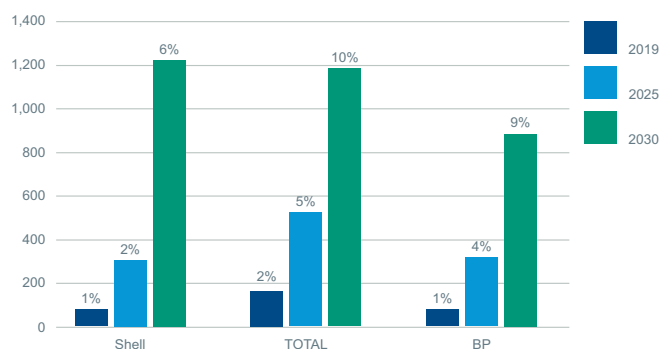
It seems clear that the integrated oil companies have to change if they are to survive in a world battling to limit global warming to 1.5°C.

In the noughties, BP appeared to be ready for that transition, with its 'Beyond Petroleum' rebrand. It soon retrenched to oil and gas again. Now it is more committed. Last February, Looney announced the company's ambition to be net zero by 2050. This would mean a reduction of around 415 million tonnes of emissions – not far off the total annual emissions of the whole of the UK.¹⁶ In August more details were given.¹⁷ BP expects to deploy 20% of its capital in transition businesses, including low-carbon companies, by 2025 and to cut oil and gas production by 40% within a decade.

The company intends to invest \$5 billion a year into low-carbon electricity and energy

"For decades the oil majors have been stalwarts within many investor portfolios because of their ability to generate cash, distributed in the form of generous dividends."

Figure 2:
Earning contribution from low carbon businesses (\$M)



Source: Company reports, Bloomberg, Bernstein analysis and estimates (all years)

projects by 2030 – it made its first move into offshore wind in September.¹⁸ It expects to increase its renewable generation capacity 20-fold, from 2.5GW last year to 50GW, by 2030. Most of this will be in wind and solar, but it is also exploring bioenergy, carbon-capture utility and storage and hydrogen.

France's Total expects to generate around half its power from renewables by 2050.¹⁹ Shell and Italy's Eni have also pledged to redirect investments towards renewables.

One advantage for the oil majors is that they have the existing infrastructure for selling power. BP has 3,000 energy traders globally, and Shell manages power trading in over 20 countries.²⁰ The European integrated oil companies have a key part to play in the transition to electric vehicles. They have around 90,000 retail stations and are investing in charging points – Total alone is targeting 150,000 in Europe by just 2025.

They are also already established investors in renewables. Shell's ethanol business (produced from sugarcane in Brazil and corn in the US) has been estimated to be worth \$2 billion and BP's \$1 billion. This new wave of investing could make a significant contribution to the renewables sector that many of the plans for a net-zero world rely upon.

But it will take some time for renewables to generate a meaningful contribution to profits. An onshore windfarm, for example, has a two-to-three-year lead time between investment decision and first power generation, while offshore farms can take 10 to 15 years.

Bernstein estimates that by 2030 renewables will still represent only 10% or less of earnings for Shell, BP and Total.

Stranded assets

There is a serious risk that the oil majors will fall short of their transition targets – perhaps far short. The consequences for investors could be serious. Former Bank of England governor Mark Carney repeatedly warned about the perils of investors finding themselves in 'stranded assets'. Now a UN special envoy for climate change and finance, he says up to 80% of coal assets and half of developed oil reserves could be left stranded. He has challenged asset managers to have a plan to mitigate that risk.

Professor Doynne Farmer, Director of the Complexity Economics programme at the Oxford Martin School at the University of Oxford, is currently producing a paper with the results of a model for the future of fossil fuel.

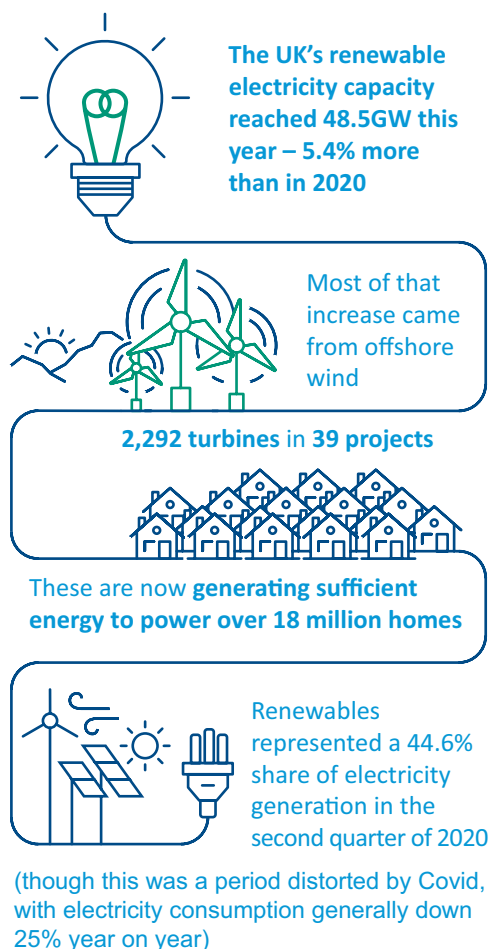
He says: "I think there's going to be a major crash in the fossil fuel market, and it's likely to happen within the next decade. Companies like BP get it and are taking steps to be players in the new world. Companies like Exxon Mobil don't seem to be doing that. The foresighted fossil fuel companies are well positioned if they really aggressively transition, so that they can jump from one side to the other as the transformation happens. In our model we looked at the revenue stream that these companies have, and it gives them a competitive advantage. They have serious investment capital. If they can actually move their physical assets over from one technology to the

Harvesting and processing plants to produce biofuels for Shell in Raizen, Brazil

Paulo Fridman



Renewable energy



Total was selected to build and operate one of Africa's largest ground-mounted photovoltaic solar power plant in Prieska, South Africa.

Total Media

other – and get the funding of that right – they potentially will be big winners here.”

Investment view

There is a scenario in which the oil majors do well. A rapid and synchronised post-Covid global recovery could see oil, gas and liquified natural gas prices quickly rise. Follow this with a successful transition to renewables and the picture looks good. Many analysts believe valuations on some European oil majors are attractive enough to warrant a contrarian bet on this scenario.

Our own view is that, while there are certainly legitimate arguments for investing in the oil majors, there are currently plenty of more appealing investment opportunities elsewhere. The precise date of peak oil is hard to guess, but it is undoubtedly closer than many analysts predicted even a few years ago. Like the huge seaborne tankers that oil companies depend on, turning these businesses around will not be an easy or quick process.

- 1 IEA
- 2 www.iea.org/fuels-and-technologies/oil – from 2018 levels
- 3 www.bp.com/content/dam/bp/business-sites/en/global/corporate/pdfs/energy-economics/energy-outlook/bp-energy-outlook-2018.pdf
- 4 *Financial Times*: www.ft.com/content/21afff2-1e57-4000-a439-62cfef6344fb
- 5 www.bp.com/content/dam/bp/business-sites/en/global/corporate/pdfs/energy-economics/energy-outlook/bp-energy-outlook-2020-presentation-with-script.pdf
- 6 www.current-news.co.uk/news/renewables-near-50-of-generation-share-in-q2-as-records-continue-to-be-broken
- 7 www.statista.com/statistics/307194/top-oil-consuming-sectors-worldwide/
- 8 RenewableUK.com
- 9 Economist podcast, 20 September – 2020 www.economist.com/podcasts/2020/09/22/new-energy-order-how-clean-power-is-fuelling-geopolitical-changes
- 10 www.economist.com/business/2020/07/18/oil-giants-want-to-own-only-the-cheapest-cleanest-hydrocarbons
- 11 www.reuters.com/article/us-bp-writeoffs-idUSKBN23M0QA
- 12 www.reuters.com/article/us-bp-writeoffs-idUSKBN23M0QA
- 13 uk.reuters.com/article/uk-shell-outlook/shell-to-cut-asset-values-by-up-to-22-billion-after-coronavirus-hit-idUKKBN2410SJ
- 14 Data: 12 months to 28/10/20
- 15 www.economist.com/leaders/2020/09/17/is-it-the-end-of-the-oil-age
- 16 Looney speech: “Reimagining energy, reinventing BP”, 12 February 2020
- 17 BP August announcement.
- 18 BP wind investment details
- 19 ENI and Bernstein analysis
- 20 ENI and Bernstein analysis

“A rapid and synchronised post-Covid global recovery could see oil, gas and liquified natural gas prices quickly rise.”

Webinar roundup

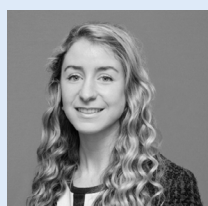
Investing for a low-carbon world

Investors abandoning fossil fuel stocks need to recognise the risks in many obvious low-carbon alternatives.



Mark Leach

Partner and
Portfolio Manager



Sarah Goose

Portfolio Manager

Investors abandoning fossil fuel stocks need to recognise that obvious low-carbon alternatives, like windfarm companies, carry their own valuation risks.

JH&P Portfolio Manager Mark Leach, speaking during our recent low-carbon world webinar said: "Investment managers are moving aggressively away from carbon-intensive stocks and into the renewable sector, mainly because of the pressure being put on them by their clients and investors.

"In 2019 we saw a 250% increase in assets held in sustainable funds. In the first three quarters of this year we're going to see around £190 billion flow into sustainable funds, relative to £157 billion last year.

Renewable risk

"As the capital has flown out of fossil fuel stocks, it has moved into these renewable plays – and usually the pure plays that are ahead of the curve in generating renewable options. That's mainly offshore wind and wind turbines. We feel that's now a risk as well. If you look at the valuations of companies like Ørsted, for example, they're at over 50 times earnings, relative to Shell on less than 10 times. That's pricing in an awful lot of growth when we see the potential for higher levels of competition in the market from the big oil companies transitioning to renewable energy, potentially lowering returns. So it's an area where we see a quantum of risk."

Doyne Farmer, Baillie Gifford Professor of Mathematics at the University of Oxford, explained how rapidly costs of producing renewable energy are falling. "Solar photovoltaic energy has dropped by more than a factor of 5,000 since its advent in

1958," he told the webinar. He projected that the cost of renewables will come down so fast that it will be possible to reach a net-zero world in just 20 years by using photovoltaics and wind to satisfy a large proportion of the global demand for electricity and hydrogen as a long-term energy storage mechanism.

"We just need to embrace renewable technologies and we'll get there quickly," he said, arguing that this is also the cheapest solution – one that is likely to save the planet something in the order of \$10 trillion or more over other solutions.

"Even if we didn't have climate change, it's going to make energy cheaper than it has been for a century and a half. Fossil fuels can be phased out substantially over the next 20 to 25 years. And that's actually the most cost-effective solution. The stickiest part is hydrogen – it looks good, but we'll need to ramp it up very substantially."

Hydrogen

James Evans, Director at Exane BNP Paribas, an expert on hydrogen, said that if the EU is to meet its target of net zero by 2050, even allowing for the use of carbon capture and storage, there is no room for emissions beyond agriculture – "which, frankly, is just cows doing what cows do". He said: "That means all coal, oil – whether it's in gasoline, diesel, jet fuel or natural gas – has to come out of our system."

He said renewables may provide up to 80% of power but battery technology has limitations in practical applications like transport. "I worked out the amount of energy that you'd need for a Boeing 737. The batteries would actually fill the entire cabin and make the plane weigh more than four times as much. So hydrogen is an important part of the solution."

Hydrogen is the most common element in the universe. However, because it is highly reactive, it is seldom found on its own.

Hydrogen fuel cells produce electricity by combining hydrogen and oxygen atoms, which react across an electrochemical cell similar to that of a battery. The only by-product is water.

"Fossil fuels can be phased out substantially over the next 20 to 25 years. And that's actually the most cost-effective solution."



Hydrogen can also be used as a carrier to transport energy created elsewhere – perhaps from solar farms in Spain. The problem with hydrogen is that it is not as energy-dense as other fuels. That means that it may be a viable solution in buses, lorries, ships and even planes. It is less likely to become a popular fuel for cars.

The other issue is cost. At the moment it costs four to eight times the price of natural gas or two to four times the price of diesel.

But Evans argued that research – backed by government investment – is likely to see costs come down quickly and ways developed to improve hydrogen's energy density.

Regulatory pressure

JH&P Portfolio Manager Sarah Goose commented on the importance of government in driving change. She said: "I think regulation is absolutely key and presents the final piece in the jigsaw in terms of the push towards full decarbonisation across the spectrum. Europe has been particularly prominent in this area, and it has been impressive to see the amount of subsidy and backing behind some of these technologies."

Investment choices

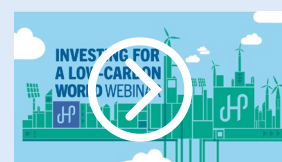
So how do investors benefit from the transition to a low-carbon world? Leach said: "In the classic JH&P way, we've looked across the value stack. Rather than take the call as to whether it's going to be solar or wind or whether it's going to be BP or Ørsted, we're taking the view that, whatever happens, you need network grids that can deal with variable demand on electricity, as well as

variable supply. So we look at the network players as being a really interesting place to invest, because they have a natural monopoly.

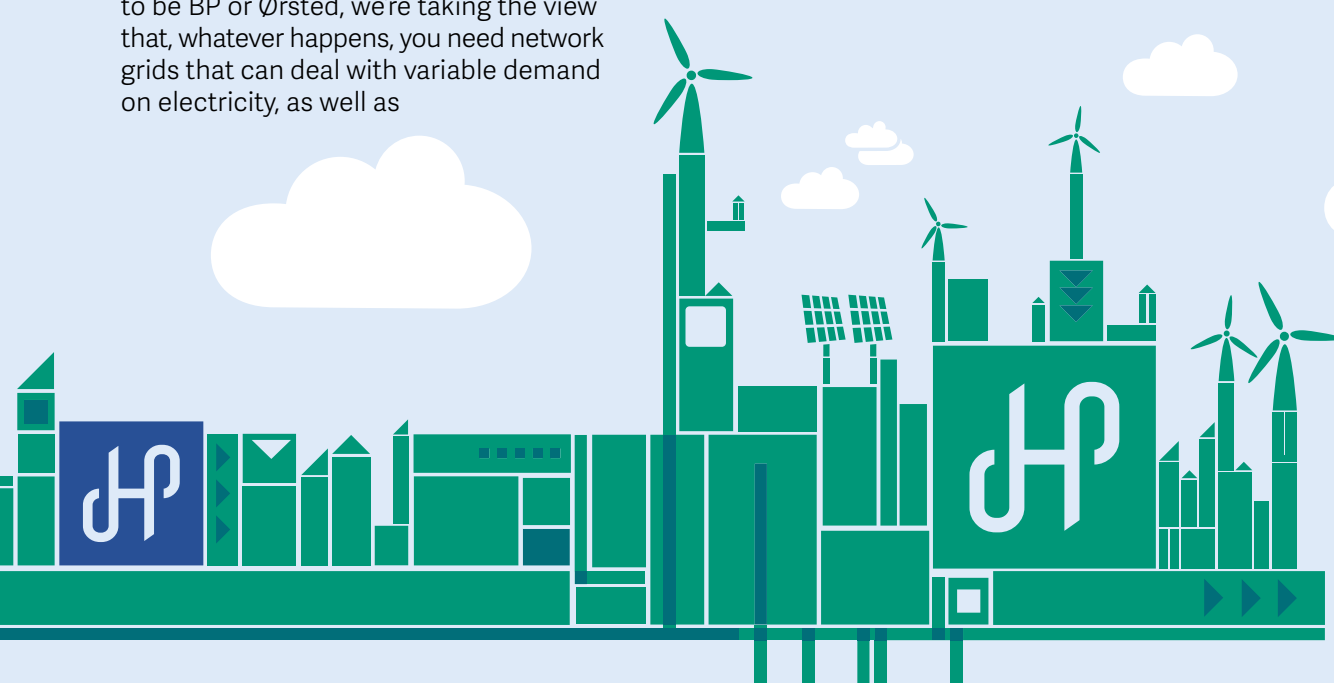
"Yes, it's a regulated monopoly. But the regulator and the government are absolutely incentivised to invest in these businesses. We need to upgrade the Western networks, which are anything over 50 years old, to cope with a changing energy construct where you've gone from very centralised production to very diversified and decentralised production. So we like the utility companies.

"We're also looking at other parts of the decarbonisation story. We like the transport sector and the building sector. Transport is responsible for around 25% of CO₂; buildings for around 12%. There's a huge amount of pressure to decarbonise. We're seeing this huge shift in terms of forcing people to buy electric vehicles (EVs). We don't have to bet on VW or Tesla. All these cars are going to have more semiconductors on them, because they're having to deal with electrification of the drive train, so we can own companies in that space instead. And within the building sector we know some chemical companies that are helping to reduce the carbon intensity of cement and making buildings more efficient by using membranes that go on roofs to make them more effective in reflecting or retaining heat. So we prefer to play the theme in that way. And we've got some really interesting ideas in this space."

"We don't have to bet on VW or Tesla. All these cars are going to have more semiconductors on them, because they're having to deal with electrification of the drive train, so we can own companies in that space instead."



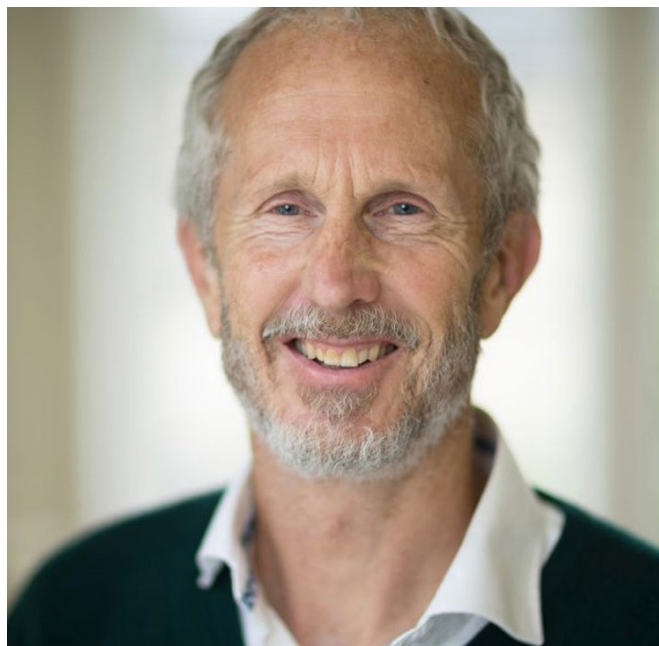
Watch the webinar here
<https://vimeo.com/482633601>



Interview

Betting on green

Meet Doyne Farmer, the charismatic Oxford don telling central banks we can transition to a low-carbon world quickly.



Professor Farmer was a special guest at our low-carbon world webinar

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“There are central banks that are hiring people with computer science degrees and physics degrees, because they know they need different kinds of models to the ones they have...”

In the 1970s, while studying at the University of California, Doyne Farmer made several trips to Las Vegas. He and two fellow physics students had built a tiny computer to help them predict the spins of a roulette wheel. For a couple of years they enjoyed a tidy profit betting on numbers in the part of the wheel where the ball was most likely to land.

The device was small enough to be concealed in a shoe. So, too, were the toe-controlled switches and transmitters that the trio used to secretly communicate while considering the most promising wagers. On average, the set-up earned a return of around 20%.

Farmer and his associates eventually quit while they were ahead. They did not doubt the effectiveness of their system: rather, they doubted their chances of leaving town with all their limbs intact if their ruse was discovered. There was actually nothing illegal about their gadgetry. But they knew that the typical casino owner of the period was unlikely to find it especially amusing.

Chaos theory

Having tackled the vagaries of roulette, Farmer turned his attention to the then-emerging notion of chaos theory. This is an interdisciplinary field of study that seeks to explain apparent randomness by identifying underlying patterns, interconnections and feedback loops. He used his skills to understand complex markets, founding one of the earliest quant investment firms.

Today, an acknowledged pioneer of the science of complexity, he is the Baillie Gifford Professor of Mathematics at the University of Oxford.

Farmer argues that the ideas behind chaos theory and complexity can go a long way towards helping us understand how the transition to a low-carbon economy might pan out.

If he is right – and, in turn, if much of what mainstream economics has to say about the journey towards net zero is wrong – a decisive shift to green energy could be completed in far less time than even the most ambitious policymakers have dared envisage. In tandem, the demise of fossil fuels and the threat of ‘stranded assets’ could be realised within only a few years.

Is the future closer – and cheaper – than we think?

The list of countries pledging to achieve carbon neutrality by 2050 grows week by week. Even China – which has led the world in consumption of fossil fuels during its meteoric, manufacturing-driven economic rise – hopes to accomplish the feat by 2060. Such targets are widely regarded as ambitious but Farmer says: “We need to envision a world where most of the power comes from solar, wind, hydrogen, ammonia and maybe other derivative fuels.”

Applying the science of complexity and using models developed for technology forecasting, Farmer, who is Director of Oxford Martin’s Complexity Economics

programme, argues that a rapid transition, compared to just continuing with the current energy mix, is the cheapest option and the switch could happen within two decades.

He says: "Fossil fuel prices obviously bounce up and down, but the US Geological Survey reports that no mineral's price has varied by more than a factor of 10 for over a century. On the other hand, the price of solar photovoltaic systems has come down by a factor of 5,000 since their inauguration in the 1950s; the price of wind power has also come down substantially, albeit not so dramatically; and the price of batteries has come down steadily as well. Meanwhile, the price of nuclear has gone up."

His confidence is at odds with the prophecies and calculations that more 'conventional' analyses have routinely produced. He says these are wrong – they fail to take complexity into account.

Convention versus complexity

William Nordhaus, a Professor of Economics at Yale University, was awarded a share of the 2018 Nobel Prize in Economic Sciences for developing a model to simulate how climate change and the global economy might co-evolve. Although the Intergovernmental Panel on Climate Change (IPCC) has used it to assess the economic impact of global warming, critics claim that his creation is dangerously flawed.

According to Nordhaus's detractors, it takes scant account – if any – of prospective tipping points that could drastically alter the relationship between the environment and the economy. Some accuse Nordhaus of placing too much stock in 'economic rationality' and too little in the quirks and caprices of real-world behaviour.

"Nordhaus's Nobel Prize is indicative of how bad the economics profession has been in the advice it's providing," says Farmer. "He massively overestimates the cost of the transition and massively underestimates the pain of not making the transition. And that's because his model is ridiculously simple. There's one representative, rational agent that models the whole world economy and all technology as one thing."

This, says Farmer, is where taking account of complexity can deliver a valuable edge. "It's not a matter of just building a more complicated model with more inputs and

more variables," he explains. "It's about understanding how a shock in one area can cascade into others."

Farmer notes that his approach is gaining momentum in policymaking circles.

"There are central banks that are hiring people with computer science degrees and physics degrees, because they know they need different kinds of models to the ones they have," he says. "So this stuff is changing. But right now the status quo is still mainly in charge."

Bottlenecks, busts and blinkeredness

While he believes that it could come about more quickly and less expensively than widely supposed, Farmer cannot guarantee that the transition to a truly green economy will be entirely smooth.

"One of the big challenges will clearly be long-term energy storage," he says. "That's where governments should be putting in more support. There needs to be more money pumped in as we start to hit grid capacity in more places, because that's where a bottleneck might arise – especially if people start wasting energy because it's so cheap. The good news is that the trends there are pretty good, which means the problems should be solvable – and free capital markets would probably deal with them in the longer run anyway."

And what about fossil fuels? Farmer is unequivocal. "I think there's going to be a major crash in the fossil fuel market," he says, "and I think it's likely to happen within the next decade."

Farmer argues that the foresighted fossil fuel companies are well positioned if they really aggressively transition. He says: "They have serious investment capital. If they can actually move their physical assets over from one technology to the other – and get the funding of that right – they potentially will be big winners here."

Some oil majors are already repositioning themselves accordingly, says Farmer, but others appear oblivious. "I presented our study to some very high-level technical people at one global fossil fuel company last year," he says, "and they absolutely got it. They said: 'Wow, this doesn't look good for us.' They're taking steps to remain a big player. But there are some that just don't seem to get it – and I sure wouldn't have my money behind them."

"I think the risk of a fossil fuel collapse is very serious," he says, "and it's essential that investors are aware of the possibility."

ESG news

Our roundup of recent events in the world of sustainable investing.



Waste

L'Oréal reveals 'world's first' bottle made from captured carbon

Developed in partnership with energy major, Total, and carbon-capture technology developer LanzaTech, the process shows that industrial carbon emissions can be used to produce plastic packaging. LanzaTech will capture industrial carbon emissions and convert them into ethanol, using a unique biological process. Total, using an innovative dehydration process jointly developed with IFP Axens, will convert the ethanol into ethylene before polymerising it into polyethylene that has the same technical characteristics as its fossil counterpart. L'Oréal is aiming to add the material to shampoo bottles by 2024.



L'Oréal and LanzaTech

E-waste rising on the agenda

Manufacturers and online retailers have been 'dodging responsibility' for electronic waste, according to an enquiry by the UK's Environmental Audit Committee's (EAC). Electronics comprise the fastest growing category of waste materials, and the UK generates the second-highest amount per person annually (Norway is number one). The parliamentary committee was not satisfied with answers from companies like Amazon and Apple on the longevity of their products and their measures for repair and recycling. Roughly 40% of the UK's e-waste is sent abroad, often illegally. This will likely become a focus for governments and investors.

In the EU, Brussels is set to introduce compulsory recycling targets for manufacturers of batteries and electric cars from 2030. The move is designed both to tackle e-waste and help meet the growing demand for essential raw materials.



Environment and biodiversity

World's first regulatory approval for cultured meat

Eat Just Inc has been given the go-ahead by regulators to sell its cultured chicken in Singapore, a world-first. Cultured meat is created by growing animal cells in a sterile environment. Eat Just has managed the breakthrough in a city-state of six million people with only around two square kilometres of farmland. Covid-19 and international trade disputes have brought food supply chains into tighter focus and Singapore is looking internally to overcome the challenges.

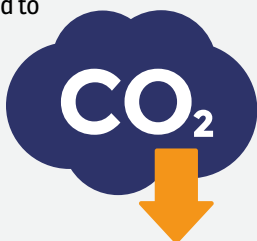
Meanwhile, fast food chain McDonald's is set to introduce a "McPlant" range this year. The firm, which sells 75 burgers every second, will introduce a line of meat alternatives from 2021 in a tie-up with Beyond Meat, the Los Angeles manufacturer of plant-based substitutes.



Regulation, policy and investment

Net-Zero Asset Owner Alliance sets targets

Thirty of the world's largest investors have unveiled details of how they intend to strip CO2 emissions from their portfolios by 2050, setting ambitious interim targets that, if delivered on, would have ripple effects across the economy. The UN-convened Net-Zero Asset Owner Alliance, which comprises investors overseeing \$5tn in assets under management, pledged in mid-October to reduce emissions linked to their portfolios by 16%-29% by 2025.

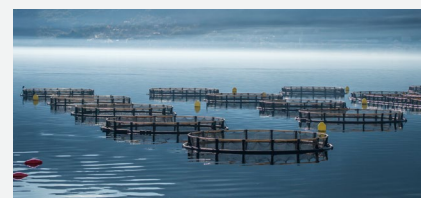


EU releases strategy for offshore wind

The European Commission (EC) has presented the EU's strategy on offshore renewable energy. It plans to increase Europe's offshore wind capacity from its current level of 12 gigawatts (GW) to at least 60GW by 2030 and to 300GW by 2050. The EC aims to complement this with 40GW of ocean energy and other emerging technologies such as floating wind and solar by 2050. According to the EC, in order to meet these objectives, investment of nearly €800 billion will be needed between now and 2050.



Insect protein production set to fly



A French biotech company that produces protein from insects plans to build the world's biggest insect protein plant in the US. InnovaFeed has designed the facility to produce 60,000 tonnes of protein each year for animal feed. The firm has competition from Ynsect, another company planning to build the world's largest insect farm, this time in northern France.

Closer to home, Nestlé's Purina brand has developed insect and plant protein-based pet foods and launched them in Switzerland in November.



Decarbonisation

The UK's green industrial revolution

Boris Johnson has released a 10-point plan for a green industrial revolution that he expects will create and support up to 250,000 British jobs. Under the plan the government will invest £12 billion, believing it will lead to over three times as much investment by the private sector by 2030.

The plan, which the PM expects to help in 'making strides towards net zero [carbon dioxide emissions] by 2050', covers 10 areas including offshore wind, hydrogen, nuclear, carbon capture and electric vehicle (EVs).

Estonian start-up develops 15-second 'battery'

Skeleton Technologies is working on graphene-based ultracapacitor technology that could dramatically reduce EV charging times. Ultracapacitors are different to batteries, storing energy in an electrostatic field rather than as part of a chemical reaction. Currently it can take 30 minutes to charge an EV battery at even the fastest charging stations, but Skeleton Technologies' 'SuperBattery' can be charged in just 15 seconds.

The technology does not provide a complete solution but used alongside a lithium-ion battery or hydrogen fuel cell it can reduce charging time, cost and weight.



The costs of inaction

A new report by the Carbon Disclosure Project (CDP) in conjunction with the University College London (UCL) Energy Institute calculates that failure to limit global warming by 2°C will cost the world \$5.4 trillion in GDP a year by 2070. It will spiral to up to \$31 trillion a year by 2200 if the global temperature rise hits 4.4°C, which is the current trajectory. The report outlines how the economic and non-economic costs of action will be a fraction of those associated with inaction.

Sony warns of leaving Japan due to energy policies

The limited availability and high cost of renewable energy could cause Sony and other large Japanese corporations to move factories overseas. The appetite for renewable power has been accelerated by the desire of global technology companies to achieve net zero in their supply chains. Japan lags other countries in the provision of renewable energy and has yet to specify how it will achieve its headline target of carbon neutrality by 2050.

Driving down green hydrogen

Energy companies around the world are collaborating in an effort to push the cost of green hydrogen below \$2 per kilogram to compete with fossil fuels. Hydrogen already has a number of industrial applications but is viewed as particularly attractive for transportation because its only emission is water. The companies behind 'Green Hydrogen Catapult' have committed to sharing expertise in developing technology and manufacturing capabilities. They seek to ramp up production fifty-fold in six years to achieve the lower cost.

CO2 at record high despite pandemic

New figures from the UN's World Meteorological Organization (WMO) show that concentrations of CO2 in the atmosphere have reached record levels despite global lockdowns. Whilst the restrictions on air travel and other industries during the crisis have prompted a fall in carbon emissions, the WMO described the impact as a 'tiny blip' in the overall rise of greenhouse gases. According to the organisation, the global average of CO2 parts per million (ppm) in the atmosphere was 410.5 – an increase of 2.2ppm on 2018 levels. "We breached the global (annual) threshold of 400ppm in 2015 and, just four years later, we have crossed 410ppm," said WMO secretary-general Petteri Taalas. "Such a rate of increase has never been seen in the history of our records."

Zero-carbon Humber and Teesside



Nature Picture Library/Alamy

A dozen organisations have submitted a joint public and private sector bid of £75 million to build key infrastructure and create a zero-carbon industrial cluster in the Humber region. The Humber is currently the most carbon-intensive industrial cluster in the country, emitting 12.4 million tonnes a year. The Zero Carbon Humber (ZCH) Partnership includes British Steel, Drax and Centrica Storage.

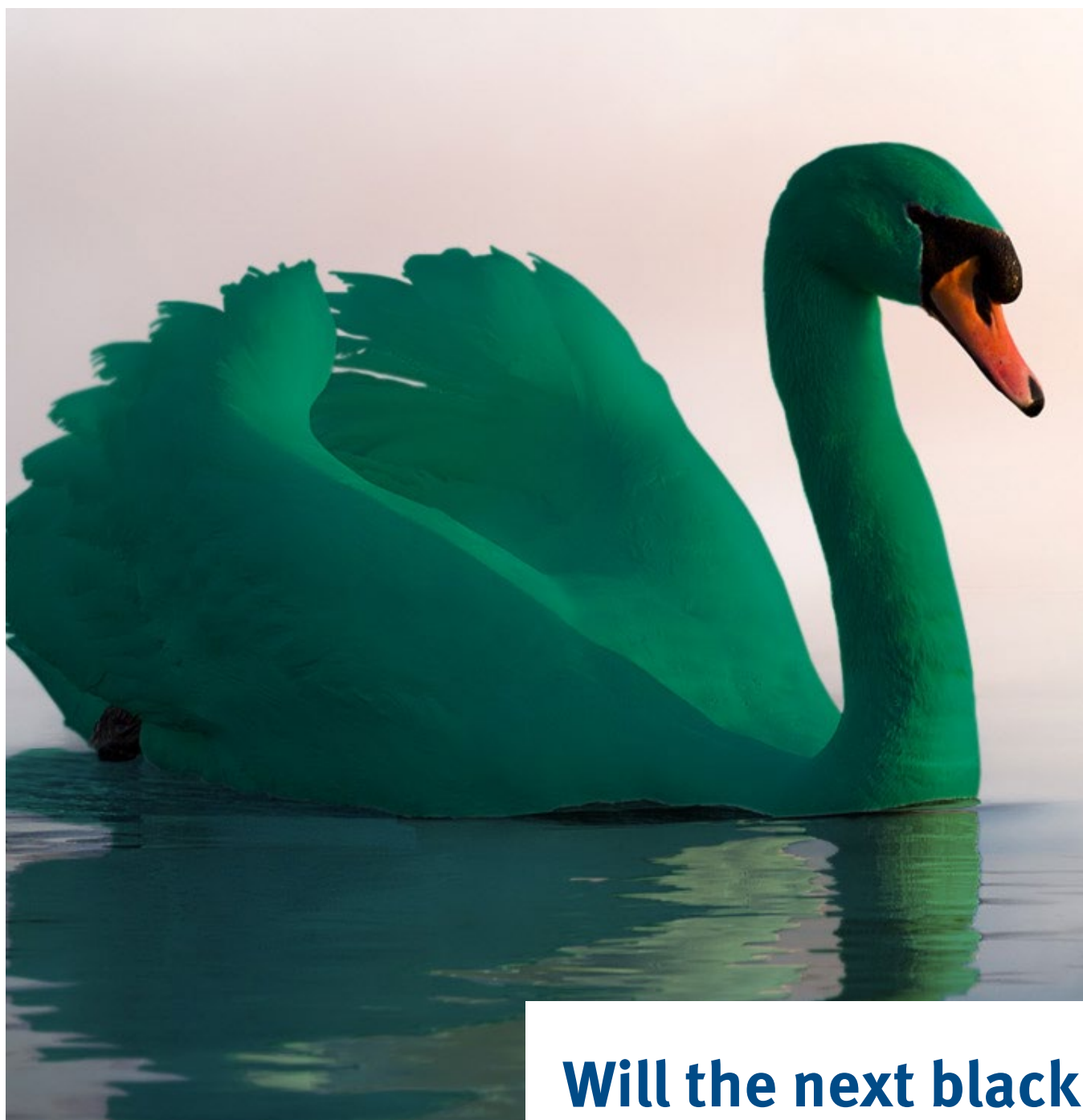
Meanwhile, BP is leading an alliance of energy companies to work with the Humber project and a similar one in Teesside to transport their industrial greenhouse gas emissions (GHGs) to saline aquifers buried beneath the North Sea seabed.

BP is leading a partnership between ENI, Equinor, National Grid, Royal Dutch Shell and Total. From 2026 they plan to transport 17 million tonnes of CO2 every year from the two projects – almost half of the UK's industrial emissions.

Australia blazes a trail in renewable energy projects

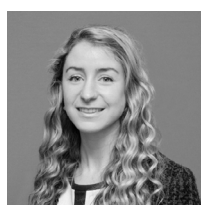
The Australian government has granted "major project" status to a \$36 billion renewable energy project that aims to build the world's biggest power station and export wind and solar energy and green hydrogen from Western Australia to Asia. The 'Asian Renewable Energy Hub' (AREH) is backed by Vestas, Intercontinental Energy, Macquarie Group and CWP Renewables.

Meanwhile, Tesla and French energy group, Neoen, have partnered to build one of the world's largest batteries in Australia. The 300MW lithium-ion battery with a storage capacity of 450MW (enough to power 500,000 homes for an hour) will help stabilise the energy grid.



Will the next black swan be green?

The Covid-19 crisis was a 'Black Swan' event. Could the next be brought on by climate change and poor policy decisions



Sarah Goose
Portfolio Manager

The Covid-19 pandemic is arguably one of those ‘Black Swan’ events that spring upon us unexpectedly. As governments and central banks scramble to address the extraordinary impact the virus is having on humanity, societies and economies, we continue to be reminded of another impending threat – climate change. Will the next black swan be green?

It was scholar and statistician Nassim Nicholas Taleb who first used the term ‘black swan’ to describe a rare, unforeseen event that has extreme consequences – such as the 2008/9 financial crisis. With the benefit of hindsight, we can see these events as entirely predictable, but at the time they come as a shock.¹

In January last year, the Bank for International Settlements (BIS), the ‘central bank for central banks’, produced a book² warning that the next global financial crisis could be triggered by climate change – a green swan rather than a black one.

Here we look at just a few of the many issues shaping the investment aspects of the climate agenda and consider how they will influence our portfolio decisions in the coming months and years.

The regulatory challenge

We hear a lot about the risks that the changing planet brings to our ecosystem, nature and mankind. BIS’s publication frames the seriousness of the issue in terms of financial markets.

The authors warn that new policies needed to fight climate change and mitigate its effects will require unparalleled international coordination – incorporating governments, the private sector, civil society and the global community.

They highlight the danger of ‘transition risks’ – the problems caused by ‘potentially disorderly mitigation strategies’ that can increase systemic financial risk. In other words, policymaker errors.

We are already seeing significant regulatory change, much of which we believe is positive. We are now in what has been referred to as the ‘decade of delivery’ – the United Nations’ Sustainable Development Goals (SDGs) Summit in September 2019 concluded with world leaders calling for action to deliver the 17 SDGs by 2030.

The following month, Europe proposed ambitious plans to join the UK’s pledge for carbon neutrality by 2050. The Green Deal for Europe outlines a multitude of policies to meet its target, with particular sections of the policy to be finalised in various stages throughout the next two years. Ursula von der Leyen, fresh into her new role as President of the European Commission, described the deal as ‘Europe’s man on the Moon moment’.

This regulation requires drastic change at all levels of society – investors will need to be one step ahead and nimble in anticipating how companies will be affected, adversely and beneficially.

Alongside the Green Deal, the EU has announced new non-financial reporting regulations and a taxonomy for reporting sustainable activities. The importance of this latter proposal cannot be stressed enough. It requires financial market participants to classify environment-focused activities, products and objectives in a consistent way.

This seeks to address ‘greenwashing’ accusations, making it harder for firms to boast great environmental targets without a timeline or plan of action. This flexing of regulatory muscle will drive a big change in corporate philosophy and raise levels of disclosure, making it easier for investors to see which firms are genuinely addressing climate issues.

The UK’s Green Finance Strategy was announced prior to the EU’s proposals, in July 2019, and establishes a joint force with regulators, overseen by the government, to ensure a coordinated approach on climate-related financial issues. Disclosure is a fundamental principle of EU and UK plans alike. Companies can either be on the front foot with this or find it becomes an enormous headwind to growth.

The role of Covid-19 in accelerating ESG³

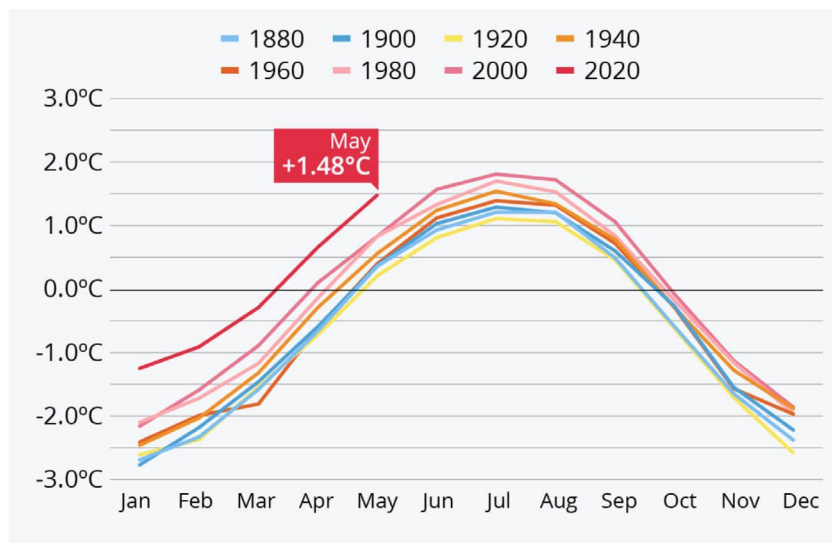
The past few years have seen company management teams begin to depart from the philosophy promulgated by economist Milton Friedman in the 1960s that their sole responsibility is the maximisation of shareholder value. We are seeing moves to incorporate a greater environmental and societal focus. Covid-19 has accelerated that shift.

“Climate change represents a colossal and potentially irreversible risk of staggering complexity.”

– BIS

Earth is heating up

Monthly divergence from average temperature (calculated for 1980–2015) in selected years



Source NASA, Statista

Many companies have demonstrated their commitment to the S and G of the ESG triumvirate as they prioritise employees, customers and society over dividends and shareholder returns.

Covid-19 and lockdown have also boosted the move to decarbonisation and digitisation. As the vaccines kick in and we emerge from lockdown, there is a powerful hope among many to 'build back better'.

Enormous government spending is required to revitalise the economy. This presents a real opportunity to target money towards projects and businesses that help decarbonise the world. Calls for 'green stimulus' echo louder and louder

throughout Europe, with the Green Deal hailed as central to Europe's recovery strategy.

What will happen in the US?

The US has been an outlier among developed economies in its responses to climate change. Covid-19 has further widened the gap between what the US federal government and the EU are doing. Increasingly in the US, states have taken environmental matters into their own hands; indeed, companies and individuals have broken rank with the Presidential decree to produce their own ESG pledges.

The US presidential election could change that. The environment was a key focus of the Biden campaign. A change of political stance within the White House on the environment could herald an inflection point that will reverberate through corporate America.

JH&P view – rising to the regulatory challenge

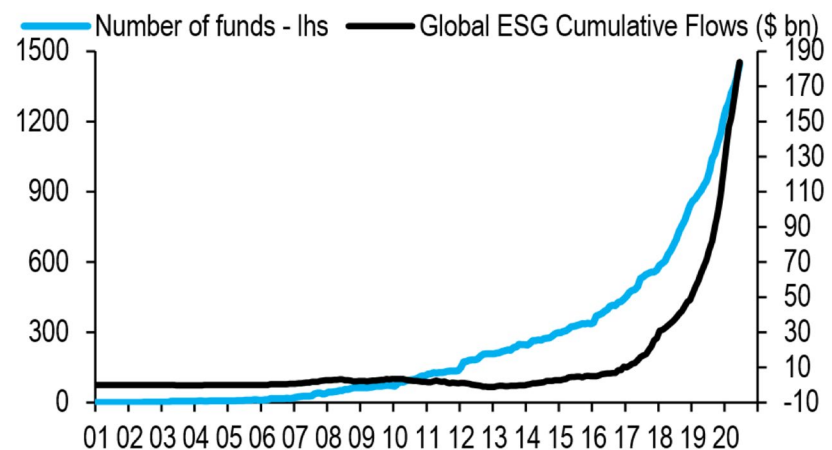
Unsurprisingly, the complexity surrounding the environmental challenge is already being reflected in financial markets. Fast-moving capital allocation decisions have led to sectoral divestment at one end and crowding at the other.

Sustainability sits at the core of our fundamental analysis of investments – we seek companies with sustainable business models and sustainability of returns. We believe we can have a beneficial impact through ownership of companies that are driving positive change, where demand is strong and consistent. We believe many of these companies will enjoy a tailwind from changing regulation and consumer preference. The companies of the future will surely be the ones that contribute to the future.

The flow into ESG strategies and stocks, particularly over the past 18 months and throughout the Covid-19 correction, highlights how individuals are taking action via their investments – an extension to other populist movements experienced across the world in politics and culture.

It can be easy to be lured into areas of the market that are particularly 'hot', such as those playing into the more obvious ESG themes. However, we increasingly see value in 'picks and shovels' businesses –

Global ESG funds have recorded record inflows in recent years



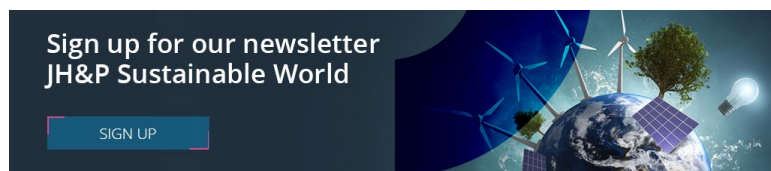
those mission-critical companies in the value chain that are perhaps further away from the ESG limelight but nonetheless crucial to the advancement of environmental targets. We find Europe particularly attractive for these types of investment.

The end of ESG

2020 was a remarkable year. With so much regulatory change on the horizon, it may prove a turning point for the environment – and for investors. It is no longer enough just to avoid sin stocks. Sustainability must now be core to investment strategy for everyone. There may come a time soon when ‘ESG investing’ becomes simply ‘investing’.

We're happy to answer any questions on how we can help you or your organisation.

www.jameshambro.com



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The value of an investment and the income from it can go down as well as up and investors may not get back the amount invested. This may be partly the result of exchange rate fluctuations in investments which have an exposure to foreign currencies. You should be aware that past performance is not a reliable indicator of future results. Tax benefits may vary as a result of statutory changes and their value will depend on individual circumstances.

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- 1 Taleb outlined the principles in his book. *The Black Swan: The impact of the highly improbable*. For centuries 'black swan' was used as a term – like 'hens' teeth' – to describe something deemed impossible. The only swans known by Europeans were white. But in 1697 Dutch explorer Willem de Vlamingh discovered black swans on a river in Western Australia.
- 2 See *The Green Swan: Central banking and financial stability in the age of climate change*, by the Bank of International Settlements.
- 3 ESG = Environmental, Social and Governance.