Willis Towers Watson

Energy Market Review April 2021

The transition accelerates:

what's next for the energy industry?

From International Oil Company to Integrated Energy Company

bp

bp's Dominic Emery talks to Willis Towers Watson

Energy Market Review April 2021

Market capacity figures

The figures quoted in this Review are obtained from individual insurers as part of an annual review conducted in January each year. They are solicited from the insurance markets on the basis of securing their maximum theoretical capacity in US$ for any one risk. Although of course this capacity is offered to all buyers and their brokers, the individual capacity figures for each insurer provided to us are confidential and remain the intellectual property of Willis Towers Watson.

Willis Towers Watson Energy Loss Database

All loss figures quoted in Part Three of the Review are from our Willis Energy Loss Database. We obtain loss figures for this database from a variety of market sources (including a range of loss adjusters), but we are unable to obtain final adjusted claims figures due to client confidentiality. The figures we therefore receive from our sources include both insured and uninsured losses.

Style

Our Review uses a mixture of American and English spelling, depending on the nationality of the author concerned. We have used capital letters to describe various classes of insurance products and markets, but otherwise we have used lower case to describe various parts of the energy industry itself.

Abbreviations

The following abbreviations are used throughout this Review:

CAR	Construction All Risks
CCS	Carbon, Capture and Storage
ESG	Environmental Social Governance
PD	Physical Damage
BI	Business Interruption
OEE	Operators Extra Expense
PPA	Power Purchase Agreement
LNG	Liquefied Natural Gas
PMD	Performance Management Directorate
S&P	Standard & Poor's

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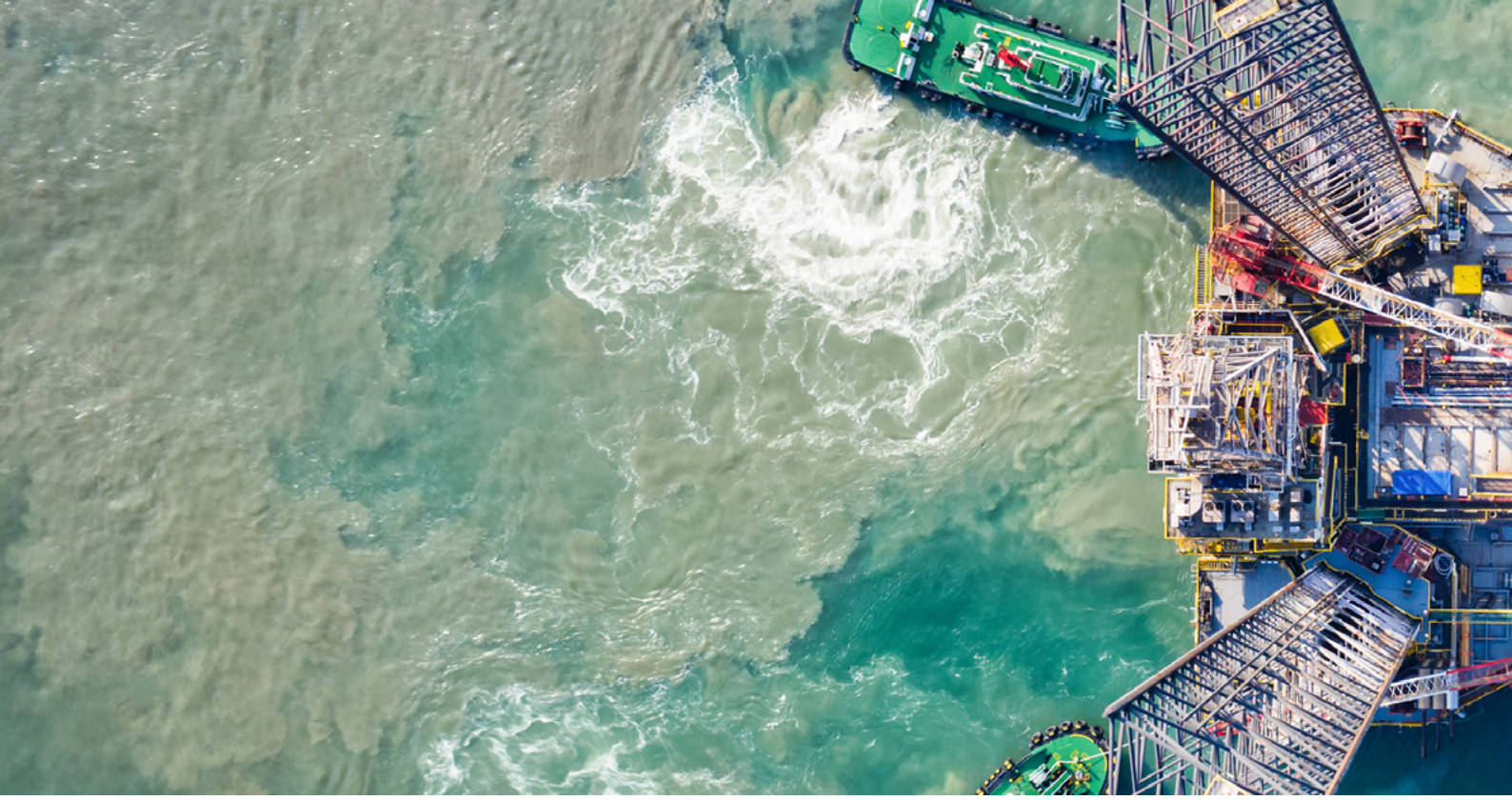

Introduction

Welcome to this year's Energy Market Review. When we published last year's edition, we imagined that COVID-19 would be an experience that might last for a few weeks, maybe a few months; little did we realise that we were on the cusp of an intermittent global lockdown over a 12 month period, resulting in a major revolution in the way in which we all now work. Regardless of when we transition back to a more physical business environment, there will be no simple return to the way we all operated in 2019; a large number of changes are here to stay, and it will be fascinating to see how the new business environments in the energy, risk consulting and insurance industries evolve in the months and years ahead. We continue to wish that all our readers stay safe, and hopefully experience a better 2021 than the challenging circumstances with which we have all had to cope during the last 12 months or so.

In the meantime, the besetting issue confronting the energy industry – that of climate change and the resulting energy transition – has, if anything, accelerated during the past 12 months, and we are putting this issue front and centre of our Review once again. This year, in assessing how climate change is affecting the industry, we thought we would ask the experts from within the industry itself. We are delighted that Dominic Emery, Chief of Staff at bp plc, agreed to be interviewed by us a few weeks ago and an edited transcript of our conversation is the leading article of this year's Review. Just one statistic provided by Dominic during the interview was truly astonishing: that roughly $100 trillion needs to be invested over the next 30 years for global temperatures not to exceed 1.5 degrees by 2050. Of course, as yet the world is nowhere near being on course to meet such a level of expenditure; as Dominic points out, the will is there, both at national and private sector level, but investment levels around the world now need to step up exponentially. In his interview, Dominic provides an interesting insight as to how bp has risen to the challenges posed by the transition, as well as how bp is managing the new risk landscape that is emerging.

We also include three other articles within Part One of the Review which highlight the challenges posed by managing risk during this accelerating energy transition. Ian Phillips has over 25 years' experience in the oil & gas industry, having worked for oil majors such as Shell and bp; he is now Development Director of a company which developed one of the UK's first Carbon Capture and Storage (CCS) projects. Ian concludes his article by suggesting that although the energy transition may pose an existential threat to some players within the oil & gas industry, it may also represent an enormous opportunity to others. Tony Rooke, Willis Towers Watson's Director of Climate Transition Risk, then shows how energy companies can begin the process of managing their transition risk by a quantification process that enables energy industry risk managers to provide insights to inform their company's business strategy. Finally, to provide an insurance market perspective, we are delighted that Sam Harrison and Peter Burton from QBE have also been kind enough to sit down and discuss with us how QBE, as a global insurer, is reacting to the changing business environment in both the energy and insurance industries, including their company's plan to support their energy industry clients through the transition.

In Part Two of the Review we focus on some key risk management issues that continue to be critical for the energy industry, including political and civil unrest issues that are fast becoming risks in domiciles which previously may have been considered benign. We also focus on the continued development of analytical tools to assist in making correct risk management decisions and the development of risk engineering dashboards that assist risk managers in communicating risk issues effectively across their organisations. We also hear from OIL on recent developments in their energy mutual; it will be interesting to see in future whether there will be any further developments in the mutualisation of energy industry risk as the energy transition gathers momentum.

In Part Three of the Review we focus on the continuing challenging insurance market conditions for Energy business. For the first time this year, we have included a specific insurance market Executive Summary so readers can pick out the main points that we make on capacity, loss rating levels and the market outlook for the remainder of 2021. We also include another insurer interview with Mike Hayes of Berkley Offshore, who provides his own perspectives on today's challenging International Liability market.

At Willis Towers Watson we continue to support our clients in achieving an orderly energy transition, enabling them to increasingly align their business strategies in response to these stakeholder challenges and pivot towards a net-zero future. We are committed to taking a positive approach to this issue, helping our clients achieve their new objectives as rapidly as possible. We do this from a risk advisory position, which is designed to help them achieve and accelerate their climate reduction targets and so enhance their profile within their external stakeholder community.

We very much hope you enjoy reading the Review and as ever would welcome any comments or feedback that you may have.

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Part One: the accelerating transition

The energy transition: from International Oil Company to Integrated Energy Company

In February 2021 Graham Knight, Head of Global Natural Resources at Willis Towers Watson (GK), was pleased to interview Dominic Emery, Chief of Staff at bp plc (DE). In this interview, Dominic talks about the global energy transition, bp's current and future thinking and how his company is addressing the strategic risks posed by climate change.

GK *Dominic, many thanks for speaking to us today. I'd like to start off by asking how you think the global energy transition has accelerated over the last three years?*

DE My pleasure Graham. Well, it certainly has accelerated, both from a national and a private sector perspective. From a national perspective, last year we saw China commit to net-zero by 2060 - a very big deal indeed. We have also seen the US re-committing to the Paris Agreement, following the recent change in administration. And by the time we get to COP 26 in November this year, we would expect many other countries to follow suit and commit to net-zero by the middle of the century. If successful, this would correspond to an average temperature increase of 1.5 degrees Celsius rather than 2 degrees.

From a private sector perspective, we are now seeing hundreds of companies committing to net-zero through various different approaches. These include business sectors where commitment to net-zero is relatively straightforward, such as large companies buying sizeable renewable energy PPAs, and those businesses where the commitment is much more challenging, for example shipping, aviation and hard-to-abate sectors. Nevertheless, these industries are also starting to make net-zero commitments – Maersk Shipping is a good example. And now we are seeing an increasing number of oil & gas companies doing the same thing, making their own net-zero commitments.

GK *Do you think there are now enough investments being made around the world to meet the Paris Agreement goals?*

DE Investments must still increase significantly – the IEA came out some weeks ago with a report which determined that roughly $100 trillion needs to be invested over the next 30 years for global temperatures not to exceed 1.5 degrees by 2050[1]. That's a huge investment commitment, and investment levels aren't nearly at $3 trillion a year yet – right now we are talking about only hundreds of billions of dollars per annum. The energy transition will is there, both at national and private sector level, but investment levels now need to step up exponentially.

[1] https://www.iea.org/reports/world-energy-outlook-2020/achieving-net-zero-emissions-by-2050

GK *Is there any future for oil and gas companies who continue to adopt a "business as usual" approach to the transition?*

DE Yes, but the world's carbon budget is finite and running out. Any kind of realistic proposition around net-zero and the Paris goals does require fossil fuel usage to decline over the coming decades, and bp are aiming to reduce our own oil and gas production by 40% by 2030. There will of course be a need for oil and gas in the coming decades, but it will have to taper down over time. We expect those who can produce oil and gas to the best possible quality to be the winners as the industry declines over the coming decades.

GK *Do you think that oil and gas companies who continue to adopt a business as usual approach will still to be supported by stakeholders such as investors, insurers and lenders?*

DE It rather depends on the nature of the investors and financiers. What we are seeing in some jurisdictions are banks that are no longer wishing to lend to oil and gas; that's happening with the North Sea for example, where there are now only a handful of banks who will lend to some players, so in some jurisdictions that's going to be really challenging. In other parts of the world there is still strong investor support for a more business as usual approach, but the extent to which that is going to continue for the longer term is less certain.

GK How has COVID-19 affected the industry in general terms?

DE What we have seen over the last year is a precipitous fall in oil & gas share prices; in part, the COVID-19 tragedy has impacted that, particularly in terms of demand destruction. We also saw a dramatic fall in oil prices earlier last year when OPEC+ started to raise production during the start of the pandemic; you may recall the WTI oil price actually going into negative territory at one point last year. Share prices have become depressed, a number of investors are no longer assigning terminal values to oil and gas companies and current oil and gas valuations are now much diminished compared to what they were historically. And while we have seen oil prices return to where they were 12 months ago, we certainly haven't seen a similar effect with share prices. In the past, there was a broad linkage between an oil company share price and the oil price; however, that linkage has been broken over the last 12 months. So it will be very challenging.

GK *How do you feel that the different business environments around the world - the West, Russia, China, the Middle East and Latin America – will respond to the energy transition challenge? What differences, if any, would you think will emerge during the next few years?*

DE Most countries have signed up to the Paris Agreement; that requires them to commit to a global temperature increase of well below 2 degrees and make efforts towards 1.5 degrees. But energy environments around the world are dramatically different – if you are a resource-rich country where it is relatively cheap to produce oil & gas, then you will seek to continue to produce it over time. Fundamentally, countries will respond to the transition according to their endowment of energy resources. Those could be fossil fuels, but they could be biomass such as in Brazil, or they could be wind or solar. Or their approach could come down to their ability to deploy Carbon Capture and Storage (CCS) and thereby successfully reinject CO_2.

I would also mention the importance of the diversification of economies; if you are very fossil fuel dependent, then the energy transition will entail a diversification programme, as we are seeing in some countries in the Middle East.

"What we are seeing in some jurisdictions are banks that are no longer wishing to lend to oil and gas; that's happening with the North Sea for example, where there are now only a handful of banks who will lend to some players, so in some jurisdictions that's going to be really challenging."

GK *Let's turn now to bp's own response to the energy transition. Several years ago you exited CCS as part of the Beyond Petroleum initiative, citing lower than expected carbon prices. Now that carbon prices have increased, what is bp's current approach to CCS? Do other oil and gas companies have the scale to adopt a similar approach?*

DE I don't think CCS has quite had the dramatic effect around the world that we might have hoped for a few years ago. It depends on whose numbers you use, but in very broad terms something like 5 gigatons of CO_2 will need to be captured by CCS to enable us to get to net-zero by mid-century. That's very significant; right now it's only in the order of a few tens of millions of tonnes, so we are orders of magnitude away from what needs to happen at a global level. bp did develop a CCS project; we learnt a lot from it and we also tried a couple of others in various parts of the world. However, they didn't materialise for two primary reasons – no supportive carbon pricing regime, and for the power projects with CCS, the electricity was just too expensive.

However, having CCS capability is very firmly in the oil and gas company skill set and the industry does have the scale to take on a more ambitious approach. We have just seen ExxonMobil announce the formation of their CCS unit and other companies are doing much the same thing, whilst also collaborating on CCS through the Oil and Gas Climate Initiative. We believe that CCS deployment needs to be significantly ramped up – right now, it is insufficiently scaled to contribute to meeting the net-zero target. As for carbon prices, we are seeing them start to rise, but to enable CCS to scale to where it needs to be, carbon pricing really needs to be in three figures.

GK *So what is the role of governments in encouraging companies to scale up their CCS efforts?*

DE Governments can help enable the transition using several different tools – here are three examples. One is putting in a tax incentive, as is happening in the US, through 45Q, that enables benefits for CO_2 enhanced oil recovery of $35 per ton and for CCS of $50 per ton, which is helping to stimulate CCS in the US. Then there's a second enabler - deploying CCS infrastructure on a rate-based approach with a regulated return for the national good. Thirdly, there's the issue of the long-term liability for CO_2 storage - when does it transfer from being a private liability to a public liability? These are the sort of important conversations and regulatory points that need to be concluded over the coming years.

So governments have an important role to play, but it's not about throwing money at it - it's about creating the policy and regulatory environment for CCS to develop. In the UK, the government has been quite generous in supporting the CCS clusters developed to date, while the US has chosen to use tax incentives to stimulate CCS. There are a number of different enablers out there, but they all have their role to play in getting CCS to scale-up.

GK *In 2018 you said that bp would take a broad-based approach to investing in renewable technologies. Are you any closer to identifying any winning technologies?*

DE We had a number of different areas that we were investing in three years ago, including electrification, CCS, carbon offsetting and biomass to products. We were also in the process of creating an advanced mobility unit, which was primarily focused on battery storage and vehicle

electrification. As a result of that work, and by investing in several different products and technologies through our venturing unit, we took a strategic approach and have started to invest at scale.

The best example of these is offshore wind through our recent investments with Equinor in offshore USA, as well as in the most recent offshore licencing round in the UK with ENBW. The technology is proven, despite the exponentially increasing turbine sizes, incentive models are generally clear, and project development and management capability is part of our – and our partners' - skill-sets. Similarly with solar - we have been in solar for a long time now, initially as a manufacturer, but most recently as a project developer through our Lightsource bp partnership. We have seen the cost curves for solar come down by an order of magnitude in the last decade or so. This is less a result of technology improvements (although there are some interesting new technologies such as perovskite solar which could prove to be very promising) but because of mass-production of solar panels. It's a similar story for vehicle electrification and battery costs – here again we are starting to see another technology where manufacturing is scaling, costs are reducing dramatically, and quality is improving.

So these technologies are just getting better and better and lower and lower cost. In terms of the future, I also think there continues to be interesting developments in CCS technologies, several of which we have invested in, which will enable CCS to scale at lower cost.

For the future there are some interesting technologies around waste and biomass conversion to fuels; for example, we are investing in a company called Fulcrum Bioenergy that takes municipal solid waste and turns it into biojet. This helps solve two problems, that of waste management and reducing the carbon emissions of jet fuel.

GK *Is bp still on track to achieve zero-net growth in operational emissions by 2025? How much of your movement towards this target is been augmented by carbon-based offsets?*

DE The former target of zero net growth has effectively been retired and replaced by a new aim which we set at the beginning of last year, in which we are targeting an actual reduction in our operational emissions of around 20% by 2025.

"Execution and performance are going to be mission critical for us over the coming years - we have to demonstrate to our stakeholders that we can be highly successful in the energy transition."

GK *What is bp doing to reduce your methane emissions? Do you have a separate target to "net-zero" these emissions?*

DE Yes, we do, as part of the overall target structure. Our overall operations emissions reduction aim for 2025 is 20%, for 2030 it's 30-35% and for 2050 (or sooner) it's 100%, i.e. net-zero. Within that overall structure, methane is included on a CO_2 equivalent basis. But we also have a separate methane emissions intensity target of 0.2% that we laid out a couple of years ago and continue to make progress against.

However, the interesting thing about that particular target is that methane measurement is still primarily through engineering calculations and standards; we now want to measure methane directly. By 2023, our new aim is to have direct methane measurement equipment for all our major upstream facilities, so that we really do know what we are measuring.

GK *Dominic, let's turn now to the issue of risk management. What are the key strategic risks that bp faces as a result of the energy transition?*

DE There are broadly two buckets of risks that we face - there are the strategic transition risks and then there are the practical, operational and resilience risks from extreme weather events. I'll focus on the first bucket, on strategic transition risks and how that is playing out with shareholders. Most of our investors like our broad direction of travel in terms of the strategy that we've laid out, but one of the key risks for us is our ability to execute on our plans, particularly in new businesses and new business models. Execution and performance are going to be mission critical for us over the coming years - we have to demonstrate to our stakeholders that we can be highly successful in the energy transition.

Then we must also bear in mind the views of civil society as a whole - which wants and needs us to change. Are we meeting the aims and objectives that we have committed to in terms of our sustainability framework? Are we doing it in the right way?

And finally, we have to support our colleagues and teams as we go through the transition. We have just undergone a programme of major changes to the organisation resulting in 10,000 people leaving the company, with most already having done so. That has been deeply unsettling. So we are very focused on communicating with the team, making sure people understand and have confidence in our strategy as we lean into the energy transition.

GK *Building on that confidence and conviction, how is bp moving to quantify/manage these risks and thereby strengthen its ESG credentials?*

DE ESG is an increasingly important element of investors' portfolios. Back in August last year, we laid out our strategy and our investor proposition to appeal not only to investors who want dividend and growth, but to those who also want growth in the new forms of energy.

As I mentioned earlier, $3 trillion a year is going to be required to re-wire and re-plumb for a net-zero world by mid-century, and this represents a fantastic opportunity for bp to participate. At the same time, we also want investors to support us from an ESG perspective, so we've laid out different carbon targets and aims as part of our ESG plans. As well as getting to net-zero, there are two other important components of our sustainability approach; one is to improve people's lives and the other is to care for our planet. Sitting beneath these sustainability focus areas are the ESG credentials that we are starting to lay out, including commitments to issues such as biodiversity and human rights. From a pragmatic perspective, it's important to achieve a good ESG score, but it is more important to do the right thing. We've carried out a comprehensive inventory of our ESG credentials; it's complex, because there are many different frameworks and metrics. We've now got a very senior team focusing especially on these ESG metrics and on investors' perception of them; we now need to see how we can simplify them and focus on some key measures.

GK *In general terms, does bp see the energy transition as more of an opportunity than a challenge?*

DE At the highest level, if the world is having to invest $3 trillion a year to meet net-zero, then naturally it represents a great opportunity. One of the very earliest things that our CEO, Bernard Looney, said back in February 2020 was that seeing this change as an opportunity rather than a threat is key – and with sufficient conviction, you can start to lean into the energy transition.

I think it's the same with ESG credentials; they do give us the opportunity to think more deeply about how we practically implement our policies - for the planet, for human rights and how to improve people's lives. This all feeds into our overall company purpose; it's an opportunity to galvanise ourselves internally, but it's also an opportunity to meet societal challenges and support the world to get to net-zero.

GK *Do you see bp as having a role in offering the benefits of its expertise in climate issues to companies from other parts of the world with less experience of these issues?*

DE Yes, we hope we can share our expertise, but we are also here to learn as well. In all humility, there are companies with huge amounts of experience in these areas that we can learn from. For example, take some of the work that we are doing with biofuels in Brazil with Bunge and their decades of experience. Another example is our partnership with Equinor in US offshore wind. In other parts of the world, we can bring our expertise to either partner with companies or countries, and we would be delighted to do that. I think there will be a learning experience both ways and a sharing of some of the benefits of what we have learned with others and vice-versa.

Several years ago, with partners that include several national oil companies, we created The Oil & Gas Climate Initiative. That's been a great way to learn from each other, particularly in terms of the pre-competitive opportunities around methane management and CCS.

GK *Turning to the future, let me ask you to reach for your crystal ball - where do you expect the oil and gas industry to be by the end of the decade? Are current fossil fuel projections of their future share of the energy mix somewhat optimistic?*

DE I would defer to my esteemed colleague Spencer Dale, our Chief Economist, and our Energy Outlook that we issued back in September 2020[2]. I think what is highly likely is that the share of oil & gas as part of primary energy will decline under any scenario; what's in question is the pace of that decline by the end of the decade.

What we do see going forward is a much more even share of the energy mix, not only in the next decade but also increasingly over further decades, with much more competition between the various fuel types. If you look back in history, there tends to be a domination of the market by a particular fuel type - coal back in the early part of the twentieth century, then oil coming to the fore in the 60s and 70s and subsequently we have seen growth in gas. But I think what we will see is a much more even share in the future and therefore more competition between different energy types.

However, if we use a trajectory that is more directed towards country Nationally Determined Contributions (NDCs) - or policies that have already been proposed by countries - the rate of change in the energy mix simply won't be fast enough to get the world to net-zero by the middle of the century. That's supported by some of the new net-zero projections provided by the IEA, as well as Shell's recent scenario work, which also gives grounds for the view that we need a more rapid transition. Because if we don't, and delay change for too long, we could end up in the middle of the century with a much more chaotic and disorderly transition.

GK *Would you say that in ten years' time hydrogen will have a significant piece of the global energy mix?*

DE I think hydrogen will indeed have a part to play - it may be modest over the next several years, but a number of different commentators, including the Energy Transition Commission and the Hydrogen Council, are forecasting there will be significant hydrogen use by the middle of the century. It will likely have a role in de-carbonising heat and industrial sectors and potentially the heavy transport sectors – on road and marine - as well. We are excited about it - we've said we want to be a major player in hydrogen and gain a 10% share in core markets for by 2030. Whether green or blue, we believe there will be significant opportunities for both in the decades to come.

GK *Can the renewable energy industry defend itself successfully from allegations that the extraction of the raw materials needed for wind, solar and battery infrastructure actually involve an increase in overall carbon emissions?*

DE It can defend itself more easily than might be imagined - the actual emissions that are involved in the extraction of those raw materials are minimal compared to the emissions generated by the combustion of fossil fuels. In due course there will also be solar manufacturing facilities that will be powered by solar, wind or some other form of renewable energy. As the energy mix becomes increasingly renewable, so will the manufacturing base, so the problem will diminish over time quite significantly.

"What we do see going forward is a much more even share of the energy mix, not only in the next decade but also increasingly over further decades, with much more competition between the various fuel types. If you look back in history, there tends to be a domination of the market by a particular fuel type."

[2] https://www.bp.com/content/dam/bp/business-sites/en/global/corporate/pdfs/energy-economics/energy-outlook/bp-energy-outlook-2020.pdf

GK *Is a completely decarbonised oil industry possible in the future? If so how?*

DE One of the most interesting developments recently around this issue was something that Occidental did some months back – they sold a cargo of carbon-neutral crude, with the emissions from both the extraction and combustion of that crude neutralised by subsurface CO_2 injection. I think that's an interesting proposition, but the challenge will be doing that at scale to achieve complete decarbonisation. It simply cannot be done for global production of ninety to one hundred million barrels a day. Offsetting of emissions through natural climate solutions may provide perhaps 10 gigatonnes – or 20-30% - of the answer, but the solution is not for land carbon to act as a sink for continued fossil fuel use on the scale of today. That's neither the right thing to do or indeed physically possible.

GK *So finally Dominic, to what extent is resolving the climate crisis the oil industry's responsibility and burden, compared say to government action or even individual choices?*

DE It is down to us all – and this goes back to a speech that Mark Carney gave a few years ago called Breaking the Tragedy of the Horizon[3], and is also a tragedy which appears long dated to many – unlike the immediacy of the pandemic.

Having said that, I do think that we in the industry can learn a lesson from the level of emissions reductions seen during the pandemic. We've seen global CO_2 emissions fall by around 7% in the last year, primarily as a result of dramatically reduced travel, and, to a lesser extent, lower power production. But that's only a 7% reduction at a time of tragedy, deep disruption to people's lives and trillions of dollars wiped off global GDP. The demand side, from energy customers, can only take us so far, and it behoves us on the supply side to decarbonise the products that we take to market. So, although we all have a role to play, we do have a particular mission to deliver low carbon energy over the coming decades to millions of customers.

GK *Dominic, thank you so much for your time.*

Dr Dominic Emery is chief of staff to the chief executive officer for bp.

Dominic is a geology graduate and has worked for bp since 1986. He has held positions in bp's Exploration and Production Division, in Asia and the Middle East, and also in the UK North Sea. Dominic has led Gas and Power business development in Europe, as well as running power and utility assets at bp industrial sites. He joined bp Alternative Energy in 2007, ran Emerging Business & Corporate Ventures in 2012. In 2013 he moved to the role of VP, Group Strategic Planning, responsible for strategy development, long-term planning and policy. He was appointed to his current role in February 2020.

In addition to his bp role, Dominic was the founding CEO of OGCI Climate Investments, a $1bn fund set up by oil and gas companies to invest in technologies and projects to reduce carbon emissions. He is also on the Board of the EITI (Extractive Industries Transparency Initiative).

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"The demand side, from energy customers, can only take us so far, and it behoves us on the supply side to decarbonise the products that we take to market."

[3] https://www.bankofengland.co.uk/speech/2015/breaking-the-tragedy-of-the-horizon-climate-change-and-financial-stability

Climate change and oil & gas: a view from an industry expert

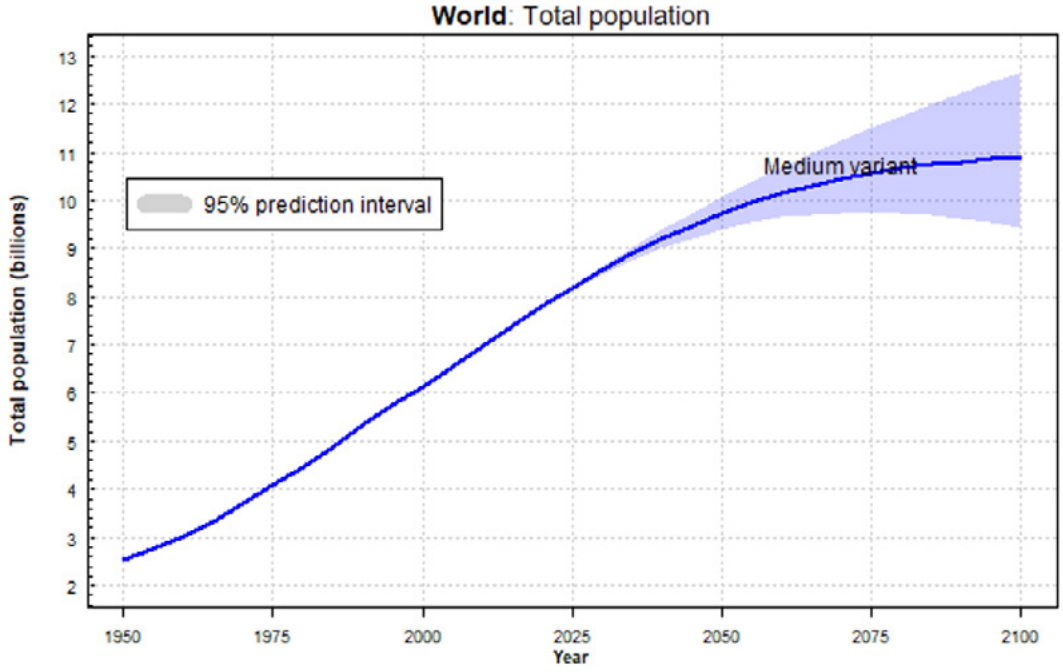
Introduction: a booming industry, if not for the changing climate...

It is a cruel irony that in any other industry the market fundamentals that drive the oil & gas industry would point to a booming future if it wasn't for climate change. Indeed, investors would be positively queuing up to be involved and customers would be delighted with the service that they would receive.

Driver one: global population expansion

The key market driver for this industry is global population. As Figure 1 below shows, the world's population has risen inexorably for well over 50 years – from below 3 billion people in 1950 to nearly 8 billion today. Projections vary, but even the "low" forecast anticipates a high of nearly 10 billion people before declining late in this century, while the "high" forecast reaches over 12 billion by the end of the century. Regardless of the actual trajectory of global population, these statistics prove that there will be many more people demanding energy over the next 25-50 years.

Fig 1: Global population – history and forecast

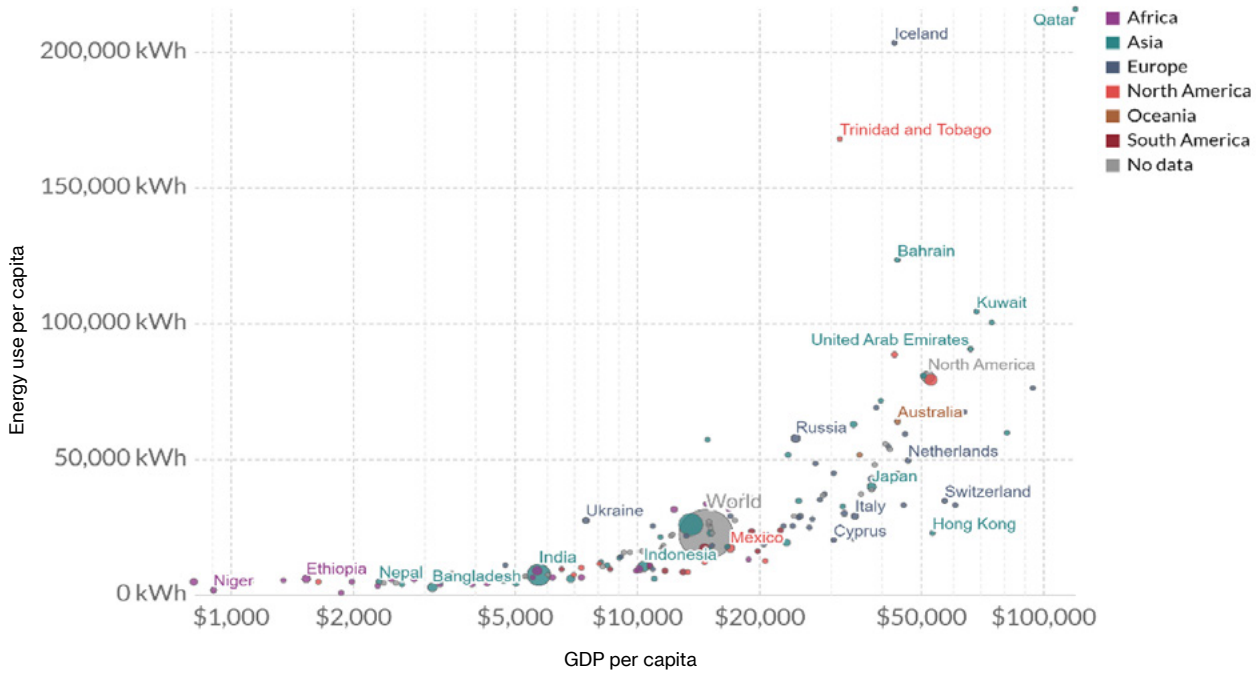


Source: population.un.org/wpp/Graphs/DemographicProfiles/Line/900

© 2019 United Nations, DESA, Population Division. Licensed under Creative Commons license CC BY 3.0 IGO. United Nations, DESA, Populations Division. World Population Prospects 2019.

Fig 2: As GDP per capita rises, energy use per capita also rises

Annual energy use per capita, measured in kilowatt-hours per person vs. gross domestic product (GDP) per capita, measured as 2011 international-$.



Source: international Energy Agency (IEA) via The World Bank
ourworldindata.org/grapher/energy-use-per-capita-vs-gdp-per-capita?tab=chart&country=&region=World

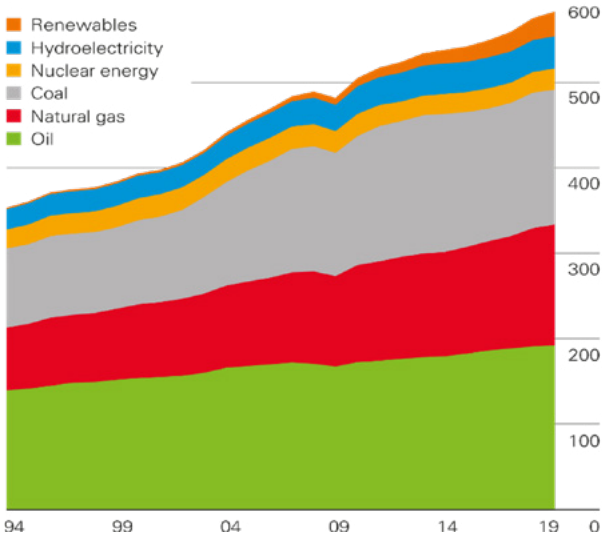
Driver two: human aspiration

The other market key driver of the market is human aspiration; as Figure 2 above shows, wealthier people consume more energy per capita. Globally, people aspire to improved standards of living – TV's, refrigerators, heating, air conditioning and, of course, mobile phones – all of which increase per capita energy demand.

This confluence of continued growth in the number of people on the planet and the growing demand for energy by all those people has driven an extraordinary rise in global energy consumption. Figure 3 to the right clearly shows this rise; apart from the impact of the 2008 financial crisis, it shows that global energy consumption has risen at a rate of 3-5% per annum for the last 30 years.

Driven by this demand, the world's oil and gas companies have explored, appraised, developed and decommissioned oil and gas fields around the world with increasing effectiveness. Technology developments such as 3D and 4D seismic, the horizontal well and massive hydraulic fracturing have enabled us to find more oil and to produce

Fig 3: Global energy consumption (in exajoules)



Source: bp Statistical Review of World Energy https://www.bp.com/en/global/corporate/energy-economics/statistical-review-of-world-energy.html

Fig 4a: Global oil reserves in 1999, 2009 and 2019 (in thousand million barrels)

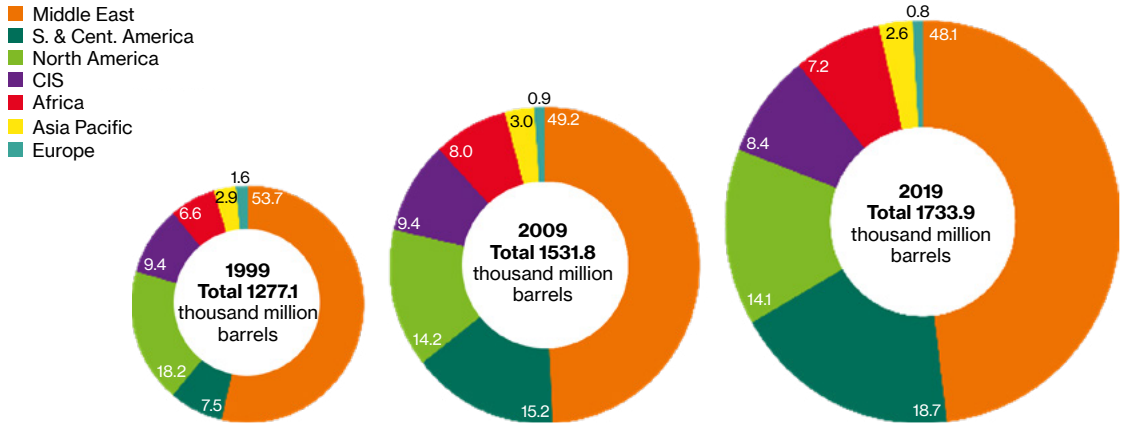
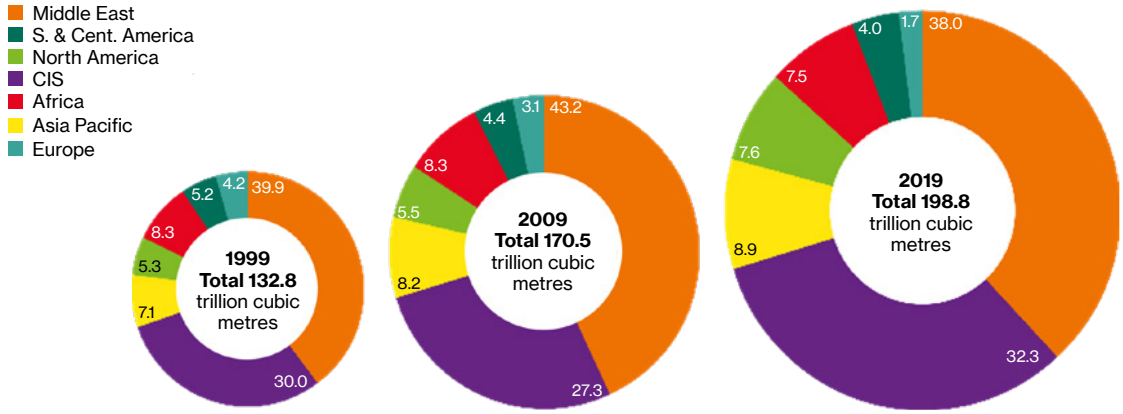


Figure 4b: Global gas reserves in 1999, 2009 and 2019 (in trillions of cubic meters)



Source: bp Statistical Review of World Energy https://www.bp.com/en/global/corporate/energy-economics/statistical-review-of-world-energy.html

more of the oil we find. The impact of technology has been remarkable; counterintuitively, although we consume nearly 100 million barrels of oil per day, global reserves have increased substantially over the last 30 years (see Figures 4a & b above.)

Facing up to reality: some challenging truths for the oil & gas industry

Climate change now a reality

For many years now, climate change scientists have been pointing to the impact of CO_2 emissions on the global climate. As most readers will appreciate, this CO_2 derives from the process of combustion of coal, oil, gas and rainforests, all contributing to the problem.

The effect is now becoming increasingly apparent, with so-called 1 in 100-year storms now happening every few years, with ever larger wildfires in California and Australia, with "before and after" photos of glaciers showing huge losses of ice mass and with extensive evidence of the planet getting warmer being published through a variety of different global media.

Sadly, the oil & gas industry has created a poor image for itself during this process. Not only is its product driving much of this climate change, but some companies have actively supported climate-denying science. The overall impression held by many outside the industry is of an entire industry in denial.

Shift in political and financial markets

Meanwhile, in the last few years there has been a seismic shift in political and financial markets to the challenge of climate change. Activists such as Greta Thunberg and Extinction Rebellion have raised public awareness, and politicians the world over have responded. Some have declared "net-zero" targets – the UK's is 2050, while China's is 2060. Many have also set aggressive intermediate objectives – for instance, the EU is targeting a 50% reduction in carbon emissions by 2030.

An upended global energy system

What this all means is that the global energy system is being upended. The well-understood flows of oil, gas and coal from fields and mines around the world, through pipelines and tankers to refineries near to the consuming markets, will either disappear or must change radically. The oil and gas industries Scope 1 emissions – those directly linked to production operations - are a big enough challenge, with tens of thousands of diesel engines, gas turbines and ship engines throughout the value chain to be decarbonised. But Scope 3 emissions – those created using the oil and gas – are the dominant issue facing the industry today.

Oil & gas seen as the problem, not the solution

Attending events outside the oil and gas sector illustrates public attitudes starkly. Oil and gas is seen to be the problem itself rather than as part of the solution, as many in the oil and gas industry would prefer to believe. All the talk is of a wholesale switch to renewable energy, with energy storage in batteries and in the form of hydrogen acting to provide the buffer that manages in-day and season-to-season energy demand fluctuations.

Access to capital challenges

This profound shift in the political climate has had a substantial impact on the finance and insurance markets. Businesses seeking to grow in oil & gas are finding access to finance challenging, with investors either unwilling to invest (for example, the recent withdrawal of the Norwegian "Sovereign Pension Fund – Foreign" from hydrocarbon investments) or demanding that clear decarbonisation plans are a part of the investment. Insurers are increasingly concerned by the risks that go with climate change – as many readers will be aware, Lloyd's of London recently asked its members to stop insuring thermal coal mines, coal-fired power plants, Canadian oil sands and new Arctic energy exploration, and undertook to phase out such cover by January 2022[1].

The energy transition has already started

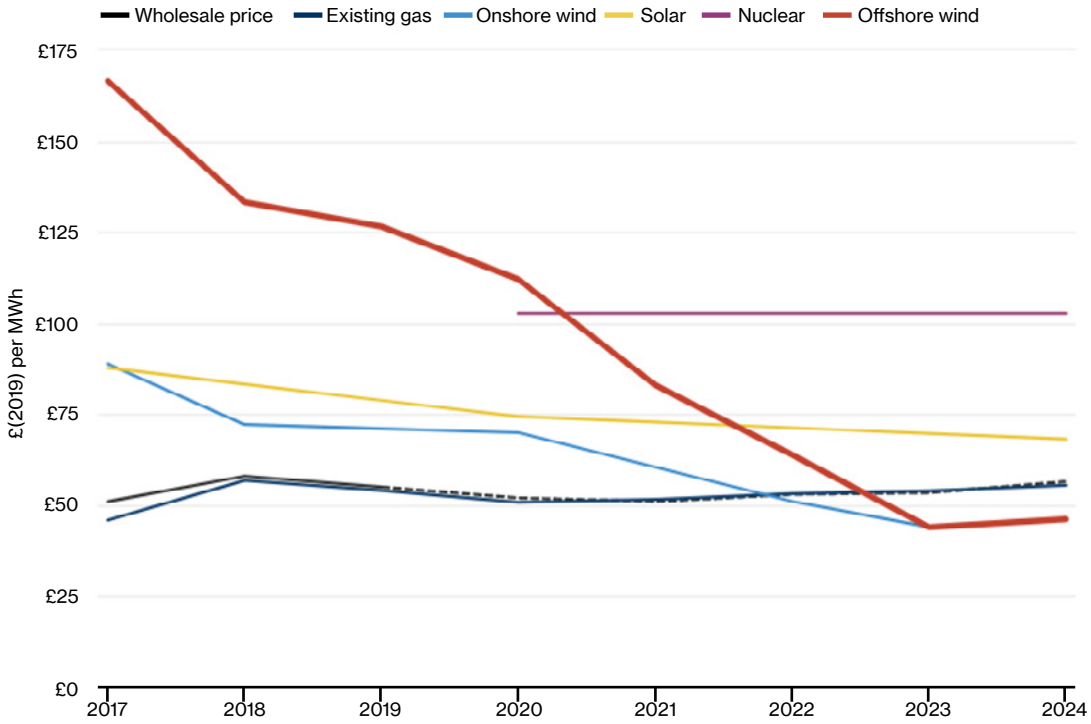
So, as Bob Dylan famously sang at a time long ago when the oil & gas industry was going from strength to strength: *The Times They Are a-Changin'*.

Government support for renewables deployment

Governments around the world have, for many years, been funding research into a wide array of low-carbon technologies, in the hope that a solution to climate change would emerge. The more promising technologies, such as wind, solar and wave power, have received explicit financial support for industrial scale deployment; for example, the UK government has used the contract-for-difference mechanism to support the emergence of an offshore wind market.

[1] https://ieefa.org/lloyds-of-london-to-stop-issuing-new-insurance-for-coal-projects-oil-sands-and-arctic-energy-exploration/#:~:text=The%20Lloyd's%20Corporation%20and%20its,Lloyd's%20said%20in%20a%20statement.&text=1%2C%202022%2C%20with%20a%20target,the%20renewal%20of%20existing%20cover.

Fig 5: Cost of UK electricity generation in £/MWh (current prices) for various technologies



Source: Carbon brief - https://www.carbonbrief.org/analysis-record-low-uk-offshore-wind-cheaper-than-existing-gas-plants-by-2023/cost-of-uk-electricity-generation-in-pound-per-mwh

As Figure 5 above shows, this has been hugely successful, with offshore wind no longer requiring any subsidy as the market cost is now below wholesale electricity market prices. This has been achieved with the industrialisation of the wind turbine manufacturing market – factories are now producing turbines, turbine blades and tower sections on production lines rather than piecemeal. Similarly, the cost of solar energy has plummeted; in California, the cost of solar electricity is now below that of gas-turbine generated electricity[2].

These simple economic realities have driven a rapid rise in the use of renewable energy worldwide – the bp Statistical Review of World Energy shows it to rising to nearly 10% of global energy supply - and with over 20% of energy in Europe being provided by renewable sources in 2019 (see Figure 5 above).

Harvesting the energy of the oceans is less mature but is nevertheless developing quickly. At the European Marine Energy Centre on Orkney, underwater "windmills" and wave energy systems are being trailed, harvesting tidal energy while small-scale wave energy devices are already commercially available.

The storage challenge

The major challenge associated with renewable energy is intermittency – if the wind doesn't blow then a wind turbine cannot generate, and if the sun doesn't shine (e.g. at night) then a solar panel cannot create electricity.

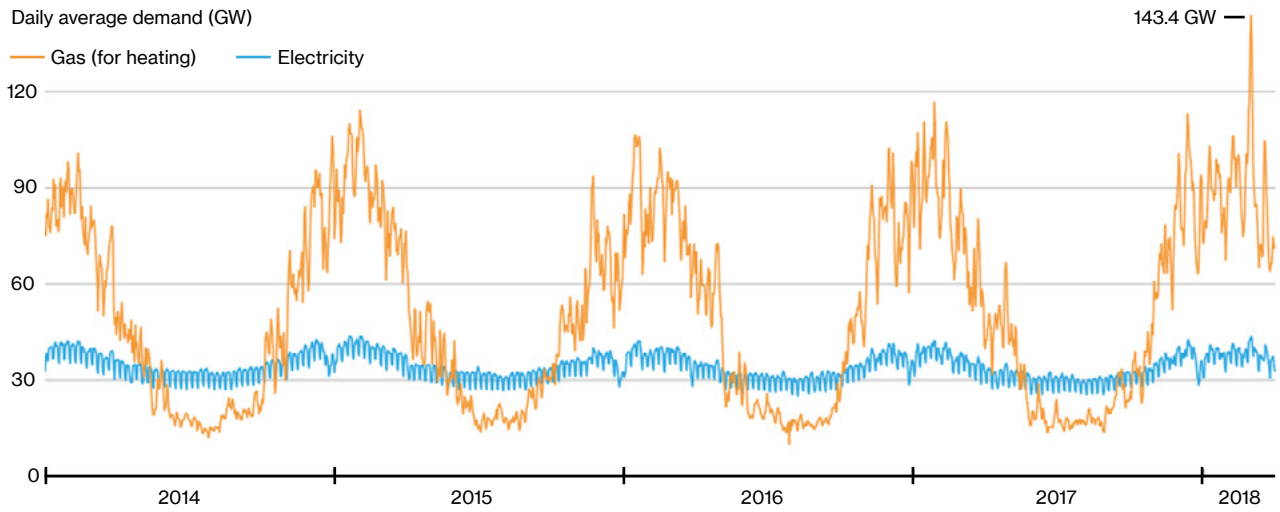
This means that considerable attention is now focussed on energy storage. Tesla has supplied a 100MW battery facility at the Hornsdale Power Reserve in Australia that stores wind and solar energy to manage the fluctuations in supply and demand[3]. Pumped storage schemes also offer the same capability, using water pumped up a hillside to generate power when required.

Probably the greatest hopes are being pinned on the use of hydrogen, both as an energy storage medium and as a fuel. Like natural gas, it can be compressed and stored, although its lower density means larger storage facilities are required – salt caverns and depleted natural gas fields are being considered.

[2] https://solarfeeds.com/solar-vs-natural-gas/
[3] https://www.pv-magazine-australia.com/2020/04/14/tesla-big-battery-expansion-reaches-milestone/

Fig 6: seasonal fluctuations in UK electricity and gas demand

Daily demand for gas and electricity over the last four years. Non-daily metered gas demand is shown (excluding power stations and heavy industry), as a proxy for domestic heat demand



Source: http://euanmearns.com/the-beast-from-the-east-coal-gas-and-the-uk/

However, energy storage, both "in day" and between the seasons, remains a major challenge. Demand on a typical day can vary by 300% between early morning low and dinner time peaks. Figure 6 above illustrates the issue: here in the UK, the peak winter demand for gas is typically 5 times the demand on a warm summer's day, while the "Beast from the East" cold spell in 2018 pushed that to peak to 7 times the summer demand low. The natural gas supply system can cope with this by a mix of summer maintenance, gas storage, system line pack and interruptible supply to major gas users and Hydrogen will have to replicate this flexibility.

Emergence of smaller-scale technologies to boost flexibility

A wide range of smaller scale technologies are now emerging. The UK government is promoting the concept of domestic heat pumps to extract low grade heat from the air or the ground to heat homes. UK company Ryse is offering stand-alone onsite hydrogen generation systems – a motorway service station in the future could generate and sell the hydrogen to fuel trucks on site, with no supply chain required, while large scale insulation programmes are being considered. All of this will reduce the overall requirement for bulk energy supply, making it more likely that the seasonal flexibility can be achieved.

The scale of the climate change challenge

All the talk in the political circles and in the media of "an energy transition" and "net-zero targets" doesn't really convey the magnitude of the climate change challenge that we collectively face.

The International Energy Agency (IEA) estimates global energy consumption in 2019 to have been 14,282 million tonnes of oil equivalent – which translates to 1724 TWh or 172,449,640 million KWh. Of this, approximately 80% originates from a hydrocarbon – coal, oil or gas – and directly creates much of the 33.3 gigatonnes of CO^2 emitted the same year (that is 33,200,000,000 tonnes – and rising - every year)[4].

This energy is consumed in an estimated 62,500 power stations[5], an estimated 1.4 billion road vehicles[6], 39,000 aeroplanes, 53,000 ships and the heating and cooling of the 1.2 billion homes in the world[7].

This energy is supplied by a sophisticated physical supply chain – ships and pipelines transporting the bulk raw materials (oil, gas and coal) to refineries, storage tanks and power stations, with final distribution to consumers by road and rail tankers, distribution pipes and cables. The

[4] https://www.iea.org/reports/key-world-energy-statistics-2020
[5] https://www.washingtonpost.com/news/wonk/wp/2012/12/08/all-of-the-worlds-power-plants-in-one-handy-map/
[6] https://www.carsguide.com.au/car-advice/how-many-cars-are-there-in-the-world-70629
[7] https://theconversation.com/the-world-needs-to-build-more-than-two-billion-new-homes-over-the-next-80-years-91794#:~:text=Taking%20an%20average%20global%20three,end%20of%20the%2021st%20century.

supporting commercial and financial infrastructure is also vast, with millions of barrels of crude traded every day, and sophisticated forward contracts, swaps and derivatives driving substantial market activity.

"Net-zero" means reinventing our energy system – largely eliminating emissions whilst preserving our civilisation as we know it. An example of the scale of the challenge is an estimate by the Offshore Renewables Catapult that 240 GW of wind energy could be built offshore the UK by 2050 just to manufacture "green" hydrogen (hydrogen produced by electrolysing water). To put this into perspective, the UK's largest offshore windfarm – Hornsea 1 - involves 174 turbines covering over 400 square kilometres and generating 1.2GW.

A long period of transition ahead

What this means is that there will be a long period of transition to some future where energy is decarbonised. A net-zero target of 2050 means we have just 30 years to profoundly change how we create and use energy.

We need to act now to limit the rise in our planet's temperature and the associated impact of climate change.

How should the oil and gas industry respond?

As one of the largest industries in the world, oil & gas certainly has the technical capability and the financial muscle to tackle the climate change challenge.

To illustrate, Oil and Gas UK, the leading trade association for the United Kingdom offshore oil and gas industry, has set ambitious goals for the UK industry. Their "Roadmap 2035"[8] articulates an ambition to decarbonise production operations first, before trying to decarbonise the product.

De-carbonising production

De-carbonising production is challenging – platforms consume 10-30 MW of energy to drive power generation, compressors and pumps. Equinor, with their "HYWind Tampen" project, aims to deploy a floating wind farm to provide decarbonised power a cluster of Northern North Sea platforms in the Snorre and Gulfaks fields. Others have considered carbon capture on their existing natural gas turbines, only to find that the scale of the required amine plants would necessitate a prohibitively expensive additional platform.

"As one of the largest industries in the world, oil & gas certainly has the technical capability and the financial muscle to tackle the climate change challenge."

Studies are under way to decarbonise shipping – perhaps with hydrogen fuel or small-scale CCS on the vessel to capture emissions. It is possible that offshore production will achieve "net-zero" by continuing to emit at the point of production whilst extracting CO_2 from the atmosphere elsewhere, using Direct Air Capture and other negative emissions technology.

De-carbonising the product

Decarbonising the use of the hydrocarbon is the holy grail for the industry – potentially allowing us to continue to use this plentiful source of energy whilst eliminating the damaging effects of CO_2 emissions.

Key to this is the technology of CCS - sometimes portrayed as carbon capture, utilisation and storage (CCUS). CCS involves three critical steps:

- Capturing the CO_2 emissions from industrial processes
- Transporting it to a storage site – by pipeline or by ship
- Storing the CO_2 indefinitely deep underground in geological formations

The technology currently available to capture CO_2 emissions from industrial processes is a long established and well understood process, known as amine capture. On large industrial plants emitting 200,000-2 million tonnes of CO_2 per annum, the amine units will be large (hence costly) and the process is energy intensive, which is why the operational expenditure involved is high.

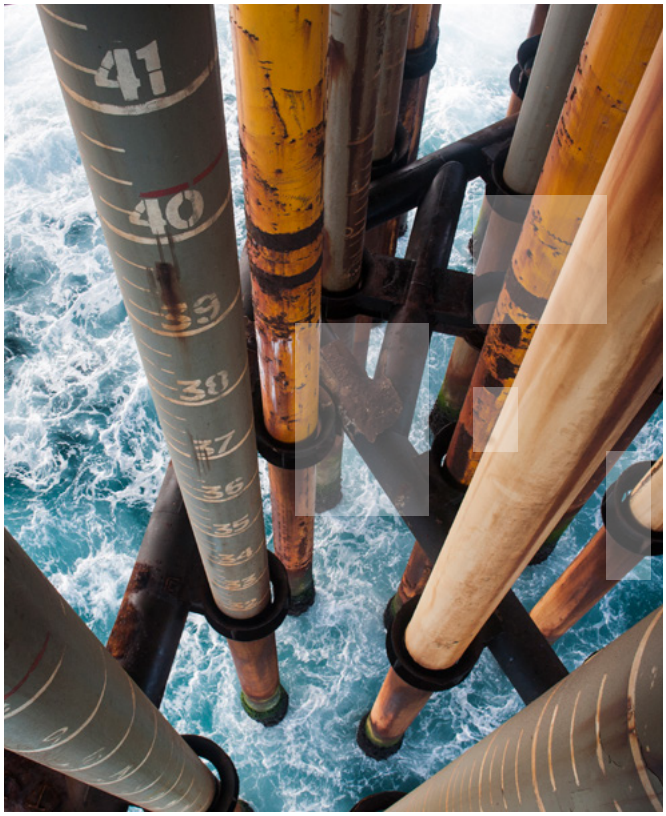
Companies such as Shell (with their "Cansolve" technology), Aker Clean Carbon and Carbon Clean have improved on the long-established amine chemistry, and their technologies are starting to be deployed. Other more novel technologies such as nano-scale filtration, are emerging, offering the prospect of lower-cost carbon capture.

[8] https://roadmap2035.co.uk/

Transporting CO_2 is also well understood, with over 6,500km of CO_2 pipelines worldwide, primarily in the USA where CO_2 is used for enhanced oil recovery (EOR)[9].

Injecting CO_2 into the ground is again a well-established process, which has been going on for many years in EOR projects in the USA. Although the CO_2 injected for EOR is removed from the atmosphere, it involves significant additional oil production which many regard as inappropriate[10].

Injection of CO_2 for long term storage is less well established, but there are now 26 operational CCS projects around the world injecting approximately 40 million tonnes per annum of CO_2, including projects such as the Equinor Sleipner West platform that has been operating since 1996 and BP's In Salah project that has been injecting in Algeria since 2004 (although this programme is now closed).



"If this technology scales up effectively, it could be the silver bullet that enables us to keep using hydrocarbons whilst capturing the CO_2 and storing it at a CO_2 storage site."

How CCS technology can keep hydrocarbon production going

CCS enables the continued use of hydrocarbon in several different ways. Existing facilities can be decarbonised by capturing the CO_2 from the exhaust gases. This can work on the flue gases from coal and gas fired power stations, major emitters such as iron and steel production and major industrial processes such as chemical production, cement manufacture and other energy-intensive industries. Industrial clusters such as those emerging in the UK at Teesside, Humberside, South Wales, north west England and around Grangemouth in Scotland can make such systems more efficient by sharing CO_2 gathering and transportation costs.

Furthermore, new large scale "blue" hydrogen facilities are now being developed, in which natural gas is processed to manufacture hydrogen, with the resulting CO_2 being extracted and stored in a carbon store. When hydrogen burns, the only by-product is water.

The Allam Cycle

Another interesting emerging technology is the Allam Cycle. This is a completely novel "hydrocarbon to electricity" cycle that uses CO_2 as the power fluid and captures all the CO_2 generated in the process. Developer NetPower has a 50MW demonstration plant is in operation in Texas, and a 300MW plant is scheduled for completion in 2022[11]. If this technology scales up effectively, it could be the silver bullet that enables us to keep using hydrocarbons whilst capturing the CO_2 and storing it at a CO_2 storage site.

Furthermore, early-stage technology offers considerable potential for further large-scale decarbonisation. Biotechnology is already used to manufacture biodiesel, and patents exist on processes to break down the long-chain hydrocarbons to manufacture lighter oil and hydrogen. However, such technology is at a very early stage and is unlikely to be in widespread use for many years.

Broadening the focus: embracing the transition

Oil & gas companies sometimes don't realise that they are in the energy business – not just in oil and gas. This means that they understand the flow of energy (consciously or not), the day-to-day and seasonal fluctuations in demand, the needs of large consumers such as power stations (as well as smaller consumers such as car drivers) and the systemic resilience that can cope when problems arise.

[9] http://documents.ieaghg.org/index.php/s/zEoohbzeT7cDx38
[10] https://www.globalccsinstitute.com/resources/global-status-report/
[11] https://gasturbineworld.com/first-fire-for-la-porte-carbon-capture-demo/

Recognising the imperative of decarbonisation, some companies have now started to pivot into the wider energy supply, embracing the energy transition. Shell have consciously refocussed their core business and are now predominantly a gas production company that is now actively investing in electricity generation and hydrogen. French energy giant Total has just announced a rebranding to "TOTAL Energy", and the Spanish oil company Iberdrola is now investing in wind-generated green hydrogen.

We will need hydrocarbons for some time yet, but the winds of change are clearly already starting to blow.

Oil & gas industry: key strengths for the energy transition

The oil and gas sector has numerous capabilities and attributes that mean it is well positioned to contribute mightily to the energy transition:

- The widespread deployment of CCS will require extensive **use of subsurface skills** in geophysics, geology and reservoir engineering to ensure that the injects CO_2 is stored safely and indefinitely. Drilling, well engineering, subsea and pipeline skills and capabilities will also be crucial.
- Similarly, the storage of hydrogen at the scale required to enable peak heating demand to be met will most likely involve **underground storage** in salt caverns or depleted gas fields. Again, the expertise of the oil and gas industry will enable this to happen.
- The **financial capability** of oil and gas company balance sheets is also well suited to the industrial scale deployment of CCS. With CCS projects costing in the range US$250-2,000 million, the investments required are substantial.
- Supporting this investment capability, the industry has extensive experience of **managing and developing major capital projects** similar to CCS – including the offshore drilling and pipelay activity.

Why doing nothing is not an option

Given the strong market position currently held by the oil and gas sector, some might find it easier to try and maintain the status quo.

But in my view, this would be fatal. After all, Kodak's film business didn't die because people stopped taking photographs - they just changed the **way** they took them. In the same way, energy demand is unlikely to be going anywhere – but **how** it will be delivered will change dramatically.

In any event, the "do nothing" stance is already difficult to sustain, with finance and essential insurance capital increasingly difficult to secure without evidence of change, as many readers of this Review will already be all too aware.

Governments shifting the paradigm on project viability

My view is that oil and gas companies should work with governments and with others to deliver much needed energy whilst reducing emissions sharply. Conventional economic wisdom suggests that an evaluation of an oil and gas project will look very unappetising if carbon capture is added, and some might conclude that decarbonisation is just unworkable. However, governments around the world are increasingly determined to shift the paradigm:

- sometimes by offering **financial support** to offset the cost of carbon abatement (for example, the US 45Q tax credit and the emerging UK grant with contract-for-difference models)
- sometimes by **regulation** (for example, the Gorgon project in Australia that had to undertake CCS and a licence condition)
- in the future, possibly even by a **carbon tax** (as is the case in Norway).

Conventional oil and gas economics are predicated on significant rates of return. Discount rates often start at 15%, and rates of return in excess of 30% might be needed to meet internal company hurdles. CCS and low carbon energy is more of a utility business, and government support means that rates of return of 6-10% are more likely to be all that is acceptable to government in the future. In the UK, the government is going further, with current proposals making the transport and storage aspects of CCS a regulated business. This paradigm shift will be difficult unless companies are clear that such investments are increasingly a "licence to operate" issue.

Collaboration attitudes need to change

My final point is one about attitudes. It is completely unclear how decarbonisation will play out, and no one organisation has the solution; collaboration between governments and different companies with many different skillsets will therefore be crucial. Although oil and gas companies collaborate on licences and field development to spread risk, in the future they will need to work together on projects involving a different form of collaboration, one where a series of interlinked and interdependent projects rely on one another to deliver the solution to climate change. This will require significant changes to existing deeply entrenched attitudes to collaboration and co-operation.

Conclusion: we've only just begun...

As we've just seen, we are at the start of the energy transition. The destination is clear – we need to decarbonise our civilisation one way or another, by meeting zero-carbon energy targets and by de-carbonising the energy and processes that have driven the development of our civilisation since the industrial revolution. However, exactly what that decarbonised future looks like is not clear – it could be entirely renewables-driven, or it could involve some changed use for the hydrocarbons that power society today. Most likely, it will be a combination of the two.

Unfortunately, the roadmap to this "net-zero" future is unclear. Exactly what technologies will end up as the dominant ones is unlikely to be clear for 20 years as there are many potential game-changers emerging.

For the oil and gas industry, this energy transition could be an existential threat – or an enormous opportunity that should be embraced.

Ian Phillips has over 25 years' experience in the oil and gas industry, having worked for oil majors such as Shell and bp, oil minnows such as Ramco Energy and in the service sector (Halliburton). In 2007, he and three colleagues established the world's first company focussed purely on CCS, and he has been involved in the climate change and technology business since that time. He is a UK Chartered Engineer and holds an M.Sc. in Petroleum Engineering and an MBA. He is the Development Director with Pale Blue Dot Energy Limited, developer of one of the UK's first CCS projects – although he has written this article in a private capacity.

The energy transition: an undiscovered country

Introduction: a decade of change like no other

The 2020s promises to be a decade of change like no other for the energy industry. It is truly an "undiscovered country from whose bourn no traveller returns". Energy is a fundamental bedrock of our economy, alongside food & water, communication and finance. Bill Gates recently stated[1] that "COVID-19 is awful" but meeting the climate challenge, and the ensuing energy transition, is a much bigger task.

In 2018, the Intergovernmental Panel on Climate Change[2] demonstrated what it is at risk: global warming must not exceed 1.5°C to avoid irreversible loss of the most fragile ecosystems, and crisis after crisis for the most vulnerable people and societies."

To meet this challenge, we need to set and keep to "carbon budgets". Greenhouse gas (GHG) emissions must more than halve by 2030 – and drop to net-zero by 2050 – to prevent exceeding the 1.5°C limit. This is roughly 7% per annum for the next 10 years as a global economy. To put this in perspective, the economic disruption in 2020 from the COVID-19 pandemic resulted in only a 7-8% reduction in emissions[3] [4]. Power markets, industry and transportation saw the lion's share of emissions reductions as the economy slowed, and they will need to integrate meaningful action at all levels in order to meet those targets.

Net-zero emissions targets and the energy transition

As yet, there is not common or scientifically based definition of what "net-zero" will mean. However, it should be noted that deep cuts in emissions are needed by 2050 across all industries for the world to meet the goals of the Paris Agreement. Last year saw a dramatic increase in the energy sector commitments and setting of Science Based Targets, with 40% of these being made between July 2020 and Feb 2021.[5]

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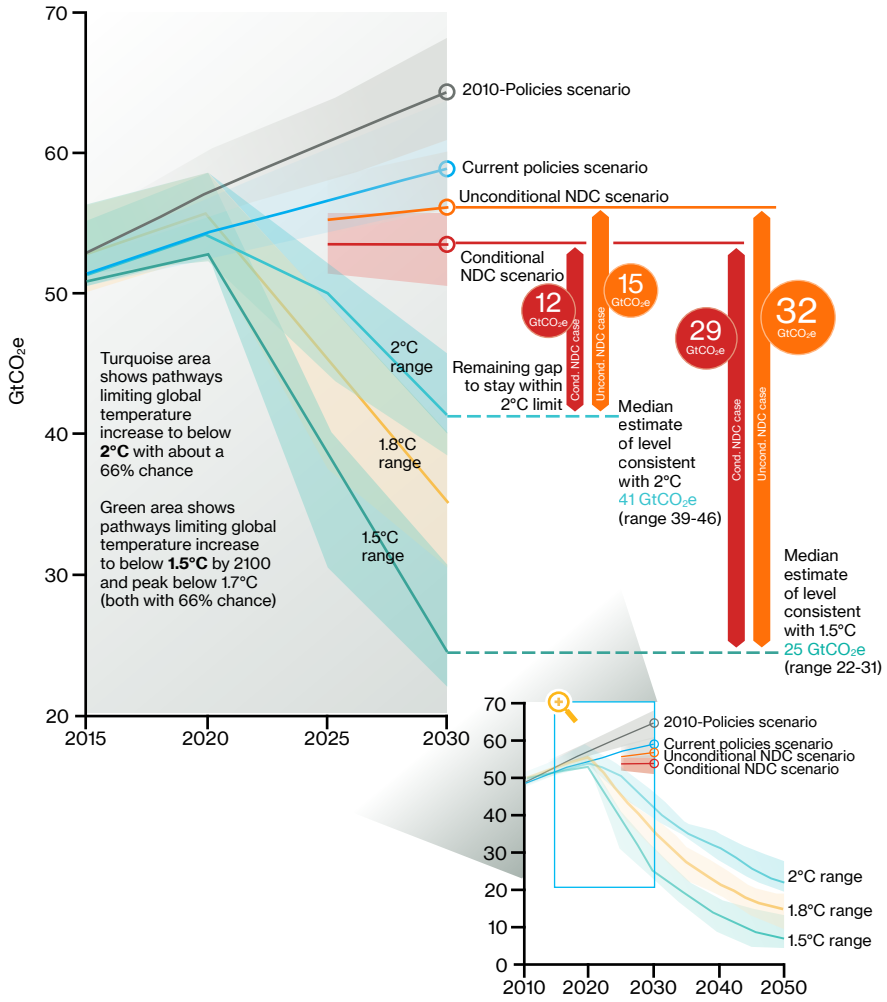
[1] https://www.gatesnotes.com/Energy/Climate-and-COVID-19
[2] IPCC, 2018: Global warming of 1.5°C. An IPCC Special Report on the impacts of global warming of 1.5°C above pre-industrial levels and related global greenhouse gas emission pathways, in the context of strengthening the global response to the threat of climate change, sustainable development, and efforts to eradicate poverty [V. Masson-Delmotte, P. Zhai, H. O. Pörtner, D. Roberts, J. Skea, P.R. Shukla, A. Pirani, W. Moufouma-Okia, C. Péan, R. Pidcock, S. Connors, J. B. R. Matthews, Y. Chen, X. Zhou, M. I. Gomis, E. Lonnoy, T. Maycock, M. Tignor, T. Waterfield (eds.)].
[3] UNEP Emission Gap Report 2020, 9 Dec 2020
[4] IEA Global Energy and CO2 emissions in 2020
[5] Companies taking action, Science Based Targets Initiative.

Fig 1: Emissions need to drop dramatically in the 2020s to meet temperature targets in line with the Paris Agreement



Source: UNEP Emission Gap Report 2020, 9 Dec 2020
https://www.unep.org/emissions-gap-report-2020

Using scenarios to support decision making

Understanding the various drivers, risks and opportunities from this change are the foundations for raising our knowledge. Scenarios and risk analysis provide risk managers with tools and data to support boards with strategic decision making. Leveraging this thinking into explicit transition plans that map the route ahead will help articulate that vision and extend confidence to investors and wider stakeholders that organisations understand the risks and have a map to navigate themselves towards a more resilient future.

The drivers of transition are accelerating the impact

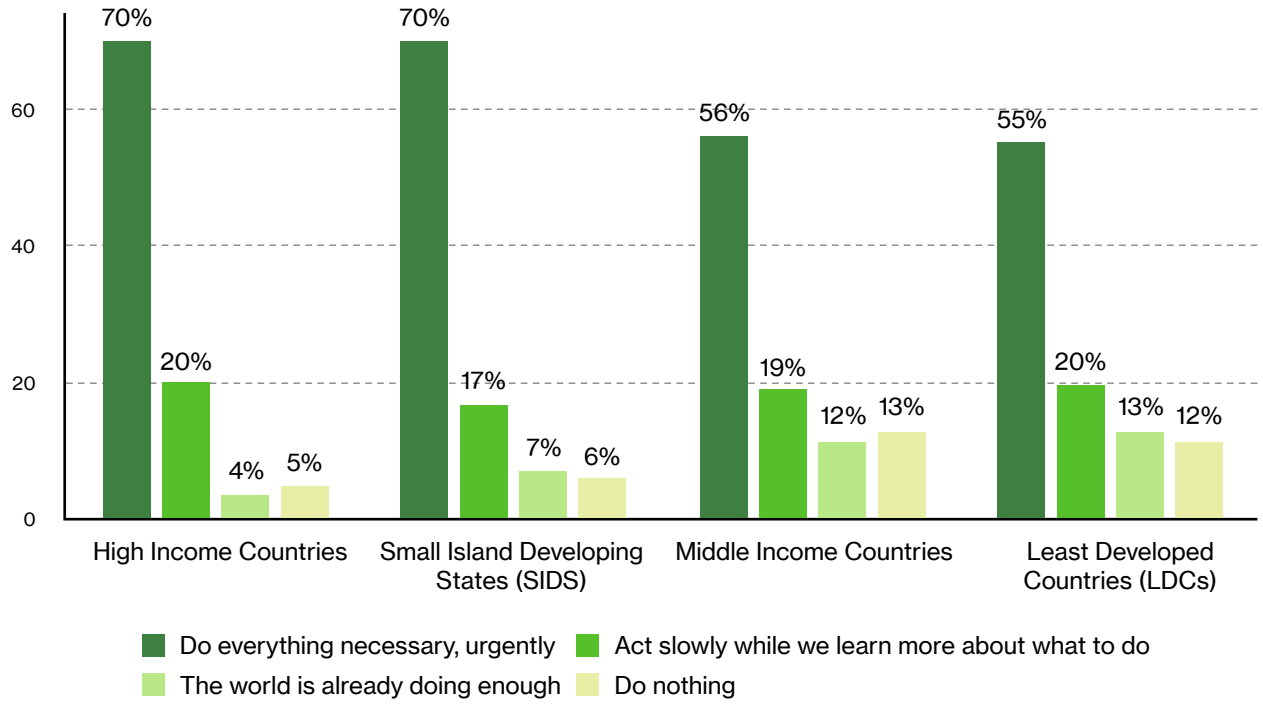
The call to transition the energy system has been heard before. The need to restrict our carbon emissions was first identified in 1992[6], which led to the Kyoto Protocol[7] (1997) and the Paris Agreement[8] (2015). So what's different from previous calls for societal moves to low carbon energy, and how has this become a financial imperative? The answer lies in three key developments:

- a shift in public awareness to view climate as an emergency
- an acceleration in policy maker intervention
- the recognition of the energy transition as a strategic and transverse risk to the financial services industry

[6] UN Conference on Environment and Development, Rio De Janeiro, Brazil, 3-14 June 1992.
[7] Kyoto Protocol, UN Framework Convention on Climate Change, 1997
[8] The Paris Agreement, UNFCCC, 2015

Fig 2: UNDP and University of Oxford People's Vote Survey shows public support for climate emergency

Urgency of response among people who believe in the Climate Emergency, by Country Group



Source: "The People's Climate Vote", UNDP and Oxford University, January 26, 2021
https://www.undp.org/content/undp/en/home/librarypage/climate-and-disaster-resilience-/The-Peoples-Climate-Vote-Results.html

Climate has become an urgent issue to the public

The rise in prominence of activists and campaigners in the last couple of years, as well as devastation to wildlife and property from the most recent extreme forest fires in Australia, California and across the world more generally, has shifted the public perception of the climate peril further. In the largest poll of its kind, 1.22 million people were surveyed and 64% of participants saw climate change as an emergency requiring urgent response from policy makers.[9]

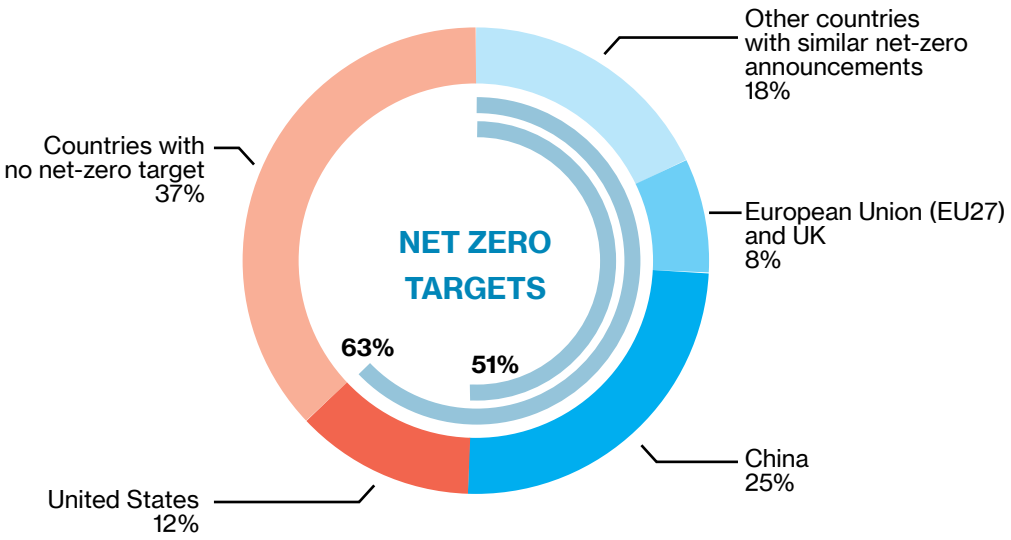
Policy makers are responding

The disruption to the economy from COVID-19, plus increasing vocalisation from society, has demonstrated tangibly that policy makers can intervene at the scale needed to keep emissions within the budget. This has been exemplified by the rapid expansion of the net-zero commitments in the latter half of 2020, the rise of low carbon COVID-19 recovery packages such as the European Green Deal[10] with 25% of all funding going to climate change mitigation, and the new US administration's goal of decarbonising the power sector by 2035.

"The disruption to the economy from COVID-19, plus increasing vocalisation from society, has demonstrated tangibly that policy makers can intervene at the scale needed to keep emissions within the budget."

[9] "The People's Climate Vote", UNDP and Oxford University, January 26, 2021
[10] European Green Deal, EC, Dec 2019

Fig 3: Net-zero targets have now been announced and/or ratified into law by countries representing 63% of global emissions



Source: "Paris Agreement Turning Point", Climate Action Tracker, Dec 2020
https://climateactiontracker.org/documents/829/CAT_2020-12-01_Briefing_GlobalUpdate_Paris5Years_Dec2020.pdf

The energy transition as a strategic risk to the financial services industry

Following the 2015 Paris Agreement, the number and size of financial services climate initiatives has snowballed with perhaps the single biggest accelerator being the recommendations of the Task Force on Climate-Related Financial Disclosures[11]. Other key initiatives illustrate the deepening of government, industry, and financial activities:

- **The French government's Article 173 (2016)**, asking French investment firms to report on how they are contributing to the low carbon energy transition. This has had an impact of reducing investment in fossil fuel energy firms by 40% between 2015 and 2019[12].
- **The Network for Greening Finance (NGFS) (2017)**, comprising of 87 members from central banks and regulators, to strengthen the global response required to meet the goals of the Paris agreement, and mobilize capital for green and low-carbon investments, and pushing for TCFD disclosures.[13]
- **The EU Sustainable Finance Taxonomy[14] classification** of environmentally sustainable finance activities, coming into force in July 2020.
- **The Bank of England's 2019 Supervisory Statement 3/19** requiring financial institutions to have a senior management function to lead on climate-related issues and risks, and that the board and appropriate committees of banks and insurers understand, assess and oversee management of climate risks in their portfolios.

[11] TCFD Recommendations, Financial Stability Board's Task-Force on Climate-related Financial Disclosures, June 2017
[12] "Showing off cleaner hands: Mandatory climate-related disclosure by financial institutions and the financing of fossil energy", WP #800 Banque de France, Jan 2021
[13] Network of Central Banks and Supervisors for Greening the Finance System
[14] EU Sustainable Finance Taxonomy, EC.

Table 1: Net-zero emissions and 1.5°C aligned initiatives are pushing the financial services industry to transition their portfolios

Commitment of member / signatory	Initiatives & guidance
Financial portfolio / company commitment must align with 1.5°C pathway	Race to Zero[15]
	Net-zero asset owners alliance[16]
	Net-zero asset managers alliance[17]
	Climate Action100+ net-zero benchmark[18]
	Bankers for net-zero[19]
	Climate Transition Bonds[20]
	Climate Transition Issuers Handbook[21]
	Science Based Targets / Business Ambition for 1.5°C[22]
Transition plan to be voted at AGM	"Say on Climate" [23]

Source: Willis Towers Watson

A view into organisation responses

At an institutional level, 69 financial services companies have committed to set emissions reductions targets in line with the science behind the Paris agreement since 2016, with 15 new commitments made between July 2020 and February 2021. Financial institutions are growing momentum to push for companies and portfolios of investments to be aligned to the Paris agreement including to 1.5°C pathways, net-zero by 2050 latest and/or insistence of an investor vote on transition plans at AGMs.

Shell became the first oil and gas major to offer a vote on their transition plan, with BP and Equinor[24] also set to allow a shareholder vote on their emissions reduction targets in 2021. In the United States, shareholders have filed 79 climate-related resolutions so far in 2021, compared with 72 in 2020 and 67 in 2019[25]. Other climate-related topics for votes at AGMs in 2020 include climate competency of directors and lobbying.[26]

The energy transition challenge

The challenge to transitioning our energy systems is akin to trying to change the design of an aeroplane (body, engines, fuel and equipment) in mid-flight. The transition needs to be managed in an orderly and just manner as livelihoods and well-being also depend upon energy availability.

Challenge one: meeting decarbonisation budgets and timescales

Energy firms need to set short, medium and long-term emission reductions targets that keep within science-based and apportioned carbon budgets. The energy sector needs to decarbonise more rapidly as other sectors face significant technological barriers and are reliant on the energy industry; these include steel, cement, shipping and aviation.

[15] UNFCCC Race to Zero Campaign
[16] UNEP-FI & PRI, Net-zero asset owners alliance
[17] Net-zero Asset Managers Alliance
[18] Investor initiative CA100+ to ensure world's largest greenhouse gas emitters take necessary action on climate change
[19] Bankers for Net-zero, Volans and UK banks
[20] https://www.climatebonds.net/transition-finance/fin-credible-transitions
[21] https://www.icmagroup.org/sustainable-finance/the-principles-guidelines-and-handbooks/climate-transition-finance-handbook/
[22] https://sciencebasedtargets.org/business-ambition-for-1-5c
[23] https://www.sayonclimate.org/
[24] "Follow This and BP in talks to test shareholder support for climate targets resolution in 2021", Responsible Investor, Dec 2020
[25] "Show us the plan: Investors push companies to come clean on climate", Reuters, Feb 24, 2021
[26] "Record breaking votes, divisive climate pledges and new engagement trends have defined responsible investment in 2020", Responsible Investor, Dec 2020

For the power sector, emissions reductions need to 76% by 2030 to achieve 1.5°C, with near zero reach by 2040-2045[27]. This is because:

- Decarbonisation of other sectors, such as ground transportation and green hydrogen production, rely on green power
- Low carbon technologies are relatively mature and already competitive, or cheaper, than coal and gas thermal generation
- Electricity and heat production is responsible for 30% of global emissions[28]

Although the sector currently still attracts plenty of investment, energy companies should now have investment strategies which are clearly linked to the energy transition. For oil companies, this could mean investing in renewables projects, or, in the case of pure-play exploration and production firms, taking serious action to cut emissions from their operations. They also need to scale back their operational emissions in the short to medium term, reduce exploration activities and begin the transition away from this form of energy during the two next decades. This is likely to mean the retirement of some fossil fuel assets, many of them earlier than anticipated at the design stage, diversification into hydrogen production via renewable energy, and reversing the flow of carbon back into the long-term carbon cycle through carbon capture and storage.

Challenge two: overcoming structural barriers

Before 2030, we are likely to see some major climatic events which will accelerate the sense urgency policy makers feel they need to change in the ways we make energy available for power, transport, industry, agriculture and domestic use. Rewiring business models to respond to these dynamics will require many structural barriers to be overcome, especially as the past will not necessarily be the best guide for the future and require new financial tools.

This is where risk managers have an important role to educate Boards on the wave of change on the horizon across a range of issues. At a macro level, this might include shifting geopolitics as we move from world economic powers of petro-states to electro-states. This could see a drop of 51% in government revenues from oil and gas over the next two decades[29]. Geo-political power[30] in the energy transition will derive from the

- control of the “green earth” materials needed in the energy transition
- availability of renewable sources for power production
- ability to produce and export both power and new low carbon industrial fuels such as hydrogen
- innovation of new technology, business models and industries

Economies will also need to deliver against the Sustainable Development Goals, particularly the just transition in providing affordable energy and decent jobs. Energy businesses will need to improve their knowledge of these changes, retraining and reapplying their workforces to deliver the new infrastructure build rapidly.

Challenge three: creating new transition-focussed systems

The energy transition is not going to be just a like for like replacement – systems thinking will be needed to create of hubs of interlinked industries, and to scale rapidly the new energy infrastructure: carbon capture and storage, hydrogen and renewables. It is likely to change the dynamic of how we do business both at industrial scale and at retail.

Electrification will offer different business models as generation patterns are changing[31]. Power grids will need to be expanded to cope with the increased electrification of our energy systems but also be able to cope with two-way push-pull of supply and demand.

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[27] SBTi Power Sector 1.5C Guidance, Science Based Targets Initiative, June 2020
[28] Greenhouse Gas Emissions by Countries and Sectors, WRI, Feb 2020
[29] "Beyond petrostates", Carbon Tracker Initiative, Feb 2021
[30] The Economist, Sept 2020
[31] “Renewables 2021 Market Review”, Willis Towers Watson, Jan 2021

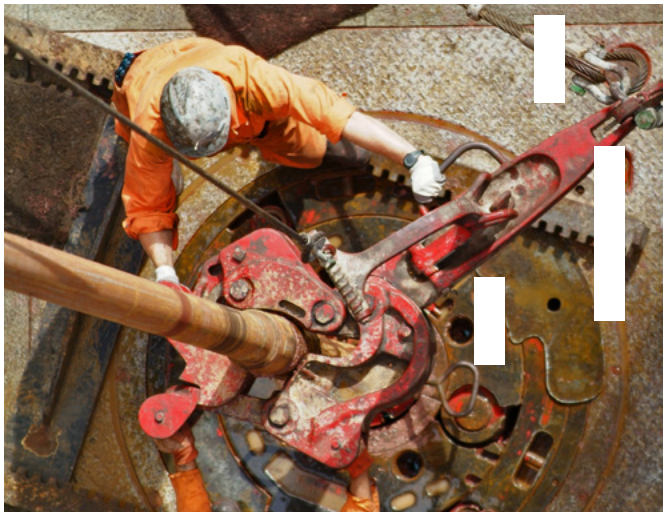
These systems will not only have to engineer the GHG emissions reductions needed to meet tough Paris-aligned targets. They will also have to take into account the rapidly changing pricing of solutions such as solar, wind and battery storage.

Challenge four: building trust

The energy transition is a 30-year+ global industrial and societal revolution. Three key things will be needed for this: political will, public support and capital. The energy industry has to rebuild trust as many initiatives to rebrand as green have failed in the past. This also makes it unlikely that claims without evidence of action will be labelled greenwashing this time.

Increasing public concern and activism is driving the political will to find an orderly energy transition. Transparency will also be demanded by the financial institutions that provide the capital for the transformation. There is a growing call for regulators and the financial services sectors to act as stewards of the climate risk and hence to the energy transition.[32] [33] These financial institutions are already under pressure to decarbonise their portfolios and support that transition.

Disclosure using the recommendations of the Task Force on Climate Related Financial Disclosures (TCFD) can provide transparency in this area to investors, providers of capital and insurance, and to society as a whole. Increasingly the TCFD is being seen as a framework by regulators for climate disclosure: UK and New Zealand are explicitly bringing in the TCFD as mandatory, but it is also being considered by the EU, Japan, USA, Canada, Australia, Switzerland, France, Hong Kong and Singapore.



Meeting the challenges: the strategic role of the risk manager

Energy businesses, and governments that rely and support them, will need to adopt a systematic approach to the energy transition challenge. At Willis Towers Watson, we take the following approach with our clients:

1. Use of scenario analysis to plot probable and possible undiscovered futures
2. Identify and assess the risks and opportunities ahead to understand which the value at risk to assets, equity value at risk and cash flows.
3. Set a transition plan to navigate these risks, decarbonise the energy mix in line with the carbon budgets in short, medium and long term, and building new energy infrastructure
4. Implement the transition plan and secure transition finance
5. Build trust through transparency of action

Step one: exploring possible futures through climate scenario analysis

In order to plot a course through the transition, a map is needed. While none of us can profess to having a crystal ball, scenarios can be used to help navigate the risks and opportunities to each organisation in the new territory ahead. A range of publicly available scenarios have been completed for the Energy and other extractive sectors that give an industry view, and these can form the basis of more tailored, site specific analysis.

These forward-looking assessments will be fundamental, as the past may not be reflective of what is to come; indeed, the pace of change over the last year has shown that there are some surprises ahead. The rate of net-zero targets, the rapid decrease in renewables costs, together with the exclusion of financing and support services, has forced a number of withdrawals from fossil fuel projects. For instance, the Australian Utility firm AGL announced in December 2020 an AUD$2.7 billion loss due to rapid market changes (including "behind the meter" technologies such as home batteries and electric vehicles and falls in power prices)[34].

"There is a growing call for regulators and the financial services sectors to act as stewards of the climate risk and hence to the energy transition."

[32] "Managing Climate Risk in the U.S. Financial System", US Commodity Futures Trading Commission, Sept 2020
[33] "A call for action – Climate change as a source of financial risk", NGFS, April 2019
[34] Renew Economy and Sydney Morning Herald Feb 2021

Given this, it is important to build scenarios that can help energy companies show sensitivity to changes in the market and resiliency of their business models to such changes. New and existing fossil fuel assets need to measure over what timescale they will be profitable against these scenarios; adding the climate dimension can strengthen decision making here.

The first step in scenario analysis is to build scenarios that explore plausible emissions profiles. The NGFS has recommended using three key scenarios:

1. A well-below 2-degree (or 1.5 degree) scenario with an orderly transition (i.e. with gradual changes to costs of carbon, deployment of low carbon technologies and market changes).
2. A well-below 2-degree (or 1.5 degree) scenario where later policy interventions could, for instance, raise carbon prices or change the economics of fossil fuels suddenly, leading to a plethora of stranded assets.
3. A hot-house world scenario to show the potential risks from changes to our climate to our asset infrastructure.

Shared Socio-economic Pathways (SSPs) are used to plot technology and market changes in the transition scenarios (1) and (2). The IPCC 1.5 special report[35] highlighted four potential pathways (P1-P4) to illustrate use of various fuels and technologies in the energy mix. This range of choice highlights that there are many technological and business model choices to achieve the overall greenhouse gas reductions needed. In making the choice, it is important to consider what the output of the analysis is needed for:

- Stress testing business models for internal or regulatory use
- Exploring areas of risk to decide upon mitigation, acceptance, withdrawal or transfer strategy
- Transparency and trust through disclosure to stakeholders.

Step two: identify and assess the risks to discover the country ahead

The good news is that risk managers can be proactive in addressing transition risks; furthermore, many industries are finding that the insurance sector is uniquely placed to help them, given its experience of being on the front-line of managing the impacts of a changing climate over many decades.

Risk, opportunity and scenario analyses are the cornerstone tools for creating a transition plan and being able to model this over the timeframes involved is at the heart of our Climate Quantified™ framework. We can help put scenarios together, identify and quantify the risks ahead, identifying cash flow changes, asset value at risk, equity value at risk and opportunities to maximise profitability during transition.

The risk financial impact and likelihood work needs to be conducted on an asset level basis, with scenarios in detailed enough form to model likely changes in severity of physical climate impacts at enough granularity. Sectoral and regional transition pathway choices also need to take into account the speed of market, policy and technology changes.

"Risk managers can be proactive in addressing transition risks; furthermore, many industries are finding that the insurance sector is uniquely placed to help them, given its experience of being on the front-line of managing the impacts of a changing climate over many decades."

[35] https://www.ipcc.ch/sr15/

The Willis Towers Watson perspective

During our work with companies and governments, we have found the following examples of climate-related risk:

- **Acute (short term, localised extreme events) risks need sophisticated regional modelling over the lifespan of the assets.**
- **Chronic (long term trend) risks that affect assets everywhere at once have a much larger cumulative impact on a large organisation than disruption at individual sites due to severe weather events.**
- **Structural changes in the global oil industry reduced the value of Uganda's upstream oil reserves by 70% ($47 billion) to $18 billion, compared to originally projections in 2013[36].**
- **Just transition outcomes need to be included as livelihoods of workers and nations are also at stake. For example, 400 million people live in the 9 most vulnerable petrostates[37].**
- **Locking in "lower carbon" fossil fuels potentially compounds the stranded assets until later: e.g. in 10 years' time when these fuels will be regarded as "high carbon fuels" and needed to be retired.**

A new additional concern for both energy companies and governments that may be pursued through the courts is the potential for "stranded liabilities". This occurs where there are insufficient funds to properly retire assets (e.g. oil & gas fields) to protect human health and the environment.[38]

Costs and budgets for transition, alongside policy, are also changing quickly – the IPCC will shortly release its latest 5-year update on climate (AR6)[39], synthesising research from across the scientific world. Given that annual GHG emissions have not yet started to go down meaningfully, it is likely that this report will indicate the rate of decarbonisation needs to accelerate, rather than slow down.

Most scenario work though is focussed on smooth orderly transitions (e.g. a smooth transition of carbon pricing to ~$100 per tCO_2e by 2030). The modelling of high impact, low likelihood risks ("Green swans"[40]) is important it enhances the disorderly modelling to include rapid changes in market and regulatory sentiments (e.g. sudden shift of carbon pricing in 2030 from ~40tCO_2e$ to 250tCO_2e$).

Step 3: Use risks and opportunities to plan your energy transition

Once scenarios and risks are plotted, asset level assessments of impacts and likelihoods need to be completed to understand the potential for changing landscape to affect profitability. Risk managers are uniquely placed to ensure their companies are prepared to meet the increasing expectations of disclosure by investors and regulators, embed climate risk into existing frameworks and ensure Boards are taking a strategic approach.

At the heart of this is achieving the balance of keeping to science aligned targets whilst achieving cost-effective transition by:

- Assessing carbon emissions locked in across portfolio of assets/liabilities
- Mapping to an adherence against science-led carbon budget
- Assessing the potential solutions and cost effectiveness

In assessing the climate risks and opportunities for an energy firm, it is likely that a cross-over for certain generation sites will take place. This potentially turns assets into liabilities (i.e. stranded assets[41]) as the cost of continued use of a high carbon asset is more than commissioning new low carbon power (usually a combination of storage with wind and/or solar generation).[42]

New renewable energy as a source of power, and as a way of manufacturing green hydrogen, is expected to be cheaper than operating old fossil fuel plants globally by the end of the decade[43], and LCOE comparisons already have many renewable technologies operating at below the costs of conventional fossil fuels.[44] Carbon capture and storage at fossil fuel generation assets needs much higher costs of carbon to be competitive.

The wave of pressure to close coal mines and generation plants is just starting to be felt for gas generation. It is predictable now that attention will continue to be focussed on coal-related and arctic/oil sands production assets and will expand further to all fossil fuel-based assets in this decade.

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[36] "Understanding the impact of a low carbon transition on Uganda's planned oil economy", (as Climate Policy Initiative Energy Finance team) Dec 2020
[37] "Beyond petrostates" Carbon Tracker Initiative, Feb 2021
[38] "The Flip Side: stranded assets and stranded liabilities", Carbon Tracker Initiative, Feb 2020
[39] International Panel on Climate Change, AR6 released in stages over 2021 and 2022
[40] Green Swans, Volans
[41] "Stranded assets: a climate risk challenge", B Caldecott, E Harnett, T Cojoianu, I Kok and A Pfeiffer, IADB, 2016
[42] E.g. "Duke IRPs focus on new gas-fired generation creating serious stranded-asset risks", IIEFA US, Jan 2021
[43] "Coal-developers-risk-600-billion-as-renewables-outcompete-worldwide", Carbon Tracker Initiative, Mar 2020
[44] Projected costs of generating electricity 2020, IEA and OECD

Many of the common ways of achieving transition plans that have been proposed involve swapping out coal for high efficiency gas and/or introducing carbon capture and storage. This is often cited as being the most economical method. However, given the rapid changes in the costs of renewable energy and storage, this may not remain the case. The EU Sustainable Finance Taxonomy gives guidance for issuers of debt of what technologies are "sustainable" through its classification of technologies that "Do no significant harm" and "Contribute solutions".[45] There is also concern that a $1-4 trillion carbon investment bubble may burst in this decade.[46]

Developing an appropriate retirement and divestment plan is also key part of any transition plan. In the early part of the transition, divestment of assets may be financially feasible but, whilst improving the carbon balance sheet, might not deliver the emissions cuts at system levels. Already there has been some call for governments and industries to work together to create the energy equivalent of "bad banks" to retire high carbon assets.

But investment in renewables isn't going to be a get out of jail free card. Value chain impacts will also need to be considered as many of the rare earth elements that will grow in demand[47] are currently being mined in regions where human rights and/or severe impacts to the health of local population and their surrounding environment[48] [49].

Step four: implementing the transition

Having a climate strategy and transition plan needs to be delivered in the company. Like any strategy, there are a number of key areas are important to successful delivery:

- Aligning the organisational culture and values to the goals within the plan
- Training of the workforce, from board to entry level, in the nature of climate risks and opportunities, and their role in the organisational transition
- Aligning incentivisation to meet targets and retiring old conflicting incentives
- Securing transition finance

Strategies and plans often fail because company cultures and staff values are not aligned with the goals. It is crucial to work with both HR, talent and reward functions to implement these plans.

Short and medium-term targets are also needed that align with the goal of getting to at least 50% reduction in emissions by 2030. Incentive plans need to be focussed on achievement of the emissions reduction targets set. Willis Towers Watson's recent survey have found that four in five companies plan to change their ESG measures in executive pay plans over the next 3 years.[50] We work with companies globally to help them implement this.[51]

Sustainable and green finance has grown hugely in the last couple of years[52], despite COVID-19, and is expected to exceed $1 trillion in 2021 and possibly accelerate from there, with demand outstripping supply. However, many of these existing financial instruments focus on purely financing zero carbon or near-zero carbon activities. Exclusionary principles deployed in finance industries mean that many companies are finding rises in the cost of capital and/or difficulty in raising capital and insurance.

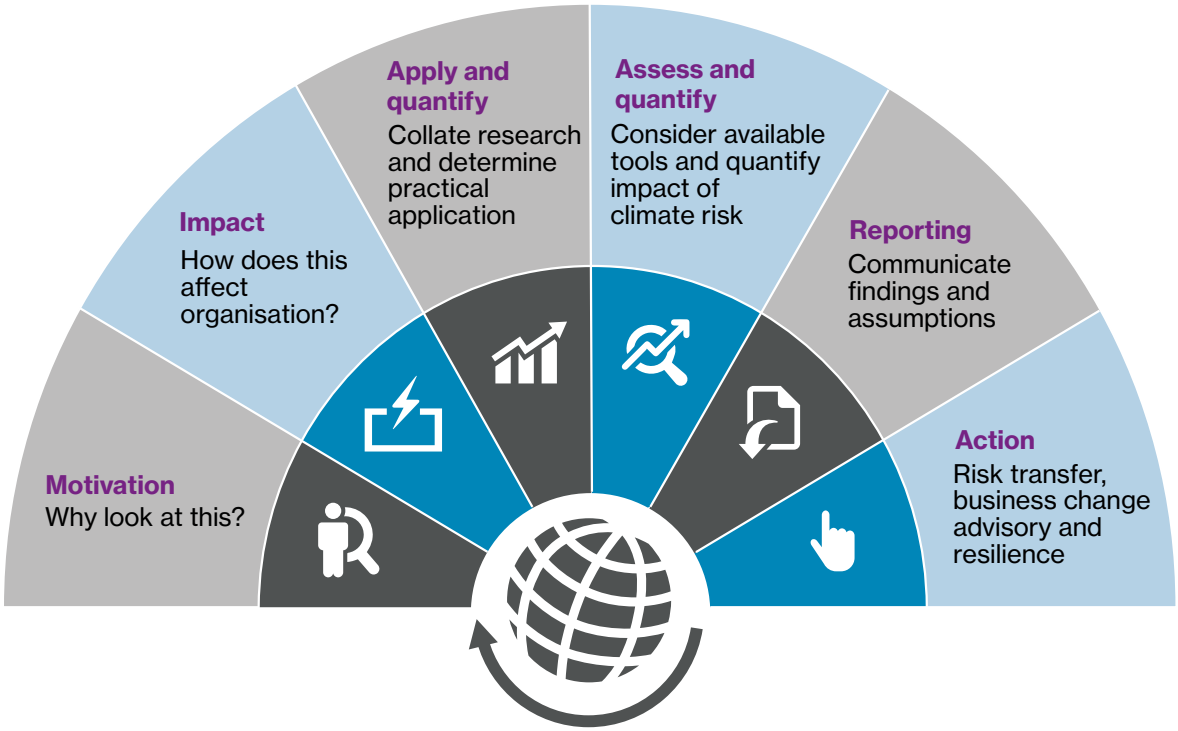
New transition finance instruments are being created to help companies that could reduce emissions significantly and are willing to action a transition strategy. Access to these debt instruments are subject to pre-conditions that their transition plans and performance align to the Paris Agreement.

Table 2: Transition finance deals with helping high carbon industries transition to low/zero carbon activities

Transition Finance Name	Mechanism
Climate Transition Bonds[53]	Debt raised through corporate or asset bonds given a climate transition bond label on preconditions meeting transition principles of aligning to Paris and a 1.5°C trajectory, zero carbon by 2050 and halving emissions by 2030, backed by a credible pathway and performance.
Climate Transition Finance Handbook[54]	Guide to issuers of transition finance, with companies seeking this debt agreeing to commit to net-zero by 2050 with short, medium and long-term targets aligned to 1.5°C pathways.

[45] EU Sustainable Finance Taxonomy, EC.
[46] "Toward Risk-Opportunity Assessment in Climate-Friendly Finance, JF Mercure, 2019
[47] "European Commission, Critical materials for strategic technologies and sectors in the EU - a foresight study, 2020"
[48] Mining and Bio-diversity, CDP briefing, 2020
[49] "Responsible or reckless? A critical review of the environmental and climate assessments of mineral supply chains", Jordy Lee et al 2020 Environ. Res. Lett. 15 103009
[50] ESG and executive pay survey, Willis Towers Watson, Dec 2020
[51] Executive Compensation, Human Capital Governance and ESG, Willis Towers Watson
[52] "Debt engineers tackle climate change with bonds to rewild land", Bloomberg, Feb 2021
[53] "Financing Credible Transitions", Climate Bonds Initiative & Credit Suisse, Sept 2020
[54] Climate Transition Finance Handbook, guide for issuers, International Capital Market Association, Dec 2020

Fig 4: The Willis Towers Watson Climate Quantified™ framework can help companies quantify risks, disclose and plan your energy transition



Source: Willis Towers Watson

Step five: climate disclosure

Demonstrating that climate action is taking place, governed well, with a robust strategy and with performance measurements, is seen as key to meet conditions of investment, whether debt, insurance or equity. This is also an opportunity space.

Our team have been helping to define the climate-related metrics and reporting recommendations behind frameworks such as TCFD and CDP, the two pre-eminent disclosure frameworks for climate disclosure. One of the key components is transparency of process, progress and what is yet to be done. Benchmarking performance against peers and being able to learn from leaders in transition planning from across multiple industries is at the core of our research and helping you successfully use your disclosure for stakeholder engagement.

Conclusion: can you afford not to quantify your climate risk and develop a strategic response?

While there may be challenges ahead, the mainstreaming of issues such as ESG and recognition of transition risks presents a strategic opportunity for risk professionals, particularly in the energy sector. As Boards grapple with these issues, risk managers can play a lead role, providing not only risk quantification and analysis but also insight to inform strategy in a rapidly evolving risk landscape to secure organisational resilience.

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Supporting the energy industry through the transition: the view from a global insurer

In March 2021 Willis Towers Watson's Chief Broking Officer for Natural Resources, Richard Burge (RB), spoke to both Sam Harrison, Group Chief Underwriting Officer (SH), and Peter Burton, Executive Director, International Markets (PB) from global insurer QBE. They discussed a variety of topics, ranging from the future of the global insurance markets to the impact of climate change and the energy transition. An edited version of their conversation appears below.

RB *Gentlemen, can I start by asking how you think the pandemic has changed the Energy insurance market? What are your general thoughts, one year on?*

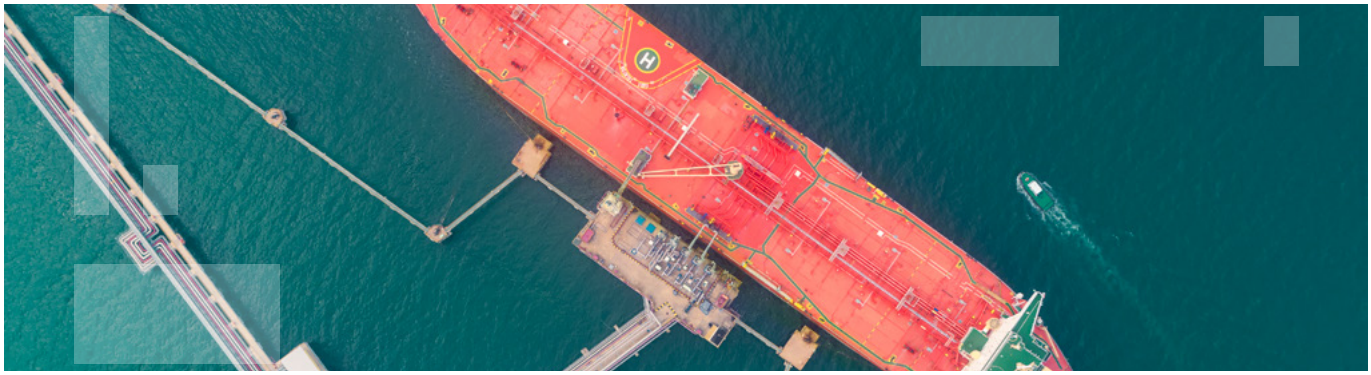
SH For us, it's been all about the way we work. We have broken a few industry myths, such as an insurance policy can only be renewed if there is a formal renewal meeting around a table with multiple participants. Despite all the predictions to the contrary, we have shown that electronic placing can be used effectively to deliver contract certainty. We have been forced into using a tool which may not be perfect right now, but we are still using it and it will evolve. Most other industries already use an agile way of working, and up until now the insurance industry has been reluctant to use this as a method of continuous improvement. Now I think electronic trading is providing that agility, which is fantastic.

RB *Have you been surprised by how well it has worked?*

SH From a QBE standpoint, we issued all our staff with laptops and video call software which actually had been planned in January of last year. So it was great that we found we were in a strong position to transact business just before the pandemic really hit. There were teething problems over sharing screens and all the issues surrounding the implementation of new technology, but when we were told to go home, our staff all left the office with the right equipment. From an insurer standpoint in a rising market, we have found that we have adapted to the new working environment more assuredly than the brokers. We can all hazard a guess as to why this might be; however, I put it down to there being less disruption to the insurer's way of working.

RB *So you would expect brokers to want to transfer back to a more physical business environment when the pandemic is over?*

SH It's much easier for brokers in a face-to face environment. But equally, brokers are adapting all the time – if it were a race, I would think underwriters have a head start; over time, brokers will of course catch up. At different points, different players are favoured. But in this particular



market environment, it's favouring the underwriter. Where the current business environment also disadvantages the client is in terms of access to individuals, because it is not as efficient at gathering consensus. It favours quick decision making by the leader, but where the leader's views are not as palatable as the client would like, I don't think it favours consensus.

RB *So how do you think the business environment will evolve from here?*

SH The next iteration is electronic transfer of information in a structured data format, as opposed to the transmission of data by excel or pdf spreadsheet. Client data is going to be needed to be captured in an electronically structured manner which is consistent for the entire market, that each insurer can then manipulate separately to meet individual company needs. The way the market used to work was along the lines of: let's wait for the leader to do the work, and then we will seek other people to critique the leader's view. Whereas in future, each insurer will conduct their own analysis at the same time.

RB *Do you feel you have been able to maintain your key client and broker relationships during the pandemic? What, if anything, have you missed?*

PB We haven't really maintained the relationships with either our clients or our brokers in the way that we would really want to. It's true that we have maintained our broker contacts via video calls etc, but for complex risks, and for a broker to properly represent their customer in the best possible light to explain the sophistication of the companies' attributes and activities, there is no doubt that some of this can be lost through remote communication. There is so much to be gained from doing this in a face to face manner. For instance, I've just been on a call with a client; it was a good call, we had a good conversation, but if we were face to face, we would have had a much more interactive dialogue and would have covered a myriad of additional issues. I think you can understand each other better in such an environment, especially during the "non-business" time with the client, which you don't get on video calls; this informal time is very important in building these relationships up. As an underwriter, you get to understand what drives the customer and their culture. So if you want a long-term relationship –and we always look for these kind of relationships - that's the understanding you need to build between the two parties.

SH Our industry is based around trust and speed of decision making, mainly because clients have coverage needs that often are immediate and require solutions in very short timescales. So the value of people knowing and trading constantly with you is really important. Peter and I have 25 years' experience of building relationships; we think that we have traded on these relationships heavily over the last 12 months, and I'm sure that the broking fraternity has done the same. But if we look at our 26- and 27-year olds, who haven't yet had the chance to build up such relationships, what are they going to trade on in five years' time if this continues to be the new way of working? Yes, we as an industry have done well during the pandemic, because we have leveraged our own personal relationships, mobile numbers and phone groups to get things agreed and done. When you don't have that ability to access people, you are relying on one method and if you don't know the person you are calling, it becomes infinitely more difficult.

PB It's a worse position for the clients to be in. They will get better delivery from us with more interaction.

SH And more latitude. If something happens outside the norm, a collaborative way of getting over a unique problem is generally done best by people who have done similar things together over time, involving similar problems and similar solutions. When you are dealing with people who have never done anything outside the norm together, then the system is very likely to grind.

"Our industry is based around trust and speed of decision making, mainly because clients have coverage needs that often are immediate and require solutions in very short timescales. So the value of people knowing and trading constantly with you is really important."

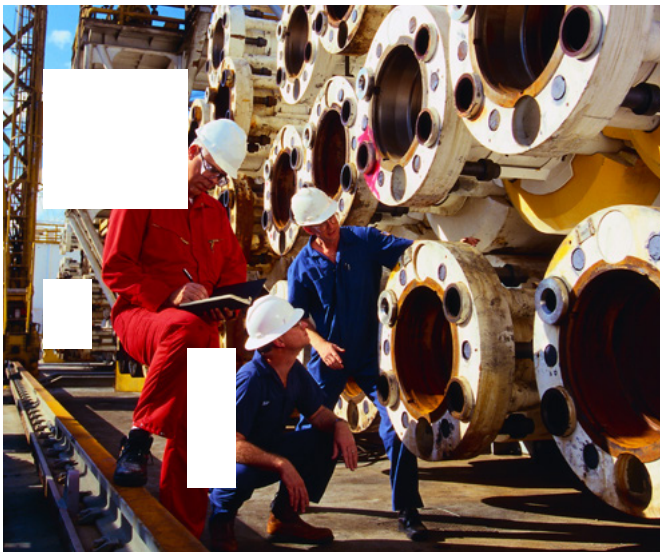
RB *Do you think that the insurance industry will permanently change as a result of the pandemic? If so, how?*

SH I don't think for us it's changing so much – I would suggest that the impact will be felt more by clients, because they may decide that they will no longer need to travel to see their underwriters. Regardless of what we want or what we think is right and beneficial, I think that in the future clients will regard travelling to buy insurance as a luxury and not a necessity.

RB *Turning now to climate change and the energy transition, how committed is QBE to supporting the fossil fuel industry as economies begin to move towards a net-zero future?*

PB Climate change and sustainability is a highly complex subject, and we are all trying to understand what it means to us, either as individuals, or as businesses. In respect of QBE, we are committed to the goals of the Paris Agreement. Taking the investment side first, we are committed to achieving zero emissions by 2050 in our investment portfolio, and we are aligning our investment strategy in accordance with the Paris Agreement. In terms of our energy industry client base, we have a very long-standing client portfolio which we are very proud of and which we will support throughout their transition to a lower emissions environment and towards meeting the Paris Agreement goals, along with their governments. We must all work together towards that common objective.

RB *So for Coal and maybe, for example, Oil Sands business, how significant would some kind of accreditation process be in ensuring that support? Should they have to go through such a process to provide you with the rationale to continue to support them as we move into this new era?*



"What will be interesting is when we start examining the second order of magnitude, and those insurers currently underwriting Agriculture and Construction business; after all, cement is a huge emitter of carbon. Once the focus shifts from Oil & Gas, what are these insurers going to do when it comes to Construction? Or even Auto?"

PB If we could have a consistent accreditation process, that would certainly help us as an underwriting community as it would allow us to rank or to assess clients on a more objective basis; it would enable us to establish how far along the road are they in achieving their transition goals. We need to come up with a consistent framework for our underwriting toolkit. It's a very challenging subject, if only because of the need to assess clients on a level playing field. For example, take carbon credits and how they are assessed, as well as new emissions technologies – these issues are highly complicated and there are so many inconsistencies and contradictions. So if we can access better tools to identify how our clients are achieving their climate goals, it can only be better for us as an industry. I would also like to see the accreditation process broadened across the whole ESG spectrum, rather than just focusing on climate change. A client may be top of the league in certain areas of ESG but may have a way to go in other areas.

SH The beauty of accreditation is that you select the client for the efforts that the client is making, regardless of industry sector. That is the more socially responsible way of handling this issue.

RB *So what's your view on those insurers who have already announced their withdrawal from certain fossil fuel sectors?*

SH I'm not convinced that clients should be selected against purely because of what they produce as opposed to their social responsibility and how much they invest in it and care about it. If you look at some of the insurers who have come out of the blocks championing zero emissions and pulling out of certain sectors, they didn't start with an oil and gas portfolio that they needed to defend; some of them are the ones that have had the least premium income from those operations to start with. What will be interesting is when we start examining the second order of magnitude, and those insurers currently underwriting Agriculture and Construction business; after all, cement is a huge emitter of carbon. Once the focus shifts from Oil & Gas, what are these insurers going to do when it comes to Construction? Or even Auto?

At some point, the benefit of insurers forcing clients to manage the transition will have a gross domestic product impact on societies around the world. Do we understand that balance at the moment? We are focussing on one industry sector, thinking that we will sort this one out and then move onto the next one, but there are some very big knotty subjects just on the horizon. I think companies will find it more and more difficult to make a soundbite on their portfolio management when we get through this initial barrier.

However, I must say we fully support our industry making public statements on climate change and the existence of discussion can only lead to the insurance industry actively and objectively doing its part in driving the energy transition forward.

RB *How has the quality of underwriting data submitted by clients improved over the last five years or so? How much more work needs to be done in this area?*

SH The client's data quality will only ever be as good as what the underwriter's pricing and monitoring models will take. Our models are not quite 21st century in most cases; the type of data that we can receive from clients is similarly constrained. In terms of the data requirements, Downstream Energy is infinitely more granular than Upstream, but if you look at the results over the cycle, you wouldn't say that there has been a profitability advantage by having better data. The one area that I do think clients

should do more on is underlying claims activity, particularly in Casualty business, where our clients tend to take larger retentions than other industries. That's fine, but I do believe we would improve as an industry if we had better data and insight into these underlying claims and how the client believes they might develop in specific judicial regions as they can take significant time to come to fruition. The more data and information we have around claims developments, the better we can assess risk and pricing and provide clients with a better product.

RB *You don't think this issue has been resolved by writing Liability business on a Claims Made basis?*

SH For us, the bigger issue is the XL-004 policy forms from Bermuda. They are not Occurrence forms, but you would be forgiven for thinking they might be when you look at the claims that are coming through. It comes back to the big issues such as climate change; there are number of clients that have advised policies of climate change loss notifications, but there aren't many discussions at renewal about the correct way to price these losses.

PB The data issue is an interesting one. If we are honest with ourselves, the data that we are currently receiving from clients is not that different from five years ago. I think clients would like to provide a lot more data, and they have the ability to do so, but as an industry we don't know what to do with it. Our analyses, models and pricing mechanisms are just not sophisticated enough to be able to reflect the data which they could provide.

RB *Data is a factor, but I am surprised at times where underwriting decisions are being made just on the basis of past data. Sometimes people forget that bad things just happen sometimes. After all, that's the reason that energy companies buy insurance - they don't know when or how losses will materialise.*

SH But when it happens, it's hugely impactful. I have yet to see a broker bring data in to show me that I should charge more for a risk, and I've never had a broker yet who has ever introduced me to the world's "second best drilling contractor"! These data questions are all asymmetric; they are designed to enable the broker to suppress price, not for it to be assessed correctly.

RB *Do you think that the market is sufficiently innovative? Does it need to be to remain relevant to the energy industry?*

SH Clients are always going to want us to deliver ease of transaction. Over time, we will have to migrate to balance sheet protection rather than product protection. I find it amazing that we still refer to the energy industry in terms of Offshore and Onshore; the Energy market even buys reinsurance on this basis, when almost every Energy client thinks of themselves in terms of being Upstream, Midstream or Downstream. When you have an industry which is so misaligned with the operations of their customers, there will come a time when there will be a schism. Soon, our clients won't care if they are classified by us as Upstream, Downstream, Midstream or even Renewable – they will just want protection across the board. So the industry needs to get a grip on the fact that that our clients' businesses are changing again; we

probably need to take a couple of steps forward and simply become risk protectors of our clients' business, full stop– not just the insurers of offshore platforms. We need to be more aligned with the way our clients do business.

PB The key to this is to find mechanisms for pricing these risks which are open and transparent; to understand from the client's perspective what the pricing value is. In the very few times where we do come up with a product that might be innovative, often it's very hard to get a client to buy it. I'm not sure we know the reason why: is it the wrong product? Do we not engage with them enough to understand what they really want? Furthermore, clients tend to buy within their peer group as well – they buy what other people buy. We very rarely see a client who is prepared to do something different, but in the same way, they rarely see an insurance company which is prepared to price and market an innovative product.

RB *Finally gentlemen, QBE is a global company. To what extent is it possible to regionalise your global underwriting operations for the energy lines of business, or is a more centralised structure more effective?*

SH It depends on your company's broader operating model. We are a global insurance company, but underwriting appetite and strategy is governed by the region. For QBE International, our underwriting appetite is designed by us for us, obviously in collaboration with our global colleagues. But it's not impossible for my division to decide, for example, that we want to expand in Oil & Gas, and for QBE North America to decide that it's not a class of business that they want to explore. The reasons for that will be wide-ranging, such as acceptable volatility, track record and access to capability of underwriters, claims and distribution staff. Can you make a portfolio of a critical size to make it structurally important to the company, with longevity? And is it where the client wants it to be placed?

RB *It might be argued that with modern technology there is less need for a regional underwriting distribution network today.*

SH It's a client business. Within reason, we have to provide our clients with access to our product where they wish to access it. And if clients in Houston want local insurers to be making local decisions, because their perception is that they have a better understanding of the nuances of the local business, then we have a rightful obligation to provide our clients with that source of expertise locally where economically possible.

PB There are two very simple issues: one, where does the client want their business to be placed? Two, can we as a carrier economically provide the requisite level of expertise in underwriting and claims to service that client in that region? If we can, then we'll do it.

SH There is no such thing as one operating model; what works for one company doesn't work for others. Five years ago we anonymously canvassed a large number of oil & gas companies who were good enough to respond, and the one thing that came through loud and clear was that they would far rather talk to two underwriters in two different product lines, both of whom were empowered to make decisions in their relevant products, than talk to just one person who would then go and talk to the decision-making underwriter on their behalf. They do want the organisation to be aware of the importance of their business to the insurer, but in terms of interaction, the thing they really want is the ability to talk to the decision makers.

"It's a client business. Within reason, we have to provide our clients with access to our product where they wish to access it."

So our whole structure has been designed around putting underwriters in a place where clients can talk to them and they can make the decisions as a result of these conversations. We have chosen not to go to a distributed product model, where we have generalists in many parts of the world talking to local clients and the passing the requests to either a regional or a global hub; instead, we have gone for a multi-hub underwriting model, to try and provide as many clients as possible with as many decision makers as possible.

RB *Gentlemen, thank you both so much for your time.*

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Part Two: managing risk through the transition

Key political risks for energy companies in 2021: survey results

Introduction: how the survey was conducted

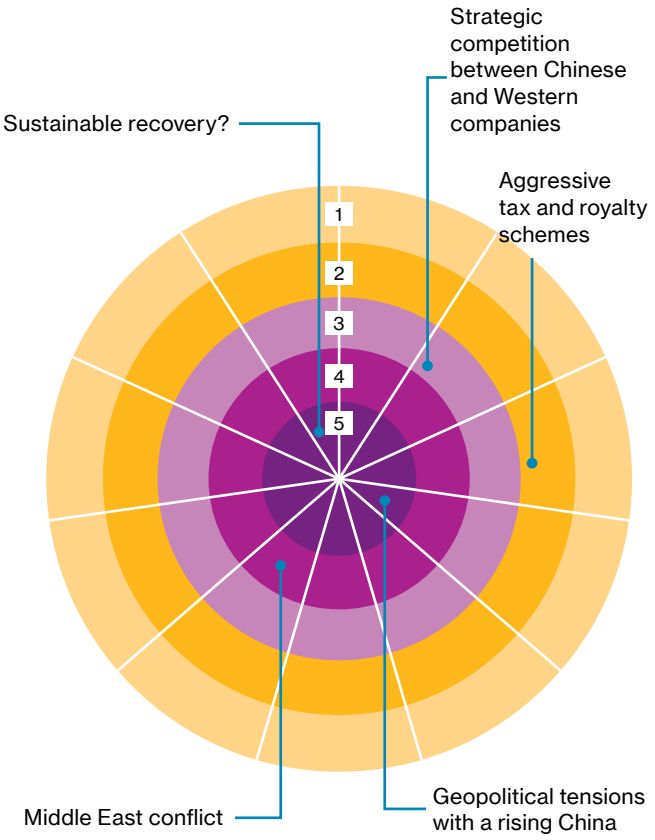
What are the top political risks for energy companies in 2021? To answer this question, perhaps there is no one better to ask than the energy companies' own in-house analysts. After all, companies in the energy sector have only been able to operate long-lived, capital-intensive investments in some of the world's most politically unstable countries by cultivating significant capabilities in political risk management.

A few months ago, we convened a panel of external affairs and risk management professionals at five of the world's largest energy firms. The geopolitical consultancy Oxford Analytica then conducted in-depth interviews with these professionals, to produce the risk radar that appears below. Scholars in Oxford Analytica's expert network then produced peer-reviewed essays on two of the top risks that the executives identified: "strategic competition between Chinese and Western companies;" and "natural resource fiscal policy after COVID-19," which you can read in the full version of our report, "Political Risk in Natural Resources," released in late January 2021[1].

Here, we provide a summary of Oxford Analytica's findings. We sincerely thank the expert panel of natural resource executives who guided the research for their time and insights.

[1] https://www.willistowerswatson.com/en-GB/Insights/2021/01/political-risk-in-the-natural-resources-sector

Fig 1: The top five political risks: political risk radar for the natural resources sector 2021 (ranked by number of mentions)



Source: WTW Political Risk in the Natural Resources Sector, 2021

Key findings

Risks relating to a rising China

China has proved to be top of mind for the panelists, accounting for two of the top five risks on our list. Perhaps China's dominance is unsurprising. In a sense, 2020 was China's year. The Year of the Rat began in tragedy, as the pandemic exploded in Wuhan and threatened to overwhelm the city's medical system. And yet, by the end of 2020, China appeared to have gained control of the virus and restarted its economy – even as many Western countries continued to struggle. Indeed, despite much talk of "reshoring," and a trade dispute with the United States, during the first half of 2020 China's share of world exports actually rose. Say this for China's government: it can manage adversity.

Both China-related risks in the radar relate to the emerging geostrategic contest between China and the West. Perhaps surprisingly, much of the concern expressed by panelists was not on China's side of the ledger. "The Americans are the problem," one panelist contended. "Can you continue to export to a given country? Work with a given supplier? Employ foreign individuals in the US? No idea."

Regarding resource competition, the panel's concerns related to the fact that China's economy has been recovering rapidly even as many resource-rich countries continue to struggle. "In countries where there are high levels of indebtedness or civil unrest, China could be a beneficiary in a geostrategic sense by contributing to the public goods that help those countries to get back on their feet," as one panelist put it.

The aftershocks of the pandemic

The other main category of risks on the radar had to do with recovery from the pandemic. One member of our executive panel threw down the gauntlet: "simply trying to get back to where we were pre-pandemic is not enough – it would condemn us to go through the same thing again relatively soon. We need a sustainable recovery."

This comment encapsulated several of the panel's most frequently mentioned concerns. For instance, panelists worried that recovery would be unsustainable because environmental and other objectives would be abandoned in a race to rebuild economically, and that much of what was learned in the world's response to the pandemic would be forgotten.

The other recovery-related risk on the radar, "aggressive tax and royalty regimes," had to do with the fiscal positions of resource-rich countries. Even before the lockdowns began, countries were pummeled by international economic shocks, including a collapse in energy prices. Many emerging markets were able to remain solvent by drawing on international bailouts. When the lending taps are turned off, energy utilities may face difficulty in collecting payments from state-owned distributors and oil and gas companies may find that tax and royalty regimes shift.

The Middle East

Although we asked our panel to focus on identifying global risks in their sector, the Middle Eastern region was felt to involve political risks of such significance that they are globally relevant.

Many of the panel's concerns had to do with well-known issues such as tensions between the US and Iran. A military conflict between the US and Iran could lead to oil price shocks, as well as disruptions of global shipping.

Another often-expressed concern was regional rivalries. The diminishing US presence in the region has arguably unleashed a struggle for regional dominance, most notably between Saudi Arabia and Iran, but also at times Turkey. "One thing all sides are realizing is Washington will be less active in the region going forward," an oil and gas panelist claimed.

During the launch webinar for the report, an Oxford Analytica analyst, Dr. Laura James, contended that Middle Eastern countries face risks in part because of the unusual nature of the "social contract" in certain resource-rich regimes. The public in some these countries does not necessarily expect full democratic representation, she said, but nor do they expect to be taxed. With climate transition looming and the need to repair fiscal positions in the wake of the pandemic, countries such as Saudi Arabia are contemplating new taxes, or a reduction of benefits provided by the state. Over the long term, such measures could pose a challenge to political stability.

Managing the risks

Globalization and the removal of trade barriers meant that some types of political risks had been in steady decline until recently. However, the global pandemic has contributed to dramatic changes in political and economic circumstances - resource-rich nations, which are dependent on strong and stable global demand for commodities and international trade, are particularly exposed.

Sovereign defaults

During 2020 and 2021, we have seen sovereign defaults or restructuring in Lebanon, Ecuador, Argentina, Belize, Suriname and now Zambia. Even in those countries not at immediate risk of default, tourism revenue will drop, tax revenue will reduce and medical expenditure will need to increase, placing further strain on already stressed economies.

It is not uncommon (or for that matter illegal) for governments under stress to unilaterally amend contracts, but it is essential that foreign companies are given adequate channels for complaint and given fair compensation for a breach. If there is a breach of contract with no compensation paid, financial losses are all but inevitable.

A political risk insurance policy can address such issues and provide some certainty in an increasingly uncertain world. Political risk insurance was born out of the turmoil of the 1970s which saw a spike in political risks and nationalizations. This insurance covers business losses caused by restrictions in capital mobility, or overt political action.

Rise in politically motivated conflict

We have also seen a steady rise in politically motivated conflict, from violent street protests to the threat of civil war or the occurrence of actual war. Even if a country avoids large scale conflicts, social division, protests and/or labor disputes can easily escalate and the financial consequences which arise, either through physical damage or the interruption in activity, can be severe.

With much of the world distracted by fires on the home front, there is noticeably less scrutiny being given to actions of foreign governments. There has never been a more important time to measure these risks, to manage those that can be and to mitigate those that can't.

Conclusion: opportunities as well as threats

For those companies that can manage these risks, this crisis should also bring opportunities. Difficult fiscal conditions in the emerging world are sometimes associated with efforts to attract foreign capital. In the years ahead, areas off limits to foreign oil and gas firms may open; countries may seek to make up shortfalls in energy provision or reduce their carbon footprint by bringing in foreign utilities.

Of course, as we have learned over the past year, such favorable political circumstances can quickly reverse. Political risk insurance plays a vital role in supporting the energy sector through such reversals of fortune.

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"Even if a country avoids large scale conflicts, social division, protests and/or labor disputes can easily escalate and the financial consequences which arise, either through physical damage or the interruption in activity, can be severe."

COVID-19 and civil unrest: the impact on the energy industry

Introduction: sounding the alarm

Throughout history, pandemics - such as the plague - have driven economic crises, political upheavals and social unrest. They have fuelled and re-fuelled poverty, exacerbated wealth gaps, fostered crime, seen the overthrow of governments, amplified existing social fissures, localised trade and fomented nationalism and exceptionalism. It is abundantly clear that with persistent and pervasive disease there exist economic and societal costs that increase the threat of insecurity over both the short and long term. COVID-19 is no exception, and multilateral organisations are sounding the alarm.

The pandemic as a political stress test

On 21 Jan 2021, Rosemary DiCarlo, Under-Secretary-General for Political and Peacebuilding Affairs, said at The UN Security Council that 'The sweeping and devastating effects of the COVID-19 pandemic are continuing to grow, and so too are the risks of instability and tension amidst glaring inequalities in the global recovery'. Observing that the pandemic has served as a political stress test as much as a structural and public health one, she elaborated on the effects noting: '...the pandemic's impact on peace and security has intensified – exacerbating inequality and corruption; breeding misinformation, stigmatization and hate speech; and creating new flashpoints for tension and increased risks of instability'.[1]

Driving geopolitical and security risks

Non-militarized crises such as pandemics, famines and natural disasters are often neglected by scholars and practitioners in the field of international security. However, they share the same crisis characteristics of threat, uncertainty and time pressure[2] and consistently act as principal or secondary drivers of geopolitical and security risks. The energy sector extracts, processes and transports among and between developed countries, emerging markets, developing countries (EMDCs) and less developed countries (LDCs). For most of 2021 and beyond, it is to be expected that their operations will take place within territories and sea routes in varying states of crisis, presenting a kaleidoscope of uncertainty and threats. The nature of these crises will depend on diverse drivers, ranging from the geostrategic to the local and tactical, and their impact will extend well beyond 2021.

But many energy companies are accustomed to managing their risks in uncertain environments. Why should the situation at the tail end of COVID-19 and its aftermath demand a change in the management of risks to people, supply chains and assets? Many of the answers to this question will be found in the aggregation and breadth of threats old and new, thrown up by the uncertainties and pressures of one of the top five debt crises of the last 120 years.

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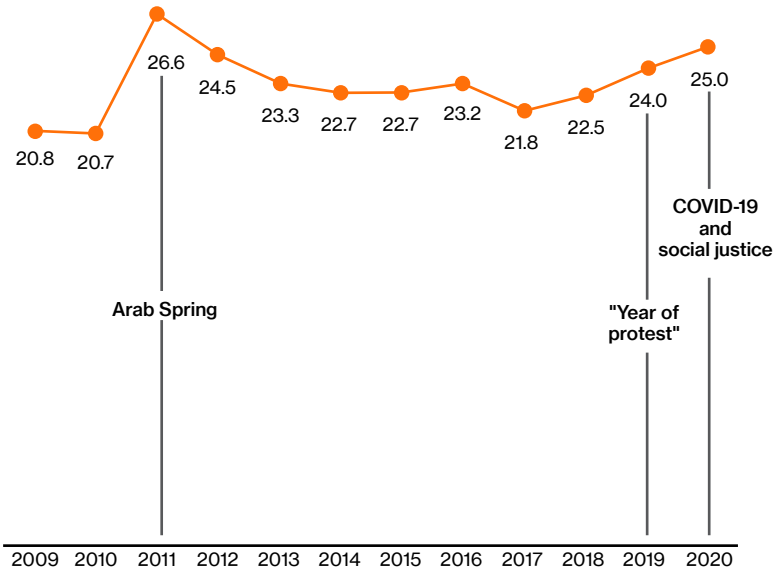
[1] https://www.un.org/press/en/2021/sc14422.doc.htm
[2] Lipscy, P. (2020). COVID-19 and the Politics of Crisis. International Organization, 74(S1), E98-E127. doi:10.1017/S0020818320000375 available online at https://www.cambridge.org/core/journals/international-organization/article/covid19-and-the-politics-of-crisis/CFEB29F225E5238F29C3233E873F0485

Fig 1: ILO World Social Unrest Index, 2009 - 2020



Source: International Labour Organization, EY analysis. https://www.ey.com/en_uk/geostrategy/what-elevated-levels-of-political-risk-mean-for-business-in-2021

Note: 2020 forecast is based on EY analysis of index data trends and social unrest events.

COVID-19 related insecurity - the realities

Social unrest

According to the ILO and EY, there already exists evidence to substantiate the theory and support these statements. The ILO's Social Unrest Index predicts a level of unrest in 2021 matching that of 2011, the year of the uprisings known as the 'Arab Sping'. Assessing the risk of disruption to business caused by the mobilisation of societal groups in response to economic, political, or social factors, analysts claim that unrest has exceeded the pre-pandemic era, with this trend expected to continue well into the next decade[3].

Government debt

The historical patterns of general government debt (see Figure 2 on the next page) show the profound stresses that two world wars, the 2008 global banking crisis and the COVID-19 pandemic placed upon advanced and less developed economies. Much of the phenomenal debt seen in both categories is attributable to fiscal stimuli, which will eventually give way to fiscal tightening. Willis Towers Watson's report 'Political Risk in the Natural Resources Sector 2021[4]' highlights strong, proven correlations between fiscal tightening and political instability, including riots, strikes, political assassinations, and violent overthrows of governments.

Social and political repercussions

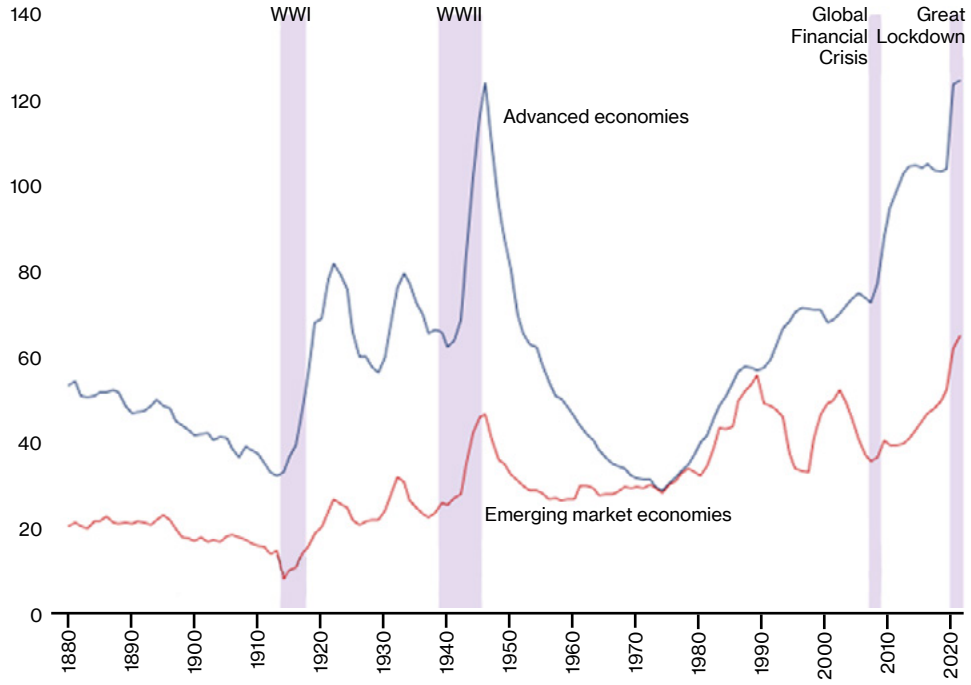
When the unprecedented increase in fiscal stimulus by EMDCs is reversed, there may be serious social and political repercussions. Furthermore, in emerging and less developed economies, the sustainability of emerging market debt will likely hit a tipping point in 2021, with more governments seeking debt relief or entering default, thereby compounding the stress[5]. Consequently, tight budgets after the pandemic could foster a political environment in which austerity, including restructuring and cuts in subsidies, becomes an economic requirement, thereby triggering a rise in social unrest.[6] Turning back to the 'Arab Spring', it should not be forgotten that the withdrawal of fuel and food subsidies were primary drivers of the unrest.

Expect more protests after lockdown

Lockdowns have served to keep many people from gathering to protest peacefully or otherwise, nor have the full financial and social effects of the lockdown yet been realised or felt. When the realities of post-COVID-19 lives and livelihoods become apparent, it is reasonable to expect a rise in resentment, protests and civil disorder. Verisk Maplecroft observe that, against a backdrop of painful economic recovery, the increase in protests is expected

[3] https://www.maplecroft.com/insights/analysis/a-dangerous-new-era-of-civil-unrest-is-dawning-in-the-united-states-and-around-the-world/
[4] https://www.willistowerswatson.com/en-US/Insights/2021/01/political-risk-in-the-natural-resources-sector
[5] EY 2021 Geostrategic Outlook available at: https://assets.ey.com/content/dam/ey-sites/ey-com/en_gl/topics/geostrategy/geostrategy-pdf/ey-gbg-2021-geostrategic-outlook.pdf?download
[6] Willis Towers Watson, Political risk in the natural resources sector, 2021 available at https://www.willistowerswatson.com/en-GB/Insights/2021/01/political-risk-in-the-natural-resources-sector

Fig 2: Historical patterns of general government debt (percentage of GDP)



Source: IMF, Historical Public Debt Database; IMF. World Economic Outlook database; Maddison Database Project; and IMF staff calculations https://www.imf.org/external/pubs/ft/wp/2010/wp10245.pdf

Note: The aggregate public-debt-to-GDP series for advanced economies and emerging market economies is based on a constant sample of 25 and 27 countries, respectively, weighted by GDP in purchasing power parity terms.

to be primarily driven by food insecurity and the erosion of mechanisms and institutions that have historically defused tensions such as freedoms of assembly and the press, and an independent judiciary[7]. Where public security has been weak, inadequate or rapacious in the past, budgetary constraints are likely to exacerbate insecurity, corruption and crime, together fuelling further dissatisfaction with governments.

Global examples of civil unrest

These dynamics are already at play across the globe. The list is long and varied but to illustrate:

- In **Chile**, reduced government spending during early months of pandemic (May 2020) led to major disruption in the food supply chain leading to significant increases in starvation and poverty sparking violent protests[8].
- In **Guatemala**, protesters torched the Guatemalan Congress building in Nov 2020, due to budget cuts to education and health[9].
- In **Iraq**, unrest has spiked, due to civil servants and government workers being left unpaid amidst an already insecure environment[10]. Furthermore, job losses, price rises, and cuts in spending have caused increased poverty levels, leading to unrest amongst the economically marginalised[11].
- In **South Africa**, major protests have occurred over job losses and wage curbs, supported by unions, due to government-imposed measures to limit economic damage[12].

The rise of petro-piracy

Importantly for the oil industry, we are seeing a pronounced increase in petro-piracy. Data from the International Maritime Bureau (IMB) Piracy Reporting Centre shows that 2020 saw more piracy incidents than 2019, and it is likely this trend will continue into 2021[13]. Lack of spending and increased insecurity amongst populations in West Africa fuels this activity, as the poor or destitute turn to criminal activity to make up for lost income, especially when security forces' attention is diverted elsewhere[14]. As such, oil tankers travelling shipping routes in the Gulf of Guinea are increasingly vulnerable to piracy.

[7] https://www.maplecroft.com/insights/analysis/a-dangerous-new-era-of-civil-unrest-is-dawning-in-the-united-states-and-around-the-world/
[8] https://www.emol.com/noticias/Nacional/2020/05/18/986529/Protestas-incidentes-comuna-El-Bosque.html
[9] https://www.theguardian.com/world/2020/nov/22/guatemala-protesters-set-congress-on-fire-during-budget-protests
[10] https://edition.cnn.com/2020/12/08/middleeast/iraq-protests-covid-19-intl/index.html
[11] https://www.mei.edu/publications/iraqs-fragile-state-time-covid-19
[12] https://www.aljazeera.com/news/2020/10/7/south-africa-unions-protest-job-losses-wage-cuts
[13] https://www.icc-ccs.org/index.php/1301-gulf-of-guinea-records-highest-ever-number-of-crew-kidnapped-in-2020-according-to-imb-s-annual-piracy-report
[14] https://link.springer.com/article/10.1007/s12198-020-00218-y

Poor governance

Social and economic insecurity and inequality will be joined, in some territories, by threat catalysts such as poor governance, including a lack of transparency, crime, corruption and inefficiency in dealing with COVID-19. In numerous countries, drivers of dissatisfaction and dissent will feature rumbling ethnic tensions, a *priori* 'frozen conflicts' as well as environmental degradation and the loss of rights. The economic disruption and damage to people and property resulting from civil unrest should not be underestimated; they can be costly, and severely damage both reputations and share prices. For example, the protests in Chile during October-November 2019 led to an estimated $1.5 billion in business losses[15].

Vulnerabilities and impacts in the energy sector

Energy companies will likely be most vulnerable to protests, violence or other forms of coercion (such as bribery and kidnap) in countries where:

- debts are high
- institutions of governance (including rule of law) are weak
- the company is seen as being 'in bed' with national elites
- the licence to operate has been eroded by perceived or actual corruption, ethnic partiality or environmental degradation

Inconsistent promises

At a time of crisis, poverty and dissent, political entrepreneurs may seek to gain political traction through the rhetoric and legal instrumentation of resource nationalism. A common aspect of this, seen at local level, is where communities identify inconsistencies between what companies and the host government have promised the local population - in terms of environmental safeguards, revenue, employment opportunities, housing and infrastructure - and the realities on the ground. At a global level, there will be escalations in demand from civil society, investors and some political groups for post-COVID transparency and accountability in terms of corporate ESG footprints which link, in turn, to local and supply chain activities.

"The economic disruption and damage to people and property resulting from civil unrest should not be underestimated; they can be costly, and severely damage both reputations and share prices."

The threat from the disenfranchised

The immediate impacts for energy companies will differ and range from the inconveniences and costs of business disruption - due to strikes, riots, protests and their collateral - to situations where they become deliberate targets. Those who may seek to do harm will include political groups or their associated 'enforcers', the disenfranchised – who may see them as intolerable totems of foreign capital across an unbridgeable gap in wealth – or criminals (including cyber criminals) who are guaranteed to thrive in times of uncertainty.

"Show us the benefits"

Significant social and political unrest inevitably brings either change or a backlash - nothing truly remains as before. Post-pandemic, the greater strategic challenges and opportunities that social and political unrest pose to the energy sector will be radical shifts in a host community or nation's social disposition or political leadership that can adversely affect demand and/or the prevailing regulatory and legal environment the company operates. Globally, demands are growing for companies themselves to respond to the underlying causes of social unrest. Rising inequality has sharpened demands for companies actively to provide visible benefits of acceptable value for all stakeholders; failure in this may erode trust and reputation[16].

[15] https://www.maplecroft.com/insights/analysis/a-dangerous-new-era-of-civil-unrest-is-dawning-in-the-united-states-and-around-the-world/
[16] EY 2021 Geostrategic Outlook available at: https://assets.ey.com/content/dam/ey-sites/ey-com/en_gl/topics/geostrategy/geostrategy-pdf/ey-gbg-2021-geostrategic-outlook.pdf?download

Conclusion: understand and adapt!

What can energy companies do to anticipate, mitigate and respond to these threats, old and new? It is impossible here to describe the myriad potential scenarios of threat, uncertainty and time pressure ahead in both the current crisis and coming recovery. However it is a given, dictated by the nature of crisis, that there is never enough information to allow for fully informed decisions; what we do know is that dithering usually results in failure. Logical timely and well - communicated initiatives, tested against 'group-think' and harnessing the best information available at the time, generally foster success.

We recommended that energy companies adapt their information gathering and interpretation capacity with alacrity:

- Firstly, **establish or scale up a full-spectrum, cross disciplinary and holistic threat identification and monitoring system** (at country, regional and HQ level if necessary). This will enable the best possible identification and monitoring of trends and patterns in the economic, political and security environments, which envelop your activities and condition your supply chains. This is best done by engaging with the breadth of your people and 'experts' respected by them, your stakeholders and those who disagree with your activities. This should not be left solely to the security department. Consider combining them with representatives from corporate social responsibility (CSR), ESG, government relations and external consultants in order to acquire and maintain a level of sophisticated situational awareness and build scenarios for mitigation.
- Secondly, **be bold in communication.** Show publicly how you are working with governments or communities to reduce inequalities, speak constantly with your people to better understand their fears, their predictions and their aspirations as well as the changing divisions and consensus that feed into local dynamics. Identify and map your stakeholders and those within the political economy in which you work. Understand their interests, their options and the threats they may engender. From this, identify audiences and ensure that consistent narratives are clearly communicated in an honest and effective manner.

Finally, never forget that it is what your people say and do on the ground that can shape or deflect the threats potentially arrayed against your activities. Sometimes a fortress may be the only option, but it is not a sustainable prospect. Far better to adapt in order to maintain a social licence to operate in an environment which you monitor and understand - and which accepts you.

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Your programme design: is it keeping your company safe?

Introduction: is change the new normal?

Energy company insurance managers have faced significant challenges in recent months. Not only has the pandemic impacted the demand for energy and company operations, but coming on top of the hardening insurance market, and increased scrutiny of risks by insurers, placing an insurance program within budget constraints has been a real challenge for many firms. Coupled with significant changes in strategy announced by many major players in the industry in response to rising public concerns on climate change - which will significantly impact future risk exposures - insurance managers may be forgiven for feeling that all these changes are conspiring to make their already challenging roles increasingly difficult to fulfil.

What is the challenge?

A key element of the challenge is to be able to communicate the trade-off between the cost of insuring risk and the cost of retaining that risk. This is particularly the case in years where the cost of insurance has increased sharply, albeit from a low base. CFOs and Treasurers are happy enough to limit the spend on premiums at renewal, but in the event of a loss the focus is always on the cover provided and seldom on the premium paid. In addition, communicating this to a senior audience that is unfamiliar with insurance at renewal time (especially when there hasn't been a large loss) can also pose problems. How do you clearly show this trade-off between cost and risk without becoming embroiled in the detail of individual covers across different businesses and individual countries?

What is needed is an approach that allows insurance managers to fully understand what the key drivers of risk are, how they may be mitigated, and how different strategies balance the need for protection against losses at an affordable cost. Yet at the same time, all this detail needs to be summarised in a format easily recognised and understood by senior management, so decisions can made based on data driven insights and market intelligence to optimise premium spend as well as highlight were risk mitigation initiatives will add the most value.

How it works in practice – downstream oil company case study

The insurance manager of a large oil company with interests in refining, construction and chemicals was concerned that they was no longer purchasing the 'right' insurance programme. For some time their company had been acquiring new businesses and had also divested some other businesses over the same period, resulting in a significantly larger business with a different mix of risks. In addition, the hardening market had meant their predecessor had purchased less insurance than in previous years, which they feared had resulted in more risk being retained than senior management realised. Their concerns were underlined by a more conservative approach to risk that had been adopted by the new management team and they wanted to review the company's insurance strategy in order to ensure alignment with the new and more prudent approach.

Fig 1: Energy loss forecasts, by country and type of year

Forecast Energy Losses in next Policy Year				
Type of Year	Country A $m	Country B $m	Country C $m	Country D $m
Good	0	1	5	10
Average	1	5	12	100
Bad	5	100	250	1,000
Catastrophic	15	500	750	6,000

Source: Willis Towers Watson

In discussions with them, it became clear that there were four key questions that needed to be addressed:

1. What are the key loss drivers?
2. What is the likely quantum of insurable risk arising from these businesses and how volatile is this risk?
3. How effective is the current insurance programme?
4. What available alternatives are there? How do these compare with the current programme for:
   a. Expected cost, i.e. premium and retained losses
   b. Cost of retained losses in a bad year?

Quantifying risk

By combining their company's own data with industry data, detailed and up-to-date knowledge of the available risk transfer markets and modern analytics, we quickly developed a better understanding of the company's risk exposures and their variability.

The exhibit above shows both the quantum of the company's energy risks in each country as well as how volatile these risks can be. From this, we were able to show where the risk in a particular country exceeds the risk appetite (shown in red in Figure 1 above) indicating where insurance was required to keep the risk within appetite.

Furthermore, we were also able to show how these risks varied by activity as shown in Figure 2 below, which helped to ensure these businesses were buying the optimal insurance cover in relation to the risk exposure within each business.

The final two questions were addressed with our Connected Risk Intelligence approach, which shows the impact of different insurance strategies on the company's cost budget and risk appetite. By considering all the energy risks in a single portfolio view, we were able to show how effective the current insurance program was, as well as comparing the merits of alternative structures. Figure 3 on the next page shows the range of different insurance strategies (each dot represents a different strategy) that are possible for this company.

Fig 2: Energy loss forecasts, by type of business and type of year

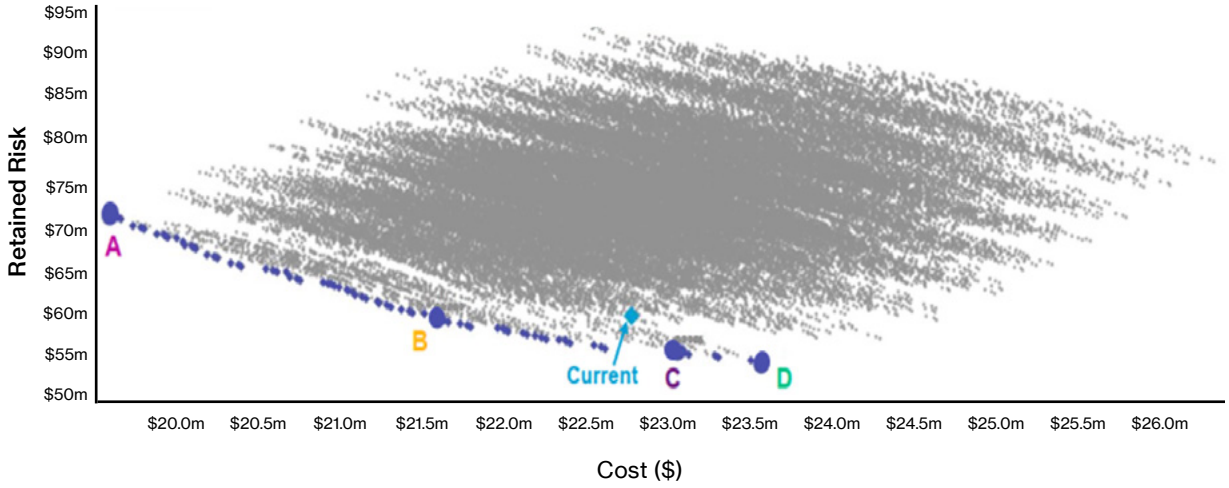
Forecast Energy Losses in next Policy Year				
Type of Year	Downstream $m	Midstream $m	Generating $m	Upstream $m
Good	6	9	0	0
Average	94	22	1	**1**
Bad	915	400	25	15
Catastrophic	4,500	2,100	325	340

Source: Willis Towers Watson

Fig 3: Range of possible efficient insurance structures, with associated retained risks and costs

Risk: Retained losses (Total) at 95th percentile using TVaR risk measure

Cost: Premium plus median retained losses



Source: Willis Towers Watson

- The horizontal axis shows the **expected annual cost** of the insurance strategy, which is made up of the premium spend and the cost of the retained losses.
- The vertical axis shows the **amount of retained risk in a 'bad year'**, which here was defined as a 1-in-20-year event.

The objective was to reduce the amount of retained risk and at the same time reduce the expected annual cost and move to a more efficient programme, closer to the edge of the "cloud" in the above diagram.

The purple dots show the suitable efficient insurance structures – that is those structures have the lowest cost for a given level of retained risk. The first conclusion we could draw was that the current structure was inefficient and that there was money left on the table that could be put to better use. There were 4 alternative strategies, each with its own merits that we then considered:

- **Option A** offered the lowest cost but had the highest retained risk. This retention was not in line with the company's new and more prudent view of risk and was rejected.
- **Option B** offered the lowest cost, without taking on any more risk, and whilst attractive, was also rejected on the grounds of the still high level of retained risk.
- **Option C** had a slightly higher cost than the existing program, but with lower risk.
- **Option D** had the highest cost of all the 4 alternatives, but with the lowest level of risk.

Option C was selected, as it offered the lowest risk within the budgetary constraints imposed by the CFO.

The Insurance Management team found this process extremely helpful as it enabled them to:

- Better understand their risks and their associated volatility
- Explain the benefits of insurance easily and clearly to senior management
- Highlight the key differences in risk and cost between the various insurance programmes

The approach was also highly valued by the Treasurer and CFO since they were familiar with risk transfer and risk hedging, but less familiar with insurance, our results provided them with a clear audit trail of objective decision making.

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Risk engineering: innovation in communication

Introduction: the value of communication

Effective communication of ideas, views, calculations and assessments is more important today than at any time in the past 20 years. When the hard insurance market conditions, making renewal negotiations more challenging and time intensive, is combined with the myriad of changes to our professional lives brought about by the global pandemic, there is now a real need for innovation in communicating effectively in today's risk management environment.

An increasingly complex business environment

For risk engineers, the ability to convey the condition and quality of an insured's assets, their procedures and staff competency is vital to the insurance placement process. This factor is set against a background of an increasingly complex environment that is adding to and augmenting traditional risks pertaining to operating and project assets. The changing business environment, which needs to balance advances in digitalisation, automation and manpower levels, creates unique risk dynamics for each organisation and demands greater analysis than in previous years. Added to this is the challenge that climate change is creating, with the introduction of new technology risks and the elevation of existing construction risks as companies seek to adjust their asset mix as part of their carbon reduction pathway strategies. These are all reasons for greater clarity.

There have been many enhancements in the risk engineering field over the years, covering loss modelling, risk assessment and the execution of risk surveys, to name but a few. Where there has been little by way of innovation is around how these insights are communicated to improve awareness and understanding.

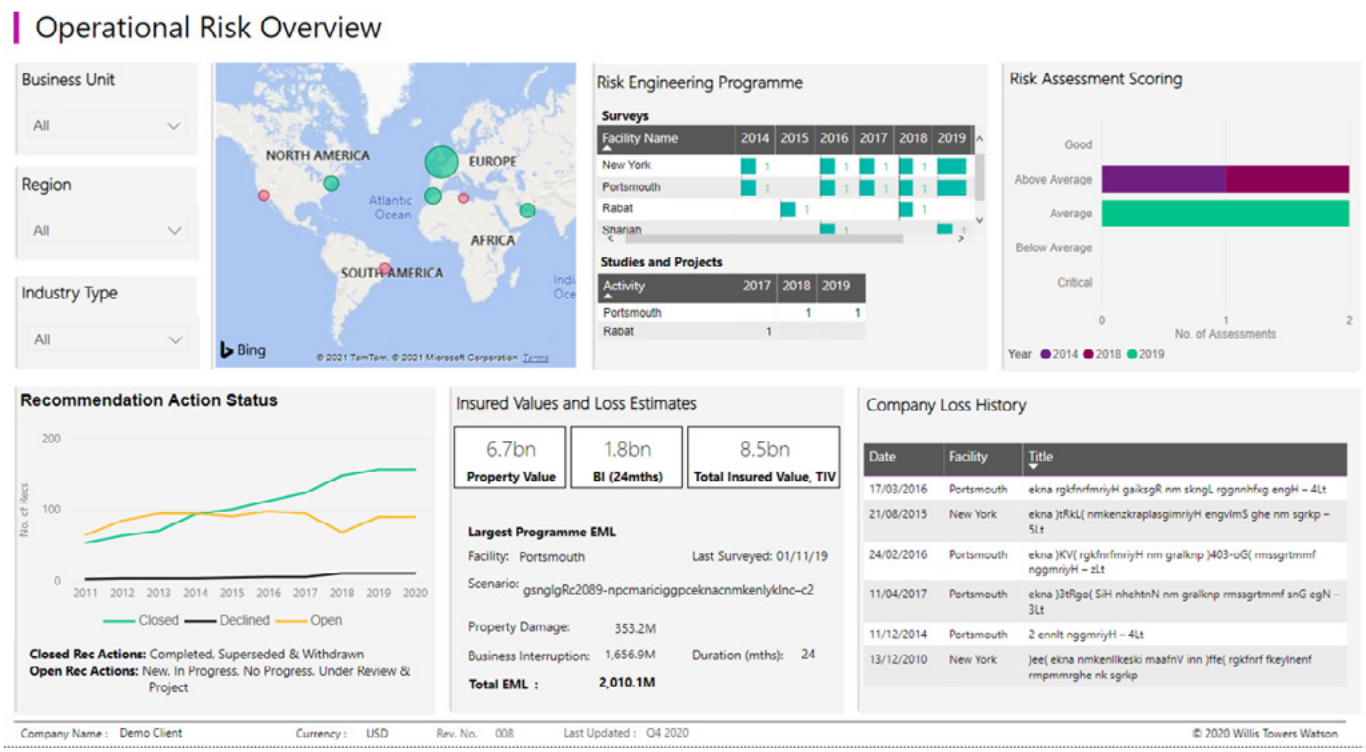
The written survey report needs some help...

With challenges outlined above and recognising people generally spending more time online on their phones and tablets, the written risk survey report, the main communication tool for over 20 years, needs some help in the 21st century - for all its strengths.

The development of on-line risk engineering dashboard portals

Looking to address this issue directly, risk intermediaries are now creating on-line risk engineering dashboard portals that provides a range of benefits in communicating risk data and insight to all stakeholders. These dashboards are designed to address the principal challenges facing both insureds and insurers today; furthermore, they enhance the value of the risk engineering service provided, making the analysis and conclusions more accessible and easier to understand. These attributes provide significant advantages to users who have limited time to analyse and assess risks.

Fig 1: Sample Risk Engineering Dashboard screenshot



Source: Willis Towers Watson

Traditional survey report challenges

Even through the pandemic, Risk Engineering teams continue to conduct risk surveys; they continue to be a proven means of effectively assessing operating facilities across the oil, gas, refining, petrochemical and power sectors, in support of insurance placement activities. However, the associated survey reports, which are normally used to conveying insights and conclusions, are typically quite extensive, highly technical and can be time-consuming to digest.

Reports are still required for a variety of reasons, including establishing a deep understanding of facility risks for the highly technical readers. However, as mentioned earlier assistance is needed to drive through key learnings more effectively to a wider audience.

The dashboard advantages

The introduction of risk engineering dashboards, alongside survey reports, allows for risk information to be presented in a more concise format, enabling greater assimilation of the risk information, insights and conclusion. This saves time for everyone involved and reports are still available to drill deeper if required when there is more time.

There are also additional benefits, namely:

- Greater accessibility of information, avoiding the need to wade through pages of a survey report.
- Simpler presentations, especially at the higher level of data.
- Various levels of detail to suit a range of user needs, which can be accessed to the users' requirements. Senior underwriter and insured board executives can access the high-level critical insights provided by the dashboard without being swamped with detail. Likewise, operational users such as junior underwriters, facility managers, etc., can access increasing levels of detail that lie behind the high-level insights required to fulfil their roles and responsibilities.
- An enhanced understanding of facilities prior to risk surveys, offering opportunities to optimize survey time either to drill deeper into key issues or reduce time on site.

These benefits are crucial for communication improvements but also offer additional value from risk engineering services moving forward.

Enhanced risk insights

The ability to visualize risk data in a more fluid and dynamic manner has created the opportunity to realize additional risk insights that were inaccessible from reading through survey reports. We believe this represents a step-change in risk data presentation which offers the following additional benefits:

- A greater clarity around risk identification, quantification and measurement, including the basis and origins of insured values.
- A deeper understanding of risk recommendations through categorization, providing guidance on strengths and weaknesses that were not visible from prior analyses.
- A portfolio view of risks, enabling anomaly and outlier detection as well as the identification of systemic strengths and areas for improvement.
- The opportunity to visualize risk data across multiple survey reports from multiple years in one place.
- The ability to structure information, providing analyses from multiple perspectives, either on site or corporate level activities.

Realizing these additional insights and conclusions are essential if insureds and insurers are to stay on top of the changing risk landscape. Risk engineering dashboards can assist and are anticipated to play an increasing role in risk management activities going forward.

Risk governance and informed decision-making

As has been discussed in this article, enhanced communications between insured and insurers is crucial as we move into a more challenging future business environment.

There is also an equal desire to ensure that the risk communication landscape within operating companies is equally efficient. For example, an area that is a constant challenge for risk engineers, and for the wider insurance sector, is ensuring that risk improvement recommendations have been understood correctly and are being progressed in a timely cost-effective manner.

Having the ability to visualize risk recommendations and associated information in the same way across an organization's departments and geographical locations allows for greater insight, agreement and timely completion.

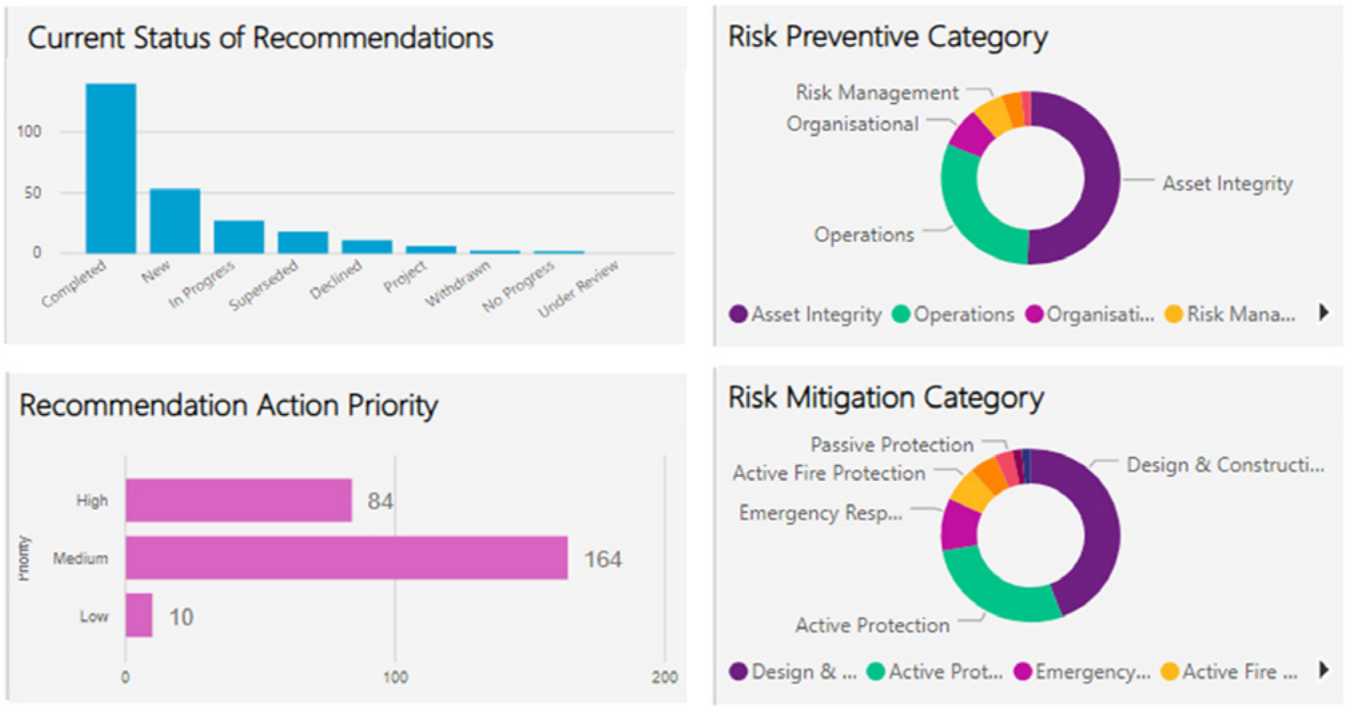
Risk governance benefits

Intelligent categorical analysis changes in company risk appetite and systemic issues can be revealed to promote additional risk improvements, leading to more timely and robust risk management decision-making. Anticipated benefits include:

- Better connectivity across company functions and locations
- The ability to track key metrics more effectively and to identify inter-relationships that exist between risks across business areas or facilities
- An interactive platform, to inform decision-making and risk governance
- An increase in risk engagement between key stakeholders
- Better loss management analysis
- A support for internal controls and compliance management
- Improved auditing of risks across the companies
- The provision of more efficient evidence for business leaders and stakeholders that risk management activities are being undertaken

This increased clarity on risk matters across a company can provide significant cost savings and more effective decision-making, both in terms of risk reduction activities and risk transfer strategies. It can also help to dampen the effect of loss events.

Fig 2: sample detailed recommendation analysis



Source: Willis Towers Watson

Conclusion: this is just the start of the journey

The future of a risk dashboard approach to communicate risk insight data derived from risk surveys is only the start of the journey. There are many enhancements anticipated with improvements in visualisation and data analysis, which will be to the benefit of the entire risk community.

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OIL: continuing to deliver long-term, stable benefits to its members

Advertisement feature: This article is provided by Oil Insurance Limited (OIL) and includes details of OIL's position in the market. This is provided for information purposes only.

Introduction: weathering the COVID-19 turmoil

2020 was a year that changed the world forever in a multitude of ways. One requires no explanation of the global damage COVID-19 inflicted; however, Oil Insurance Limited (OIL) continued to deliver the long-term stable benefits the members have grown accustomed to while elements of the commercial market were anything but steady. The pandemic also negatively affected the way commercial insurance policies were renewed, negotiated, priced and worded from a buyer's perspective, in addition to an already hardening underlying energy insurance market. In contrast, OIL weathered the COVID-19 turmoil with minimal disruption and continued to operate uninterrupted delivering value to our members. OIL policies automatically renewed, limits remained the same, coverage remained broad, deductibles were left unchanged and pricing remained stable.

Five new members in 2020

For the year, OIL welcomed five new members: United Refining Co., Pembina Pipeline Corp., Ecopetrol S.A., Federated Co-Operatives Ltd., and Inter Pipeline Ltd. All five companies are located in the Americas – one in the USA, three in Canada and one in Colombia. This was the largest number of companies joining OIL in a single year since 2003; no members departed, and membership now stands at 60 companies after two members acquired two additional members. It is also important to note that several other energy companies sought OIL membership but did not meet OIL's current eligibility requirements. Overall, there is no doubt that global interest in OIL is growing. In some respects, the dynamics in today's energy insurance market are not unlike the late 1960s and early 1970s, when markets withdrew coverages and capacity from the sector - leading to OIL's formation.

Strong earnings results

Financially, the company once again posted strong earnings results with Net Income coming in at US$467 million for the year. Return on invested assets was 7.4% and drove Net Investment Income of US$420 million while Net Underwriting Income contributed US$67 million. Expenses remained flat at US$20 million and the company paid US$200 million in dividends to its shareholders late in the year. Over the past seven years, OIL has returned US$2.25 billion to its shareholders via dividends, which equates to 94% of OIL's Net Income and 73% of Written Premium over that same period.

The next five years – a new strategic plan

Perhaps the most important news is OIL's current development of its next 5-year strategic plan. With the energy industry in transition, OIL is preparing itself for our members' future insurance needs. Our Advisory Panel provided us with input in the fall of 2020; our members completed a survey in early 2021 and now the Board will deliberate over and determine our new strategic direction by the end of 2021.

No reliance on outside capital and reinsurance

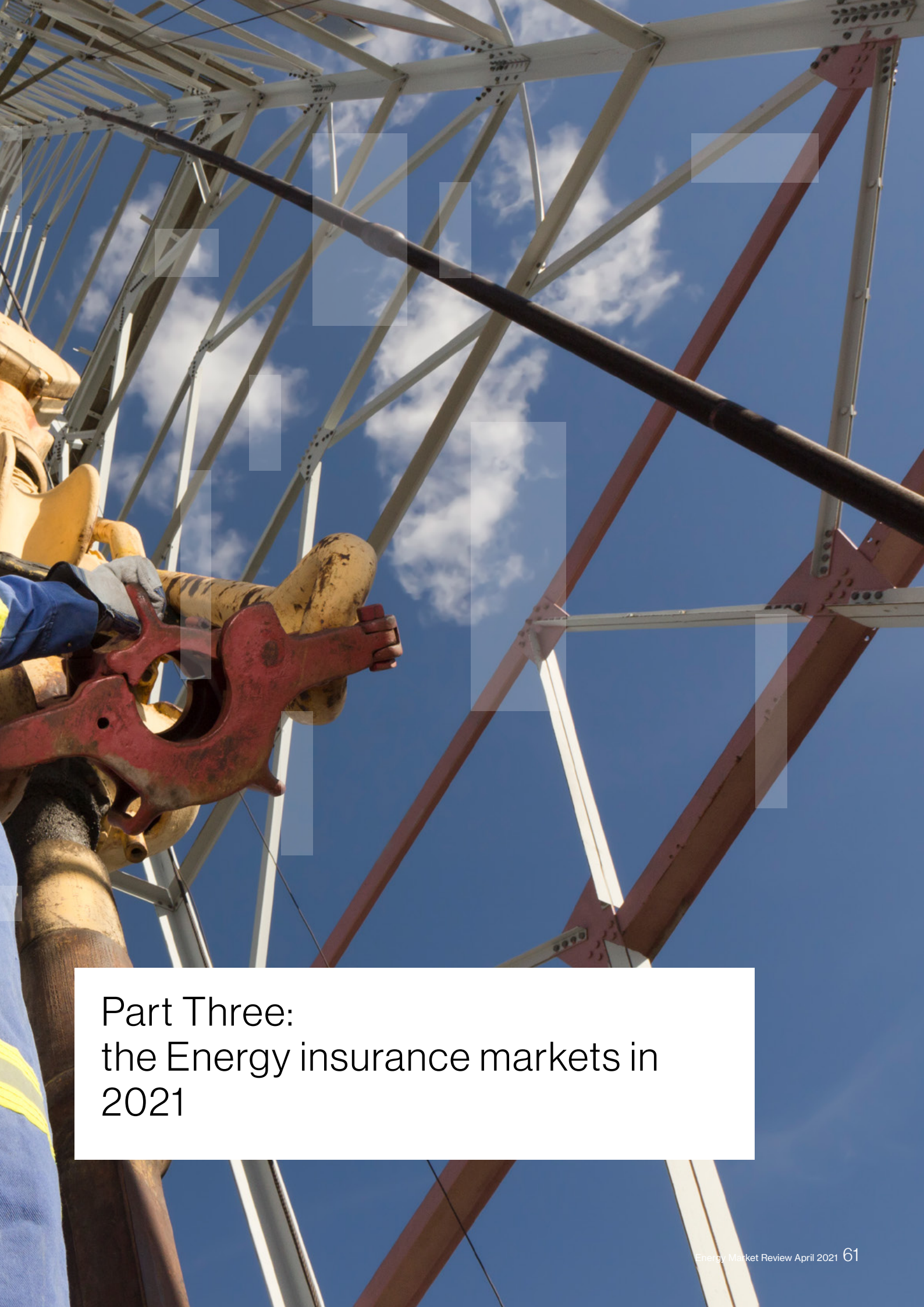
Without doubt, OIL's most important strategic advantage it has over other energy insurance providers is its complete lack of reliance on outside capital and reinsurance. Collectively and intrinsically, our members provide over US$2 trillion of capital support to OIL, based upon how the mutual system works. This enables it to chart its own path through the maze of ESG pressures organizations are experiencing around the world. We intend to provide both traditional oil & gas - as well as renewable/new energy technologies companies - with the ability to insure their operations, irrespective of their strategic direction. OIL is there to support our members and prospects based upon their internal decision-making, not the directions set by others.

The road ahead – making the journey together

Each company has its own view of what the future looks like and how their company will participate in that future. Our job is to see to it that they can make decisions based upon rational criteria versus politically driven thresholds. "The Road Ahead – Making the Journey Together" is OIL's 2020 annual report theme; it could be the theme of the 5-year strategic plan as well.

OIL is a Bermuda based energy mutual that offers its members up to US$400 million in net property, control of well and sudden & accidental 3rd party pollution coverages. Should your company have an interest in learning more about OIL, please contact your local WTW representative or Paul Braddock on:
paul.braddock@willistowerswatson.com

George Hutchings is SVP & COO of Oil Insurance Limited and based in Bermuda.



Part Three: the Energy insurance markets in 2021

Executive Summary

General

Conditions in almost every arena of the Energy insurance markets continue to harden, albeit not quite to the same extent as 12 months ago:

- In particular, those programmes that have already had significant rating increases imposed on them during the first phase of the hardening insurance market are now finding that further rate increases imposed this year are generally more moderate in nature.
- As a result, a “two-tier” market dynamic is beginning to evolve, between those programmes that insurers truly value from a risk profile, premium income and long-term relationship perspective, and those which insurers value less unless stronger underwriting measures are put in place.
- The COVID-19 pandemic has had a significant impact over the course of the last 12 months, not only on energy industry activity and asset/BI valuations but on the speed of the overall insurance market renewal process.
- In the meantime, the recent rise in oil prices may well offset some of the downturn in Energy insurance market premium income levels which, despite the hardening market conditions, have flattened due to reduced Exploration & Production activity and reduced BI values.

Upstream

Positive factors limit the extent of market hardening:

- Realistic capacity is now at record levels (US$7 billion), with no sign of withdrawals.
- Some insurers now have significant growth targets, fuelling competition.
- Reinsurance cost increases at January 1 were more modest than anticipated.

However, negative factors ensure that the overall hardening dynamic remains:

- The sector suffered a decline in E&P activity and in BI/loss of production income values during the COVID-19 crisis.
- Continued losses in other parts of the property and casualty portfolio weigh on this sector.
- Underwriters face continued management pressure to maintain hardening momentum.

Overall, a benign loss record has kept the portfolio in profit:

- 2020 continued the benign overall loss record of the previous three years.
- Premium income was impacted by lack of E&P activity, but we expect total premium will fall only 5% compared to last year.
- Lloyds statistics point to overall profitability, although Offshore Property results are much superior to Onshore Property and OEE.

Offshore Construction portfolios continue to deteriorate:

- This subsector has seen a significant disparity between premiums and losses for each of the last three years, with losses outpacing premiums.
- One major leader has withdrawn from this portfolio entirely.
- Others maintain a presence, but the enthusiasm for subsea projects in particular is much diminished.

Rating increase guidelines:

- Major E&P programmes: +5%
- Small/medium lease operators: +5-7.5%
- Offshore contractors: +5-10%
- Onshore contractors: +7.5%-12.5%
- Midstream: +12.5-20%
- Offshore CAR platforms: +20%
- Offshore CAR subsea: +50-75%
- Loss-affected business: exponential

Downstream

Positive factors restrain the hardening process for the most sought-after business:

- A much-improved loss record led to a generally profitable 2020 – and less steep rate increase expectations for 2021.
- An increased premium pool, a result of increased rates charged in last 24 months, promotes market interest in the attractive risks.
- We have also seen increased capacity, with no major withdrawals this year.
- Some buyers are approaching the marketplace with a strategy of retaining more risk.

Negative factors mean the hardening process continues for the rest:

- There may be a possible impact of the recent Texas cold weather losses on this class.
- Downstream is also affected by the unprofitability of related sectors, including power, mining and renewables
- Insurer management is exerting pressure to maintain the hardening momentum.

COVID-19 has impacted BI values:

- Oil prices plummeted at the start of the outbreak.
- The dramatic reduction in economic activity has led to market suppression for many downstream companies.
- The current volatility in oil prices and economic activity is likely to have a profound effect on the volatility of Downstream BI values for the foreseeable future.
- The new market clause LMA 5515 factors in maximum percentage of the margin of error between actual and declared values, as well as any premium adjustments – so it is vital for buyers to keep values up to date and accurate if full the quantum of future BI claims are to be paid.

Rating increase guidelines:

- Tier One: good clean risks – insurers have received sufficient payback during last two years. Rate increases are less than they have been (+12.5% to +20%).
- Tier Two: Programmes still not at the right benchmarked rating are seeing harsher treatment (+25% to +40%).

Liabilities

Social inflation foundations of current hard market conditions still in play:

- Statute of Limitation reforms
- Growing litigation funding
- Higher jury awards
- Increased general costs of repair

The result has been continued gloom for buyers:

- Capacity above a certain limit is unavailable at any price - a truly hard market
- Only $1 billion realistic capacity available, $800 million for refineries/petrochemicals, onshore/offshore follow form capacity just $250 million
- New, volatile and openly opportunistic insurers now targeting this market to secure increasingly favourable terms

Losses continue to be reported:

- Midstream/pipeline pollution incidents
- Gas pipeline explosions
- Refinery and chemical plant explosions
- Product liability losses

Emergence of two-tiered approach:

- The potential top-tier energy programs are recognized by quality of risk, stronger loss and incident records and acceptable operational exposure, especially in the areas of ESG.
- A second tier consists of those programs whose assets and operations are considered more difficult to underwrite as compared to the first tier, along with problematic losses.

Rating increase guidelines:

- International Liability 25-40% (more for loss-impacted business)
- Upstream Liability 10-12.5%
- US Excess liabilities 25-50%

Berkley Offshore's Mike Hayes: offering better service for longer term Liability clients

Mike Hayes (MH) is Senior Vice President at Berkley Offshore Underwriting Managers and has over 35 years' experience in the London insurance market. In this interview he talks to Willis Towers Watson's head of Liability in London, Mike Newsom-Davis (M N-D) about the current conditions in the Energy Liability markets, the current challenges facing insurers and the value of energy companies maintaining long term relationships with insurers.

M N-D *Mike, the Energy Liability portfolio has had a couple of years now of hardening market conditions. In general terms, how has the portfolio performed during the last 12 months?*

MH The real rating increases in Energy Liability started in the first quarter of 2020, where we saw increases of between 3-10% on what was a fundamentally unchanged renewal portfolio; for the remainder of the year, the rates hardened some more, and by December they averaged around 35%. It was tempered slightly by geographic scope– during the first quarter, some European markets were seeing less increases, while for regions such as Australia, Canada and Latin America, larger increases began to show through.

M N-D *What was the rationale for these increases? Has the portfolio now attained technical rating adequacy?*

MH Essentially, the reason was that rates were predominantly soft in the first place. In terms of technical adequacy, it's important to compare apples with apples. Take pollution cover as an example; on some risks, we have gone from a 30-day discovery/90-day reporting provision to a 7-day discovery, 21-day reporting provision, which would not generally be reflected in the actual rates charged. However, from a technical rating perspective this development is helpful as a benchmarking tool.

M N-D *Do you think that Energy capacity has reduced due to losses in such sectors as Mining and Wildfires, even though the industry is not connected to these losses?*

MH Not really. Energy capacity is still generally available, although some markets may offer less due to appetite or their individual portfolios. The one region where capacity has indeed reduced has been Latin America, mainly because of a lack of information accompanying renewal submissions from this region. The two sides of paper which might have been sufficient in the past is no longer enough; we need a thorough review and assessment of detailed information, be that regarding health and safety, the risk management approach, the loss mitigation data etc. We are especially interested in pipeline data: is it crude coming through? Is it just gas? What is the pollution exposure resulting from these operations? There are a myriad of questions which underwriters need to ask, and we have just not been getting this information from this region. So for those programmes we can't really release any terms that actually make any sense, until we get better data.

M N-D *We have seen the Liability portfolio profitability declining markedly over the last few years –as reflected in the most recent Lloyd's results. What is your view of the Energy portfolio - is it the same for this class? Or is it the Liability losses for your portfolio as a whole that drive your underwriting strategy?*

MH That's not an easy question to answer because there are so many different factors in play. I can't speak for other insurers, as individual strategies will depend on the shape of individual portfolios. We have our own definition of Energy business at Berkley Offshore, but some insurers might have a wider one; for example, some will include chemicals and others may not. From our own perspective, we have seen the Energy portfolio as profitable and I would reiterate that; I can't say that this would be the case for other insurers. The focus is about risk selection, developing and continuing important client relationships, as well as building up trust via the brokers.

From an Energy perspective, we have seen some large refinery explosions, as well as pollution from rupture/pipe leakages, with the resulting injury/damage from such incidents. These are significant losses, but they may affect insurers in different ways, as an example depending on whether the insurer writes on a primary or on an excess basis. Buyers need to ensure they are purchasing sufficient limits for the potential catastrophe exposures.

But one thing's for sure – the market stands ready to renew those programmes where we have been impacted by large claims - so long as we get the baselines right regarding information quality. For example: now that you are aware of the claim, could it happen again? Have the right mitigation and loss prevention measures been put in place? If the buyer can answer these questions properly, then we don't think we should just pay a claim and then fail to renew the programme. The key is the frequency factor– Energy is a catastrophe portfolio, and as such it's not generally characterised by attritional losses. If we were suddenly looking at multiple losses which provided risks with poor returns, that's when consideration is taken to withdraw.

M N-D *As the hardening market conditions continue into another year, is there a danger that rating increases are unfairly compounded, year-on-year?*

MH As I said earlier, in 2020 the rates changed from single digit increases in the first quarter to an average of 35% by the end of the year. It's true that as we approach the end of the first quarter of 2021, we have seen those rates continue to increase. For example, Europe is a particularly significant region for us in the first quarter, and we have seen European rates go up by a further 20-35%. But I would temper this by saying that if a risk had been corrected or rated according to its exposures, that correction should not occur again for the second year. So the buyers will see increases, but not for every risk if potential exposures remain unchanged – if there are indeed increased exposures, then insurers would have to rate around that. So there will still be increases, but not to the same extent as last year.

M N-D *Does that mean you have achieved technical rating adequacy for those risks which suffered rises last year? Logic would suggest that those risks should basically go flat going forward.*

MH Just because it is a hard market, it's poor business practice to say to a client, I'm increasing the rates anyway without any justification. You should really rate around the metrics, not just increase rates because of market conditions. Whether the market will flatten out is difficult to say so early in 2021. It may depend on the business trades; some of the wider risks that include some US content or US operations could see larger rating increases. This is predominantly because of US award inflation; some of the US auto awards in particular have been nothing short of crazy recently. So for this business, there has been a trend towards increased attachment points and rating levels.

M N-D *How does Berkley Offshore differentiate itself from some of its larger competitors?*

MH When we set up Berkley Offshore, we wanted to do something niche with specific areas of expertise; we are small and nimble, we are not there to compete with the larger markets and nor do we wish to. But by offering something that was bespoke and specialised, we could offer something that clients wanted - knowledge of our subjects, which we have achieved by surrounding ourselves with a good, experienced and innovative team. We also wanted to put an emphasis on service, whether it be a quote coming in to review information, or whether it be meeting with a client or a broker. For us, communication is massively important – we want to respond as quickly as we can. We think this is an aspect that could separate us from our competitors, where some may have extensive portfolios and may find it challenging to respond in such a bespoke way.

"The two sides of paper which might have been sufficient in the past is no longer enough; we need a thorough review and assessment of detailed information, be that regarding health and safety, the risk management approach, the loss mitigation data etc."

M N-D *It's true that poor underwriter service is the biggest complaint that we receive from the client base.*

MH I'm not surprised; we also receive feedback from other brokers that this is still the case. Here at Berkley Offshore, we will always try to respond as soon and efficiently as possible; we think that it's the small things like this that may assist in the wider picture for buyers. We have all sat in our homes working during this pandemic and yet we are fortunate that we now have the technology to keep communicating effectively with our clients and brokers online. For us, the client relationship remains absolutely critical; we welcome as many client meetings as we possibly can. For each meeting, we do our research and brief ourselves on the latest developments at that organization and we want to ensure we can ask the right questions and increase our knowledge with these respective clients. Our experience suggests that clients want their underwriters to show an interest in what they have been doing.

M N-D *Have you found that this approach has resulted in clients actively requesting a deeper relationship with Berkley Offshore?*

MH Absolutely. It takes many years to build that client relationship up, and it gives them the confidence that you understand their business. While we are going through the pandemic, that ability to still speak to our clients through technology has been essential.

M N-D *So do you think that those clients that have shopped around during the soft market to get the lowest pricing are now finding themselves disadvantaged compared to others in their peer group?*

MH Yes, I do! We are fundamental believers in longevity. Both the clients and insurers have to go through some of the softer phases of the cycle as well as this harder phase together to come to a long-term landing. The key is no surprises; if the client is briefed and has sufficient early warning, then their expectations can be managed. Insurers don't appreciate programmes being tendered every year purely on the basis of establishing the best price at the time. In such cases, we will simply walk away from those tenders, as by definition they won't represent a long-term proposition for us or the market. We believe in a client that shows some loyalty, through the good times and the bad, and of course we as insurers also have to show the same loyalty.

M N-D *What's Berkley Offshore's view on terms of providing Cyber coverage to clients? At the moment, so many Liability policies are still silent on this issue.*

MH Indeed, there is a tendency for our Liability product to be silent on Cyber; most insurers' portfolios have been in the past. The concern here is not really knowing what you as an insurer are giving or indeed not giving - until there is an incident, and then both insurers and clients are at the mercy of the courts. It's also a concern for the reinsurance treaties that sit behind us. So implementing clauses such as provided by the recent Lloyd's Cyber Exclusions LMA 5468, LMA 5469 and LMA 54670, together with the two buy-backs, should provide much more clarity on the Cyber coverage provided. From the conversations that we have had with both brokers and clients, this new clarity has been received positively.

M N-D *How have you as a Liability underwriter dealt with the issue of COVID-19?*

MH It can be difficult to implement COVID-19 exclusions. Various businesses will have different potential exposures, with insurers having variant exposures that may affect their portfolio. In the Energy sector, the risk is more remote, and we don't see a heavy footfall; for example, you won't be writing retail or care homes on an Energy programme. Our Energy portfolio is designed to be catastrophe-based; it's not designed to absorb multiple attritional losses or heavy frequency. Furthermore, most Liability insurers have a reinsurance treaty behind them and if their reinsurers insist on a COVID-19 exclusion, then the direct market will insist on it in turn. My main concern on this issue would be the US; we and other insurers have implemented a Communicable Disease Exclusion (LMA5396) on any US-exposed business. In this domicile, it's all about defence costs, whether there is 'deemed' exposure or not; these costs could impact the market even if no indemnity is ultimately paid.

M N-D *Are defence costs simply a fact of life, something clients have to learn to live with rather than try and insure against?*

MH Indeed. I would also add that no one had ever come across COVID-19 before this time last year, and now most insurers see a high percentage of their portfolio with a COVID-19 exclusion. I would add that the Australian market has the least number of exclusionary clauses; generally their exposures are more benign and in fairness to the clients, the information they provide is excellent.

M N-D *How is the changing climate going to affect the Energy Liability risk landscape?*

MH This topic has been growing in significance now for some time and I feel has been generally ignored until the last 6 months and it's an area that the market should be taking very seriously. Portfolios could potentially have some class action litigation in the US, which only reinforces my thoughts when we spoke about COVID-19 and the US costs. There are numerous factors that can contribute to climate change; some of these can include weather patterns, volcano emissions, greenhouse gasses/emissions or even the earth's orbit pattern. A number of insurers have started to do some work on this; we have seen a few risks with some exclusionary language implemented relating to agricultural chemical risks and mining. So we discussed climate change with them and implemented a climate change exclusion. What we now need to learn is the language around it, what are we covering and not covering, and this learning and understanding will continue through 2021. We have listened to various lawyers and now is the time to get some clarity before all this escalates. We haven't seen too many awards just yet, but it is certainly been spoken about.

M N-D *Do you think it is time the industry innovated more to try to bridge the gap and cover more of the really critical risks that the energy industry is faced with relating to climate change?*

"What we now need to learn is the language around climate change, what are we covering and not covering, and this learning and understanding will continue through 2021. We have listened to various lawyers and now is the time to get some clarity before all this escalates."

MH You make a valid point – in some areas, I don't believe the market is innovative enough. It's basically because of the unknown, and perhaps we as insurers need to do more research. The goal is to indeed innovate and find a way to positively respond to the challenge. This does not mean that on every risk insurers are going to impose a climate change exclusion – but there is always the concern in the back of insurers' minds that climate change may be the next asbestosis.

M N-D *I guess this comes back to the point you were making about client familiarity – if you know your client well, are you are less likely to impose these exclusions?*

MH The answer would depend on the client's exposures; it would certainly be a consideration, especially if insurers had a strong knowledge of such clients. In overall terms, I don't think that the London market is going to run away from this issue, especially for our long-term clients; I really hope that in six months' time I might have a better answer for you. No one would have conceived this situation 5-10 years ago; the potential exposures are huge, so we must quantify them and find a solution.

M N-D *Do you see overall Liability insurance market capacity, particularly for Energy, impacted by the issue of ESG in the future? Should the industry be concerned that it might one day run out of Liability market protection?*

MH No I don't believe that it will ever be the case. It's true that some insurers are having some challenges and concerns with Coal, and especially for Mining in general, where coverage for tailings dams is sometimes now being excluded. But for Energy, the capacity is certainly not reducing; we have seen many risks renewed very successfully without the factors that have affected the Coal portfolio from being an issue. There are always factors in the Energy portfolio such as pipeline exposures - their age and location for example - that may restrict the capacity on offer. I would mention that in the last few years 'general insurance' capacity has reduced; however, that has been offset by new entrants and so this development does not amount to a significant withdrawal from the portfolio.

M N-D *Finally Mike, Long Term Agreements often come up as a subject for conversation, particularly during a hard market – do you welcome such arrangements with trusted clients?*

MH My message would be that we should be flexible on this, so long as there are practical and agreeable annual review caveats incorporated. But LTAs can be irrelevant in my opinion; we are here to build longevity with our clients, and we should not need LTAs to achieve this over the long term. The long-term benefits of such a relationship will surely outweigh any perceived cost disadvantages in the shorter term. What will be interesting will be when the market softens again, how many clients will be prepared to continue with their existing markets. I would assure them that it will always be worth it for them in the long run.

M N-D *Mike, thank you very much for your time.*

Mike Hayes is Senior Vice President at Berkley Offshore Underwriting Managers (BOUM) and has over 35 years' experience in the London insurance market. The BOUM Liability team based in London was created in August 2012; it has established itself as a specialist market player in the UK & International Energy & Construction worlds, focusing on those niche business segments.

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"LTAs can be irrelevant in my opinion; we are here to build longevity with our clients, and we should not need LTAs to achieve this over the long term."

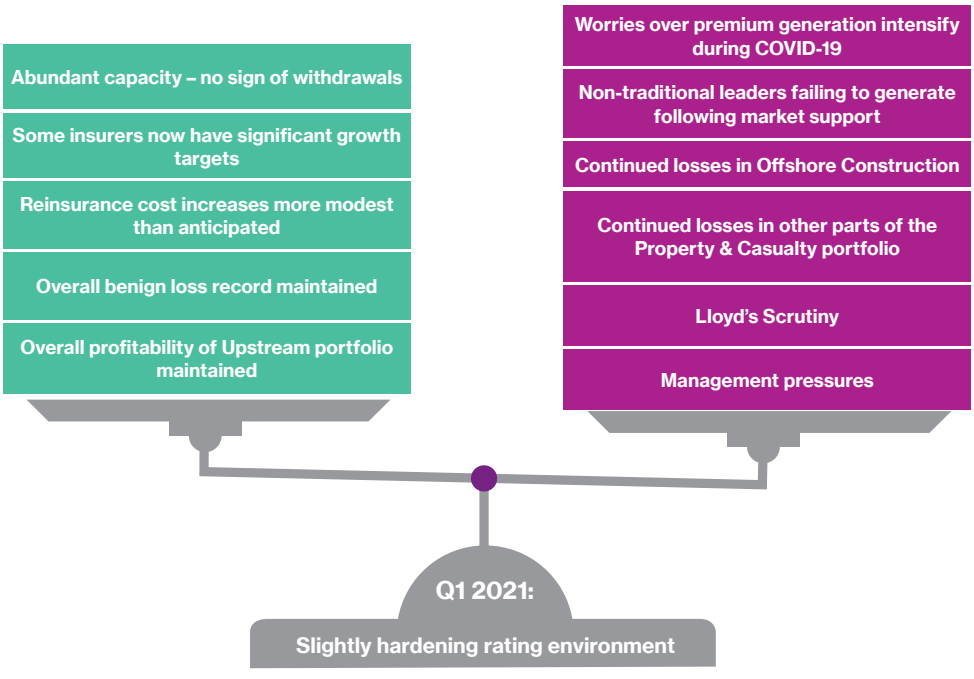
Upstream: conflicting pressures result in a two-tiered market

Introduction: hardening continues, despite good results

In overall terms, the Upstream market has had another satisfactory underwriting year. We reported last year that the hardening process in this market was considerably less dramatic than in some of its related classes of business, and that if the recent profitability of the portfolio could be maintained, then perhaps the degree of rating increases would abate as we moved further into 2021. However, the usual factors that we examine in some detail every year in this Review – capacity, loss record, premium income and leadership options – have been superseded this year by three key additional factors - the continuing impact of COVID-19 on premium income levels, the overall underwriting performance of those Lloyd's syndicates and composite insurance companies that make up this market and the poor performance of specific areas of the Upstream portfolio, most notably Offshore Construction. These factors are putting a significant break on what would normally be a softening process at this stage of the underwriting cycle.

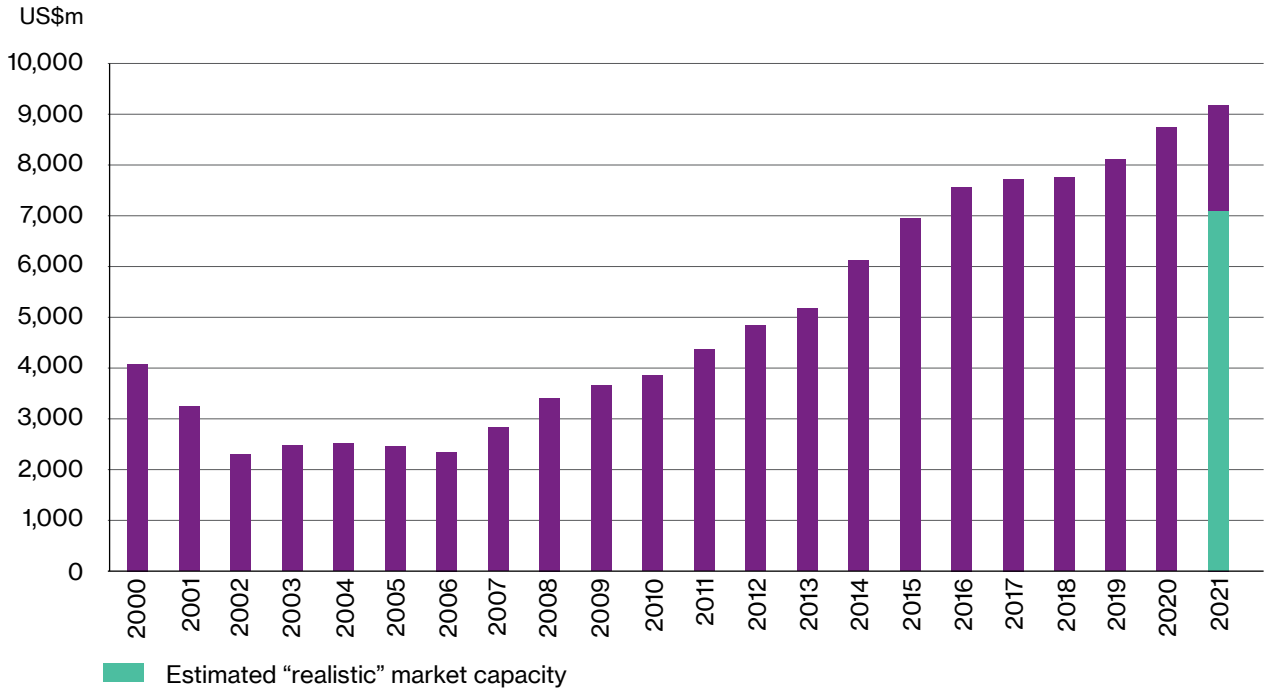
Figure 1 below summarises the various dynamics at play in the current market. Although there are some positive factors to take into account, summarised by the green boxes on the left, there is no doubt that the purple boxes still carry more weight, resulting in a continuation of the mild hardening that has characterised this market for the last couple of years or so.

Fig 1: The Upstream market underwriting environment, April 2021



While there are genuine grounds for optimism in the Upstream market, a combination of factors is marginally increasing the hardening pressures in this space

Fig 2: Upstream Operating insurer capacities 2000-2021 (excluding Gulf of Mexico windstorm)



Both theoretical and realistic capacity levels are once again on the increase – thwarting the efforts of insurers to accelerate the hardening process

Source: Willis Towers Watson

But of course there is more at play in this market than the basic general trends and questions remain about the future. How long will the basic upward trend last? Are there any signs that the overall underwriting consensus, in place for so long, is now beginning to wear a little thin? As usual, this section examines the issues of capacity, loss records, rating movements and profitability; we think that this is becoming a two-tiered market, with contrasting attitudes being made apparent for the very different risks that make up the market's constituent parts. This year, we are going examine these issues by taking each of the "bricks" in Figure 1 in turn, beginning with the green positive blocks and then moving onto the purple negative factors.

Positive factors

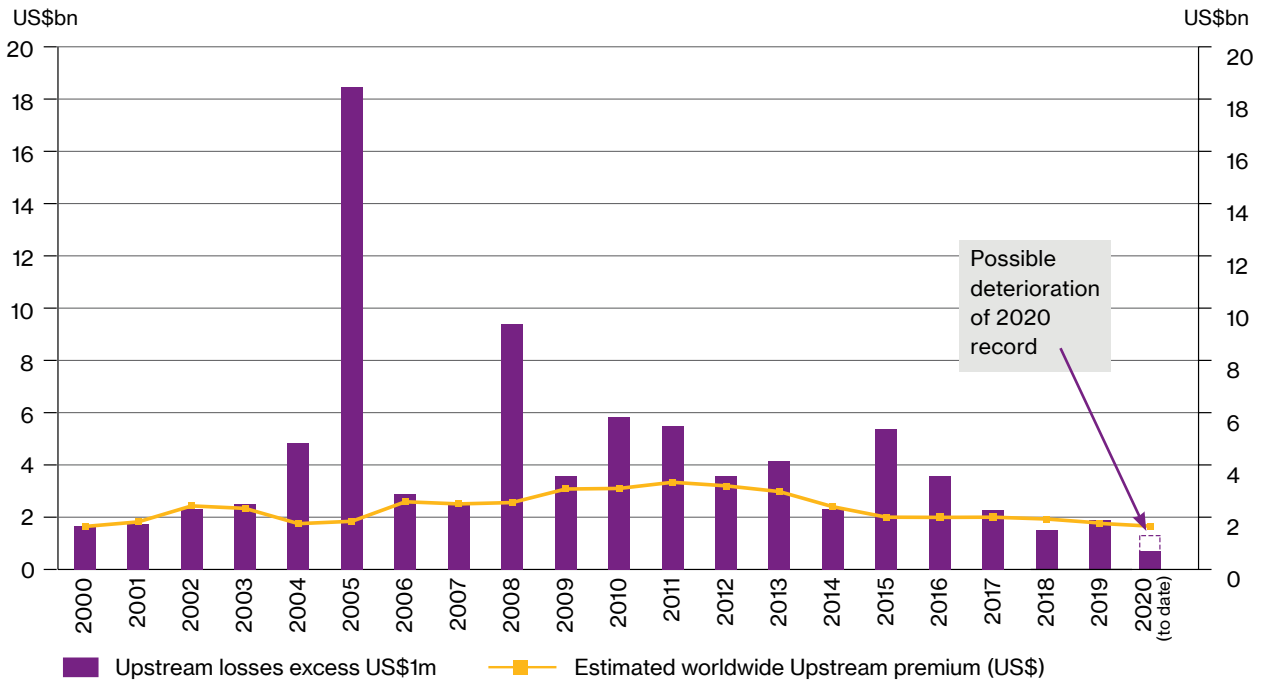
Capacity: a marginal increase, although significance declining

Not for the first time in the last decade, we can report that total theoretical capacity (i.e. that officially provided by insurers) is now at record levels; indeed 2021's figure of US$9 billion is over US$1 billion higher than at the very bottom of the old soft insurance market in 2018. Furthermore, our own estimate of the maximum realistic capacity available (i.e. what we believe can be accessed in practice for the perfect risk) has also increased, up to US$7 billion from US$6.75 billion last year. And as in previous years, there are currently no signs of any withdrawals being contemplated by any of the existing market participants.

However, it is important to remember that these are maximum stated capacity figures, and the amount available for individual programmes will continue to be subject to a host of other factors. As we will discover, capacity itself is becoming less significant than perhaps it was in previous underwriting eras; today, it is rather more a question of the underwriting decision to deploy it rather than its simple stated existence. What Figure 1 does show at least is that the supply is still there for the right risks; this factor is therefore still an important offset against some of the negative factors that we will discuss later in this section.

"Capacity itself is becoming less significant than perhaps it was in previous underwriting eras; today, it is rather more a question of the underwriting decision to deploy it rather than its simple stated existence."

Fig 3: WELD Upstream Energy losses 2000–2020 (excess of US$1m) versus estimated Upstream premium income



While 2020's Upstream loss record is likely to be the lowest this century, overall premium income levels remain modest in light of the relative lack of E&P activity

Source: WTW/WTW Energy Loss Database as of February 23 2021 (figures include both insured and uninsured losses)

New growth targets – for some

Perhaps the very first sign of a change in overall market dynamics has been a new-found enthusiasm of a small number of insurers who are usually not regarded as part of the traditional leadership panel to take advantage of the current favourable trading conditions and begin to grow their Upstream portfolio. Logic suggests that in the absence of underwriting losses, it will not be too long before sufficient numbers of the following market adopt a similar approach and begin to want to grow their portfolio as well. So from a buyer perspective this development can only be good news, even if in the short term it is making little difference to the overall market dynamic.

A modest reinsurance market renewal season

In previous editions of the Review we have shown that changes in direction within the direct Upstream market are often driven by developments in the global reinsurance markets; indeed, since 2018 increased reinsurance costs have been a very significant factor in driving rates upwards. In our October 2020 Update, we warned that increased reinsurance costs at January 1 2021 may well lead to further rating increases, as it might not be possible for the direct insurance market to absorb these increased costs without passing them on to the direct buyer.

We are pleased to advise that these increases turned out to be not as bad as some Upstream insurers had feared. Although there were some significant escalation in rates in respect of some of the higher, Energy-specific excess of loss treaties, the bulk of the reinsurance costs – mainly whole account treaties shared with other disciplines such as Marine – were limited to single digit rating increases, with considerations such as COVID-19 yet to make an impact on this portfolio.

As a result, in general terms we do not think that such increases have been passed onto the direct buyer and this has done much to take the sting out of the overall upward momentum in direct rating levels.

Fig 4: Upstream losses excess of US$5 million to date, 2020

Type	Cause	Region	PD US$	OEE US$	BI US$	Total US$
Rig	Faulty work/op error	Africa	10,000,000	0	145,200,000	155,200,000
Well	Blowout no fire	North America	0	86,500,000	0	86,500,000
SSCS	Unknown	Asia Pacific	2,500,000	0	34,850,000	37,350,000
Pipeline	Unknown	Africa	30,000,000	0	0	30,000,000
Platform	Mechanical failure	Europe	23,800,000	0	0	23,800,000
Pipeline	Subsidence/landslide	Asia Pacific	17,000,000	0	0	17,000,000
Pipeline	Anchor/jacking/trawl	Asia Pacific	15,200,000	0	0	15,200,000
Well	Blowout + fire	Africa	0	15,000,000	0	15,000,000
Well	Fire no explosion	North America	15,000,000	0	0	15,000,000
Pipeline	Unknown	Latin America	13,500,000	0	0	13,500,000
Platform	Unknown	Latin America	13,000,000	0	0	13,000,000
SSCS	Anchor/jacking/trawl	Eurasia	11,150,000	0	0	11,150,000
Well	Blowout + fire	Africa	0	10,000,000	0	10,000,000
MOPU	Unknown	Latin America	9,800,000	0	0	9,800,000
SSCS	Unknown	Europe	9,025,000	0	0	9,025,000
Well	Blowout no fire	North America	6,000,000	3,000,000	0	9,000,000
MOPU	Unknown	Africa	8,500,000	0	0	8,500,000
Pipeline	Mechanical failure	Europe	7,224,000	0	0	7,224,000
MOPU	Mechanical failure	Europe	6,578,000	0	0	6,578,000
MOPU	Mechanical failure	Europe	6,228,000	0	0	6,228,000
Pipeline	Unknown	Europe	6,000,000	0	0	6,000,000
Pipeline	Misc	Africa	6,000,000	0	0	6,000,000
Pipeline	Anchor/jacking/trawl	Asia Pacific	6,000,000	0	0	6,000,000
Well	Windstorm	North America	500,000	5,500,000	0	6,000,000
Rig	Mechanical failure	Asia	5,700,000	0	0	5,700,000
Oil sands	Fire no explosion	North America	5,480,000	0	0	5,480,000
MOPU	Mechanical failure	Europe	5,240,000	0	0	5,240,000
Platform	Unknown	Australasia	5,000,000	0	0	5,000,000
Platform	Impact	Asia Pacific	5,000,000	0	0	5,000,000

There may be still some significant add to this total when all losses accounted for – but this is still another benign year by historical standards

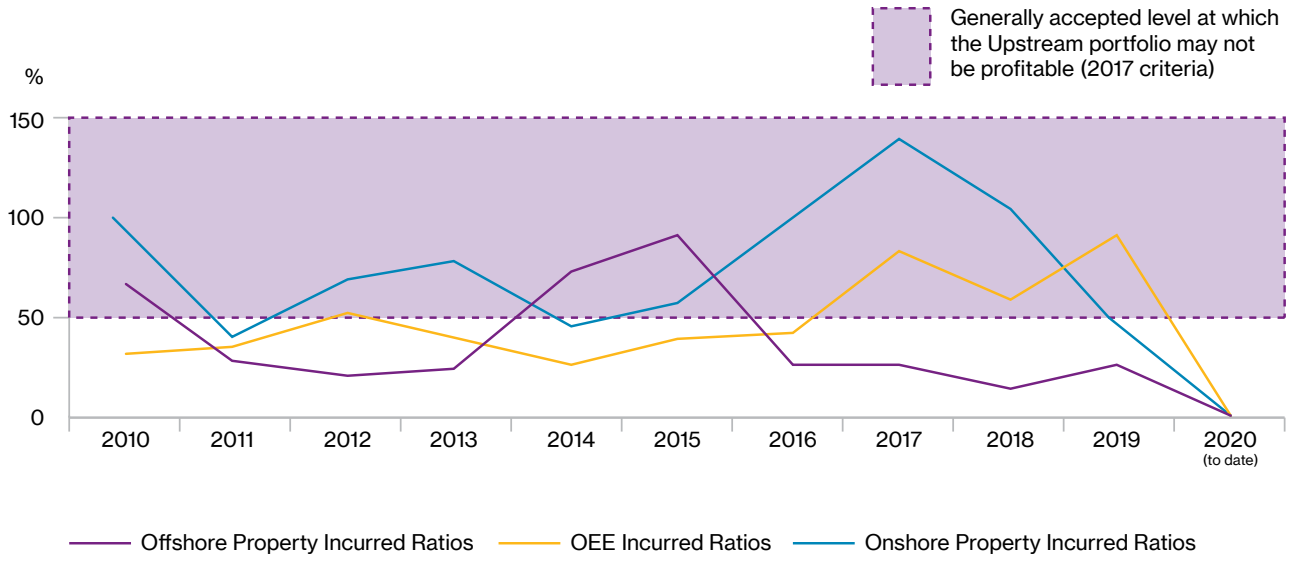
Source: WTW Energy Loss Database as of February 13 2021 (figures include both insured and uninsured losses)

Overall benign loss record maintained – despite a significant potential CBI loss

For the last two years, we have been able to report relatively benign years for the Upstream portfolio, as evidenced by Figure 3 on the previous page. Although the data for 2020 is still relatively immature (it takes a while for our Database to fully reflect all loss activity for the year) it very much seems as if the same dynamic is going to hold sway again in 2020 as it did for the previous two years.

However, this year there is one important caveat – we are very much aware of a recent explosion at an LNG plant in Scandinavia that is likely to generate a very substantial Contingent Business Interruption loss for several North Sea Joint Venture Partners. We are also aware of a potentially significant Construction loss in the Middle East, as well as damage to an Upstream facility in North Africa. These losses are likely to take the final loss total for 2020 to almost as much as our database currently registers for 2019, and possibly even higher.

Fig 5: Upstream Market Profitability 2010 – 2020



While the Offshore Property portfolio remains highly profitable, the same can not be said for OEE or Onshore Property when viewed historically up to 2019. However, 2020 is looking very hopeful for all lines at this stage.

Source: Lloyd's Market Association Quarterly Loss Report Q3 2020. "Offshore Property" – combination of ET/EC/EM/EN Audit Codes "OEE" – combination of EW, EY and EZ Audit Codes. "Onshore Property" - EF audit code.

Overall profitability maintained – for now

Figure 5 above shows the development of Incurred Ratios (premiums earned versus claims paid & outstanding) for Lloyd's of London Energy business during the last decade. Although by no means an entirely reliable indicator of overall sector profitability, these figures do at least provide a profitability comparison with previous years and indicate the general direction of travel of the three basic classes of Upstream business, namely Offshore Property, Operators Extra Expense (OEE) and Onshore Property. As we have mentioned in past editions of this Review, although an Incurred Ratio in excess of 100% obviously represents an unprofitable portfolio, following several conversations with underwriters on this issue in recent years we now would suggest that an Incurred Ratio anywhere in excess of 50% may also result in a negative overall underwriting result. The chart therefore shows that since 2016 both the Onshore Property and the OEE have been in consistent negative territory; indeed, the Onshore Property element has only once ended up at less than 50% during the entire decade. In contrast, the Offshore element of the portfolio has proved to be consistently profitable (apart form 2014 and 2015).

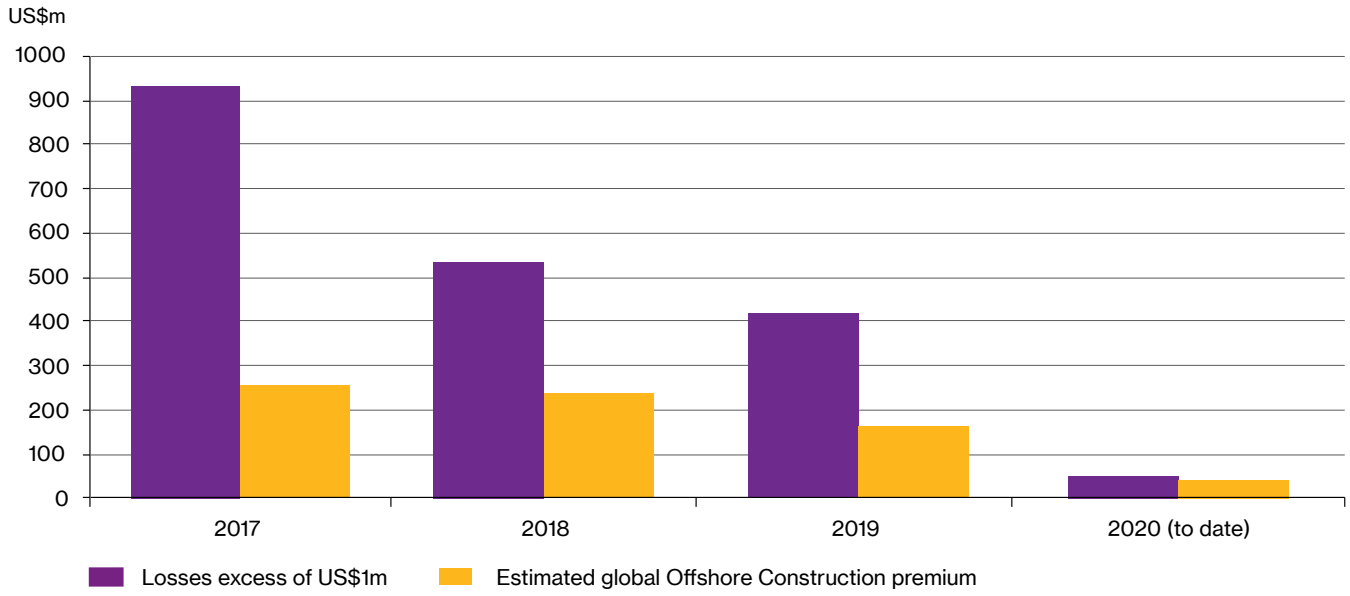
Although the figures for 2020 are still too immature to be germane, it does seem that all three elements of the portfolio are likely to end up profitable, despite the looming Contingent Business Interruption loss we referred to earlier. This is likely to add to the first signs of competitive pressure that we alluded to earlier in this section.

Negative factors

The impact of COVID-19 on Upstream premium income

In Figure 3 on page 72 we showed how our estimate of the overall Upstream premium income has actually declined slightly since last year, down approximately 5% since 2019 at some US$1.75 billion. This may come as a surprise to some observers, given the fact that rating levels have been rising for the last two years or so. However, others will not be surprised to learn that our estimates have had to incorporate the impact of the decline in Exploration and Production activity during the COVID-19 crisis, as well as the decline in Business Interruption/Loss of Production

Fig 6: Offshore Construction losses reported to date, 2017-2020



Most of the deterioration of the overall Offshore Construction loss record falls back onto the 2017-19 years of account. The outlook for 2020 looks more promising, but premium and loss data for this year is still very immature.

Source: Willis Towers Watson/Willis Towers Watson Energy Loss Database as at February 9 2021)

Income values during the same period; premium income levels associated with the Offshore Contractor portfolio have been especially impacted. The result is that the overall premium income pool continues to stagnate, despite underwriters' best efforts to increase revenue by raising rates. Indeed, most insurers are painfully aware that a major Upstream tragedy such as Piper Alpha in 1988 or Deepwater Horizon in 2020 would remove the entire annual premium income stream from the market at a single stroke.

It is therefore only the very choicest business, featuring significant premium income in well-regarded areas of the world, that are coming under any sort of rating pressure. In contrast, insurers are still looking to redress the issue of the premium pool by attempting to raise rates as far as they can on the remainder of the portfolio.

Offshore Construction portfolio continues to deteriorate

In last year's Review we expressed concern that the Offshore Construction portfolio was starting to deteriorate significantly. This year, we would suggest sadly that this development has only got worse; Figure 6 above illustrates the unhappy situation, with each of the last three mature years in significantly negative territory (the 2020 statistics are still too immature to be germane). With this portfolio led almost entirely by the major operating leaders, this development has alarmed the market; indeed one of the major leaders of the last few years has recently gone so far as to rationalise their portfolio. Others maintain a presence, but the enthusiasm for subsea projects in particular is much diminished.

"Most insurers are painfully aware that a major Upstream tragedy such as Piper Alpha in 1988 or Deepwater Horizon in 2020 would remove the entire annual premium income stream from the market at a single stroke."

Fig 7: Negative impact of overall P&C portfolio, H1 2020

	GWP (£mn)	Net earned premium (£mn)	Net incurred claims (£mn)	Net operating expenses (£mn)	Underwriting result (£mn)
Reinsurance	7,759	3,880	(2,756)	(1,380)	(256)
Property	5,104	3,317	(2,885)	(1,434)	(1,002)
Casualty	4,404	3,355	(2,358)	(1,383)	(386)
Marine, aviation and transport	1,585	1,121	(665)	(446)	10
Energy	761	445	(219)	(164)	62
Motor	405	424	(242)	(160)	22
Life	29	27	(16)	(9)	2
Total from syndicate operations	**20,047**	**12,569**	**(9,141)**	**(4,976)**	**(1,548)**

Although Energy had a profitable first half of the year in 2020, the same cannot be said for the General Property and Casualty portfolios at Lloyd's. Upstream insurers are therefore under relentless pressure to continue the upwards momentum in pricing.

Source: Lloyd's

Continued losses in other parts of the Property & Casualty portfolio

Another major impediment to the easing of the current hardening rating environment has been the continuing unprofitability of several significant lines of business within the overall Property & Casualty (P&C) portfolio, as evidenced by Figure 7 above, which shows first half results for 2020 at Lloyd's of London. Although Energy (Upstream and Downstream combined) seems to have secured an underwriting profit, it can be seen that the same can hardly be said for either general Property or general Casualty, while Lloyd's Reinsurance portfolio has also made an apparent underwriting loss for the first half of the year. These figures throw into sharp relief the dilemmas facing the Upstream market; as much as they can see that their portfolio in isolation is making money, any attempt to broaden their premium base by growing their own business by adopting a more competitive approach is being overridden by the need of their organisation as a whole to be seen to be insisting on rating increases across the board.

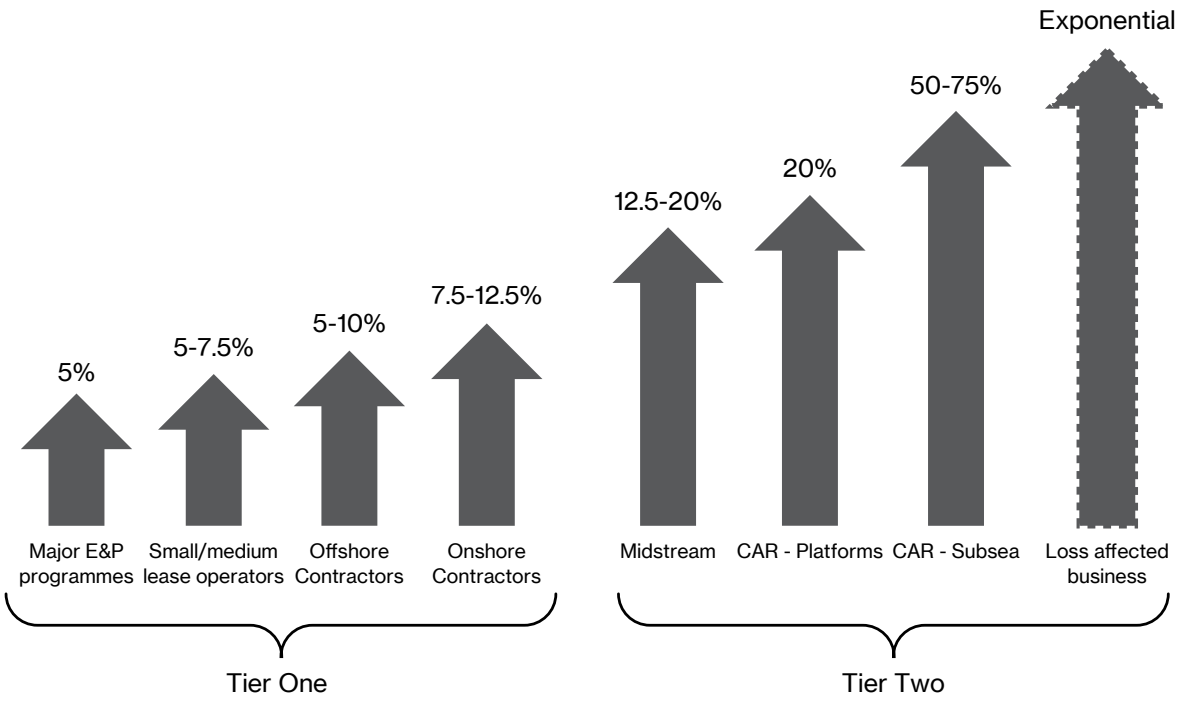
Lloyd's scrutiny and management pressures

Our final negative factor is the continued management scrutiny of the Upstream portfolio, whether within Lloyd's or from the major composite insurance companies. For several years now we have highlighted the growing trend towards a centralisation of underwriting authority; now we are seeing decisions that used to be taken by even that centralised authority being ultimately handed over to senior insurer management. Often operating at some considerable distance from the Upstream portfolio itself, these managers are generally taking an overall Property & Casualty portfolio approach to their business strategy; while currently profitable, Upstream is only one cog in a much wider business wheel.

Today's rating environment: a tale of two tiers

Given the various positive and negative factors affecting the Upstream market that we have outlined, the reader would be forgiven for being somewhat confused by the contrasting trends which we have identified. How is the conflagration of these trends being evidenced in the rating levels currently being imposed by the market? In very

Fig 8: Two-tier market differentials, April 2021



A two-tiered market has developed in Upstream, with different appetites for each sub class

Source: Willis Towers Watson

general terms, Figure 8 above shows how a two-tiered market is now developing in Upstream; of course there are always exceptions to these rating guidelines, and much will depend on individual risk profiles, premium income streams, past loyalty to existing leaders and loss records.

This chart shows that there is much more to the gentle overall rise in rating levels than might be supposed. Indeed, we can now see the beginnings of a two-tiered market, with a distinctly different tone been taken for each tier.

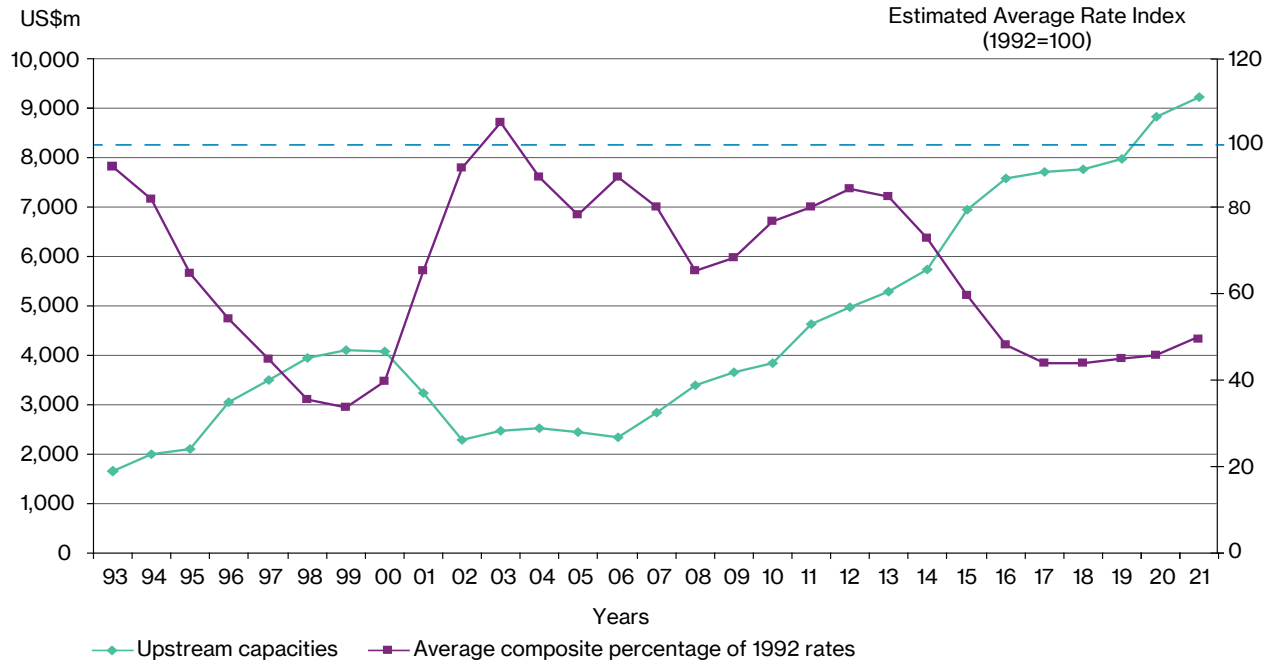
Tier One – sought after business, so relatively modest rises

- Major E&P programmes that offer significant premium income from essentially offshore exposures with little or no natural catastrophe risk will always be popular with the market, and if these programmes are put out to tender, brokers can sometimes achieve better than expected pricing and find a way to get this home in the market.
- Small/medium lease operators, that perhaps cannot offer the same degree of premium income to the market, will generally be charged rises above the most well-regarded business.
- Offshore contractor business, which previously had also been well-regarded by the market, is now attracting slightly more increased rating levels, as insurers are looking to make up for premium shortfalls due to the recent lack of activity due to COVID-19.
- Onshore contractor business continues to be treated with some caution by the market due to the recent spate of land rig losses in 2018/19 (see previous editions of this Review) but if underwritten in bulk offers a good spread of risk as well as sizeable premium income. This business tends to be led by a small panel of experienced leaders who have a sufficiently large share of this sub-class to make their portfolio worthwhile.

Tier Two – insurers taking a more determined stance

- Moving further up the scale of Figure 8, Midstream business is still regarded with some suspicion by several Upstream insurers and the leadership panel for this sub-class remains limited. Rating levels have increased in line with Downstream, and it seems that Upstream insurers are using the rate increases attained by their Downstream colleagues on this business as an excuse to push rating levels up further.

Fig 9: Upstream Capacity versus rating levels, 1993–2021 (excluding Gulf of Mexico Windstorm)



Economics teaches us that supply and proves cannot both rise for ever - but there now more complicated factors at work in the Upstream market

Source: Willis Towers Watson

- As we have outlined earlier in this section, the Offshore Construction portfolio has been running at a significant loss for the last three years. While conventional platform projects are now attracting increased rating levels, the situation is even more severe for subsea projects where the loss record has been significantly worse.
- Finally there is that part of the portfolio which insurers generally tend to either avoid or insist on draconian rating increases. This obviously includes loss-affected business but also includes smaller business offering limited premium income and spread of risk. Last year we commented that several small programmes had been subjected to an exponential increase in the Minimum and Deposit premiums imposed by the market; it is fair to say that those programmes impacted last year in this way are likely to be charged a much more modest market rise this year.

Conclusion: the outlook for the remainder of 2021

We have published the chart in Figure 9 above in every Energy Market Review since 2006 and it is always interesting to compare historic capacity and rating levels using data collected all the way back to 1993. What is immediately apparent is that the volatility of the Upstream market has significantly decreased during the last seven years or so; although during this period we have moved from a softening to a hardening market, the effects on overall rating levels have been modest by historical standards. For example, if we compare the seven-year period between 1999 and 2006 with 2014-21, we can see a much more stable supply of capacity, as well as a less turbulent rating environment.

That being said, the chart once again shows that both capacity and rating levels are increasing, just as they did between 2008 and 2013 - another “false equilibrium”. The reader may wonder how long this strange state of affairs will continue for this time; simple economics suggests that this dynamic cannot remain in place indefinitely. In the previous “false equilibrium” era, a relatively restricted panel of Upstream leaders were able to point to a number of notable losses – Hurricane Ike, Deepwater Horizon and Gryphon A to name three – as an excuse to continue to insist on increased rates. This time round the market has no such excuse, as the loss record has continued to be basically benign. So surely, some would argue, in time rates will begin to fall again?

If only it were that simple. As we have seen, the vice-like grip that senior management has on a range of overall Property & Casualty portfolios suggests that any softening process is still some way off. And as we saw in Figure 7, various parts of the Upstream portfolio continue to be loss making, despite the overall profitability of the sector.

That being said, we do see signs of an increased appetite for this class from some insurers keen to expand their portfolio and lead more business; the question remains as to how much support these leaders will generate from a still cautious supporting market. The opportunity for buyers to secure more advantageous terms as 2021 develops may arise should this current meagre level of support increase exponentially.

In the meantime, our advice to clients remains very similar to last year:

- Make sure your risk retention, captive participation and risk transfer strategy is based on sound actuarial principles
- Make a careful inventory of what should be insured, and what should not
- Ensure that your values are accurate, up to date and accountable
- Provide a high quality, comprehensive underwriting submission
- Engage with your underwriters personally, as far as is possible
- Timing is everything – COVID-19 continues to make the process of negotiating terms and binding coverage increasingly painstaking, on top of the command-control diktats of insurer senior management.

In short: please engage with us as soon as possible to ensure an optimal result in the market.

"We do see signs of an increased appetite for this class from some insurers keen to expand their portfolio and lead more business; the question remains as to how much support these leaders will generate from a still cautious supporting market."

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Downstream: pressures ease for some, as two-tier market emerges

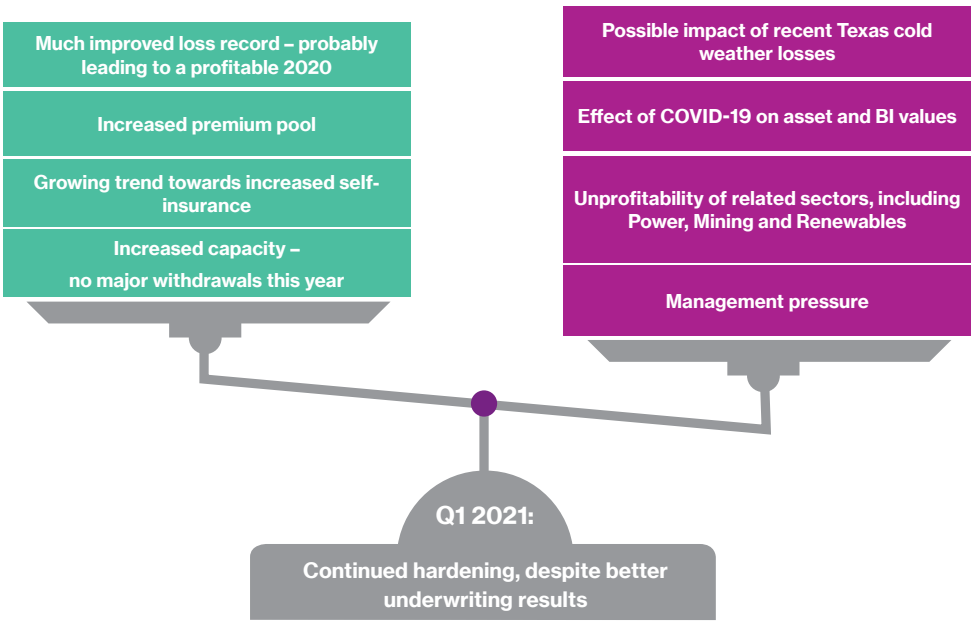
Introduction: a better year for insurers - at last!

Last year our Review presented a very gloomy picture of a significant hardening of the Downstream market. With 2019 losses continuing to surpass premium income in a similar fashion to both 2018 and 2017, we had very little good news to offer buyers in hope of better market conditions on the horizon.

This year however, we can at least report some easing of the overall hardening dynamic in this market. Figure 1 below shows a summary of the current situation, with positive factors in green on the left and negative factors in purple on the right. By far the most important green factor is the radically improved loss record in 2020; however, this is balanced by the continuing impact of the unprofitability of other parts of the overall Property & Casualty (P&C) portfolio, not least in light of the recent arctic weather in Texas. We think this extraordinary event is likely to result in additional downstream losses being reported as 2021 unfolds, as well as impacting the P&C portfolio as a whole.

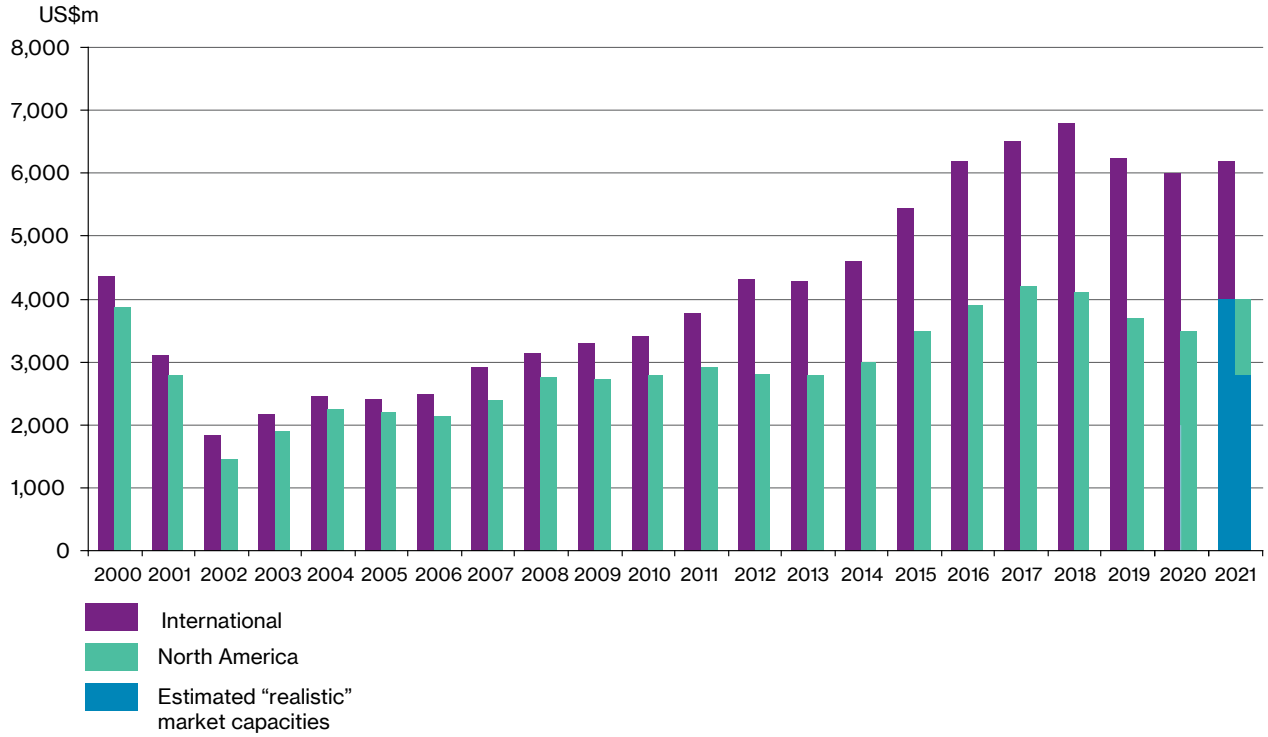
The key issue for buyers is a simple one: will 2020's improved underwriting results enable them to negotiate more favourable terms from the market as we move further into 2021 – or will insurers, impacted by the Texas cold weather losses, be able to maintain the existing challenging market conditions? Let's look first at the supply side, and the recent developments in underwriting capacity.

Fig 1: The Downstream underwriting environment, April 2021



With an overall underwriting profit virtually guaranteed for 2020, insurers are still determined to force through rating increases in this market. But is the rate of increase now flattening?

Fig 2: Global Downstream insurer capacities, 2000-2021



Although the estimated maximum capacities for Downstream have increased marginally in 2021, underwriters have been very cautious in their deployment of any maximum or theoretical capacity

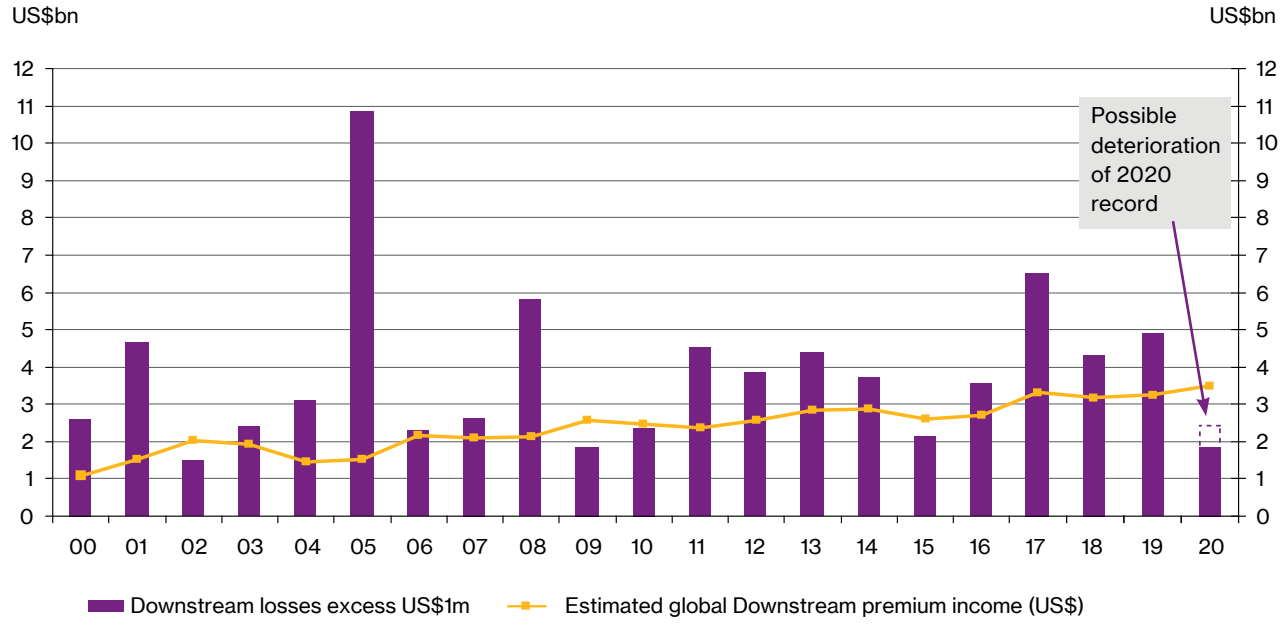
Source: Willis Towers Watson

Figure 2 above shows how overall capacity for this class has ebbed and flowed over the course of the last 20 years. It an be seen that theoretical (i.e. that advised by insurers) capacity has been decreasing from 2018 onwards until this year, where we show a marginal improvement – a total of US$6.2 billion for International (non-North American) programmes, up from US$5.9 billion in 2020, while capacity for North American risks has increased more significantly, up to US$4 billion from US$3.5 billion last year.

However, this theoretical increase has made little difference to the realistic amounts of capacity on offer. Last year we advised this to be US$4 billion for International risks and US$2.8 billion for North American risks; we see no reason this year to change this. As we reported last year, insurers will usually advertise more capacity than they are willing to deploy in practice, and in the current market atmosphere underwriters remain cautious, fully aware that to deploy more capacity than last year might send the wrong signal, both to buyers and to their own senior management. As it is, even these figures represent the very most available for the most attractive projects; for an average refinery located in a non - Nat Cat area for example, perhaps only as little as US$2.5 billion can be realistically accessed.

Despite this, we have seen some insurers quietly increasing their offered capacity; several have their eye on the profits secured for 2020 (see Figure 3 overleaf) and are positioning themselves to be the first to take advantage of any opportunity to augment their premium income.

Fig 3: WELD Downstream losses 2000 – 2020 (excess of US$1m) versus estimated global Downstream premium income



While the loss record for 2018 and 2019 continues to deteriorate, 2020 looks a lot more promising at this stage as premium levels start to increase

Source: Willis Towers Watson/WTW Energy Loss Database as of February 25 2021 (figures include both insured and uninsured losses)

Losses and profitability

Figure 3 above shows how the Downstream loss record has developed over the last 20 years, compared to estimated global premium income. It shows that the last really good underwriting year for Downstream was 2015, which was the only year in the previous decade where premiums definitively outstripped losses. Since then, the picture has hardly been a rosy one from an underwriter perspective; 2017 was a particularly horrendous underwriting year while 2019 was not much better, and the deterioration of both the 2018 and 2019 figures continue to cause apprehension in the market.

However, to date the picture for 2020 looks considerably more promising; it is interesting to note that in a year which was notable for a highly active Gulf of Mexico hurricane season, only one windstorm loss in excess of US$100 million has been recorded by our database.

So although the overall loss figure for 2020 will deteriorate further - for example, our Database has yet to register a major African incident last year that is likely to generate a loss in excess of US$200 million - the chart shows that there is still likely to be a significant gap between the final loss total and the increased premium income pool for last year.

Indeed, insurers will be pleased with our own estimate of the premium income pool for Downstream business, which stands for 2020 at US$3.5 billion, up from US$3.2 billion in 2019. This increase reflects the dramatic hardening of market conditions since the nadir of 2018 – furthermore, 2020's total would have been higher still if it were not for the significant reduction in BI values prompted by the COVID-19 pandemic, which we discuss later in this section.

Fig 4: Downstream losses excess of US$5 million, 2020

Type	Cause	Region	PD US$	OEE US$	BI US$	Total US$
Chemical	Fire + explosion/VCE	Asia Pacific	49,300,000	390,000,000	439,300,000	155,200,000
Refinery	Windstorm	North America	125,000,000	40,000,000	165,000,000	86,500,000
Gas plant	Unknown	Africa	4,500,000	143,000,000	147,500,000	37,350,000
Petrochemical	Fire no explosion	Europe	33,150,000	113,568,000	146,718,000	30,000,000
Refinery	Fire + explosion/VCE	Africa	49,000,000	71,000,000	120,000,000	23,800,000
Refinery	Fire no explosion	Asia Pacific	92,000,000	0	92,000,000	17,000,000
Refinery	Fire + explosion/VCE	Asia Pacific	80,000,000	0	80,000,000	15,200,000
Refinery	Fire no explosion	North America	15,000,000	57,000,000	72,000,000	15,000,000
Petrochemical	Fire + explosion/VCE	Europe	32,282,500	23,860,000	56,142,500	15,000,000
Petrochemical	Fire + explosion/VCE	Europe	0	47,000,000	47,000,000	13,500,000
Refinery	Fire + explosion/VCE	North America	20,000,000	26,400,000	46,400,000	13,000,000
Gas plant	Fire no explosion	Eurasia	1,000,000	39,650,000	40,650,000	11,150,000
Chemical	Windstorm	North America	35,500,000	4,500,000	40,000,000	10,000,000
Refinery	Fire + explosion/VCE	North America	30,000,000	10,000,000	40,000,000	9,800,000
Gas plant	Windstorm	North America	35,000,000	0	35,000,000	9,025,000
Chemical	Unknown	Latin America	10,000,000	21,100,000	31,100,000	9,000,000
Refinery	Faulty work/op error	Latin America	9,000,000	20,000,000	29,000,000	8,500,000
Chemical	Faulty work/op error	Africa	0	28,303,327	28,303,327	7,224,000
Refinery	Fire + explosion/VCE	North America	10,000,000	9,160,000	19,160,000	6,578,000
Gas plant	Mechanical failure	Africa	16,500,000	0	16,500,000	6,228,000
Chemical	Mechanical failure	Africa	1,000,000	15,000,000	16,000,000	6,000,000
Refinery	Fire + explosion/VCE	Eurasia	11,700,000	0	11,700,000	6,000,000
Gas plant	Fire no explosion	Eurasia	10,200,000	0	10,200,000	6,000,000
Tank farm/terminal	Unknown	Latin America	10,000,000	0	10,000,000	6,000,000

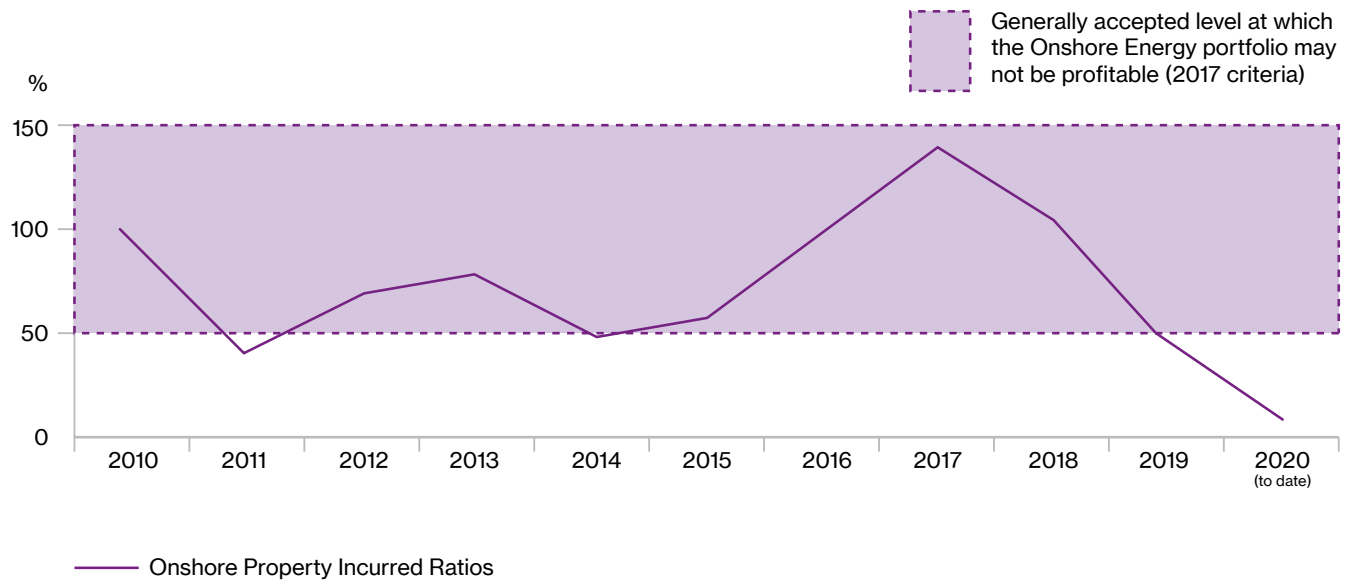
Additional losses not yet recorded by the database may have already been advised to the market – but 2020 still likely to be the best loss year for insurers since 2015

Source: WTW Energy Loss Database as of February 25 2021 (figures include both insured and uninsured losses)

It is perhaps typical of the inherent volatility of this market that such a rise in premium levels should coincide with one of the lowest loss totals this century. Under traditional market conditions, such a scenario would lead to pressure on insurers to respond immediately by offering more competitive terms; however, this is no ordinary market and we will see later that this simple economic logic no longer applies in quite the way that it once did.

"To date the picture for 2020 looks considerably more promising; it is interesting to note that in a year which was notable for a highly active Gulf of Mexico hurricane season, only one windstorm loss in excess of US$100 million has been recorded by our database."

Fig 5: Lloyd's Onshore Energy Profitability 2010 – 2020



Lloyd's Onshore Energy Property portfolio has remained generally unprofitable until last year

Source: Lloyd's Market Association Quarterly Loss Report Q3 2020. ""Onshore Property" - EF audit code.

Our final chart in the section (Figure 5 above) reflects the only external statistics available to us to corroborate our view that this market has returned to profitability.

The chart shows Incurred Ratios (net premiums versus paid and outstanding claims) for the Lloyd's Onshore Energy portfolio for the last ten years or so. Given that overall underwriting profits can only be guaranteed if the Incurred Ratio falls below 50%, the chart seems to indicate that this class of business has been inherently unprofitable for the last ten years, with the potential exception of 2011. However, with an Incurred Ratio to date of only 11%, it seems that 2020 is likely to break this long-running trend.

Market trends

Growing trend towards increased self -insurance/ increased retentions

As we have reported in previous editions of the Review, the hardening insurance market conditions continue to persuade some buyers, notably those with sufficient financial muscle and scale, to consider alternative risk management strategies that enable them to be less reliant on conventional risk transfer. Indeed, only within the last few months we understand that a major energy company, following a large loss, has this year elected to retain its entire programme within its captive insurance company as the "payback" prices being charged by the market for the renewal were considered to be too high. We have also seen other clients elect to take larger retentions and purchase lower programme limits in response to the current hardening market dynamic.

Needless to say, these decisions perplex the insurance market in its search to find an equilibrium; not only do they prevent the market from obtaining any redress for any losses that they have incurred but they also deplete the premium income pool at the very time when underwriters are under significant management pressure to increase it. It seems clear to us, however, that these decisions to retain more risk are likely to increase in future, as prices increase and buyers turn to analytical tools to determine how much of their risk is really worth transferring to insurers. And of course this development will put pressure on the market to restrict the imposition of draconian rating increases for those programmes where buyers can always select the option to retain more risk.

Modest reinsurance market rating increases

An encouraging development for both the direct Downstream market and for their clients has been a more modest reinsurance market renewal season than was anticipated a few months ago. Our understanding is that, in general terms, rating increases were restricted to single digit territory, which is sufficiently modest to allow them to be absorbed by direct insurers rather than being passed on directly to the end buyer.

Impact of COVID-19 on asset and BI values

While it is difficult to estimate the actual financial impact of COVID-19 on the Downstream sector itself, with few claims being submitted citing the pandemic as the actual cause of the loss, it is clear that from a general Property & Casualty (P&C) perspective the market has been significantly affected by the pandemic during the last 12 months. We also have yet to see whether the reintroduction of hydrocarbons after a period of shutdown will result in further incidents in the future.

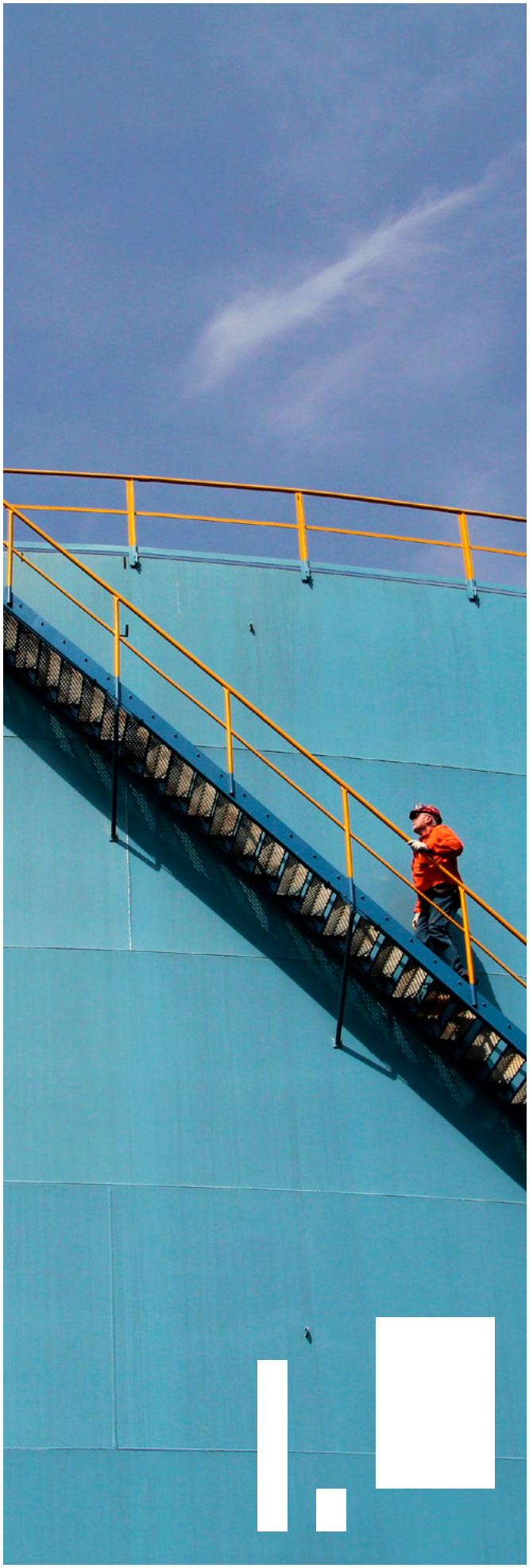
What we can say is that Business Interruption (BI) values in the Downstream sector have been generally reduced since the onset of the pandemic, as oil prices plummeted at the start of the outbreak some 12 months ago; the dramatic reduction in economic activity has also led to market suppression for a large number of Downstream companies. This has had obvious knock-on effects on premium income levels, although at the time of writing the Texas Freeze has caused a notable upturn in crude oil prices which may well be sustained well into 2021.

However, buyers should be aware that the current volatility in oil prices and economic activity is likely to have a profound effect on the volatility of their own BI values for the foreseeable future. Given the introduction of the new clause LMA 5515, this is going to be a vital issue for buyers to keep abreast of as there is a real danger on under-insurance if the values declared are not consistent with reality. LMA 5515 ensures that not only will insurers factor in a maximum percentage of the margin of error that whey will allow between actual and declared values, but they will also factor in any premium adjustments to ensure that they continue to receive what they consider to be the correct premium for the risk in question.

To illustrate: suppose a buyer had declared a total BI value of US$1 billion to the programme for the previous 12 months. The policy wording provides for a maximum of a 30% monthly swing (upwards) and a 20% overall annual swing. Now suppose because of the COVID-19 effect, the values declared for the ensuing 12 months have reduced, to say US$500 million. The buyer must bear in mind that the 30% monthly maximum will still be applying, but annually only to 20% of US$500 million, not US$1 billion as in the previous year; the percentage allowance has therefore effectively been reduced by 50%.

We therefore continue to urge buyers to keep their BI values under constant review, as they will have to redeclare them when economic activity picks up again as the effects of COVID-19 recede during the next 12 months or so. Failure to do so may result in some very unexpected and unwanted surprises in the event of a major BI loss, as the amounts recovered from the market may well be considerably less than the amounts actually suffered by the buyer.

Furthermore, insurers are not only taking a keen interest in BI values; they are also keeping abreast of asset values as well from a Physical Damage (PD) perspective, although we suggest that buyers should not need to undergo a revaluation exercise for asset values more often than every three to five years.



Unprofitability of related sectors enhanced by recent Texas Freeze

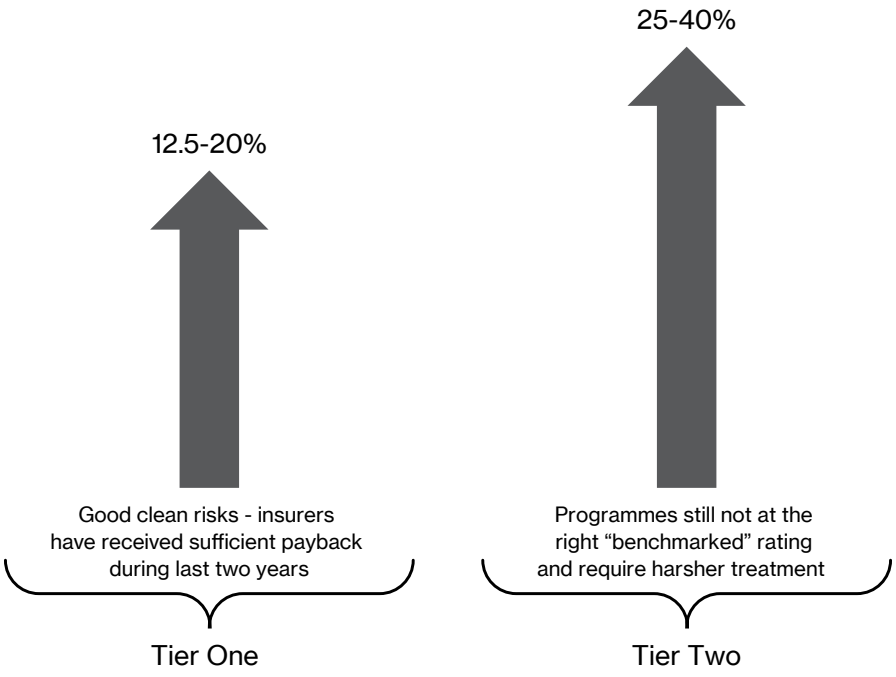
As we continue to remind buyers regularly in the Review, the Downstream portfolio remains part of a much wider "heavy industry" general Property portfolio, encompassing Power, Mining, Renewables, Textiles and Steel Mills among other lines of business. Despite the improvement in the loss record, the overall Property portfolio has continued to be impacted by significant natural catastrophe losses - not least the recent Arctic freeze in Texas which, as we indicate elsewhere in this Review, may produce overall insured loss totals of anything between US$8-18 billion. Although reinsurance will compensate the direct market for much of this amount, its impact on the P&C market is likely to be profound. From a Downstream perspective, we are aware at the time of writing that several facilities were shut-in as a result of the freeze; it remains to be seen as to how many valid claims will be submitted in excess of existing BI waiting periods or PD deductibles/retentions.

Continued influence of senior management

The final factor driving today's Downstream market conditions is related to all the others – the continued in fluence of senior management on underwriting decision making and overall strategy. We have commented in past Reviews on the increasing degree of centralisation developing in the Downstream market, with regional underwriting hubs increasingly coming under the control of a central centre of excellence; now even those centres have found that their freedom of manoeuvre continues to be restricted by senior management. Perhaps it is not so surprising that with so much of the general P&C portfolio still remaining unprofitable, the Downstream market continues to harden, despite 2020's positive underwriting results.

"Despite the improvement in the loss record, the overall Property portfolio has continued to be impacted by significant natural catastrophe losses - not least the recent Arctic freeze in Texas which, as we indicate elsewhere in this Review, may produce overall insured loss totals of anything between US$8-18 billion."

Fig 6: Current downstream rating increases, April 2021



As in other parts of the Energy portfolio, a two-tiered market has now developed in Downstream

Source: Willis Towers Watson

Rating movements - a two tier market opens up

So what impact have all these positive and negative developments had on overall rating levels? As in other Energy lines of business, we can detect a distinct two-tier approach developing in the market, as reflected in Figure 6 above.

Given the different positive and negative factors that we have outlined earlier, perhaps its not so surprising that such a two-tiered market has emerged. The positive factors, including 2020's overall underwriting result, are encouraging insurers to feel that the best business needs to be retained – sometimes at all costs - but the negative factors, including the overall unprofitability of the P&C sector, are continuing to discourage them from writing the less attractive areas of the portfolio.

The two key questions

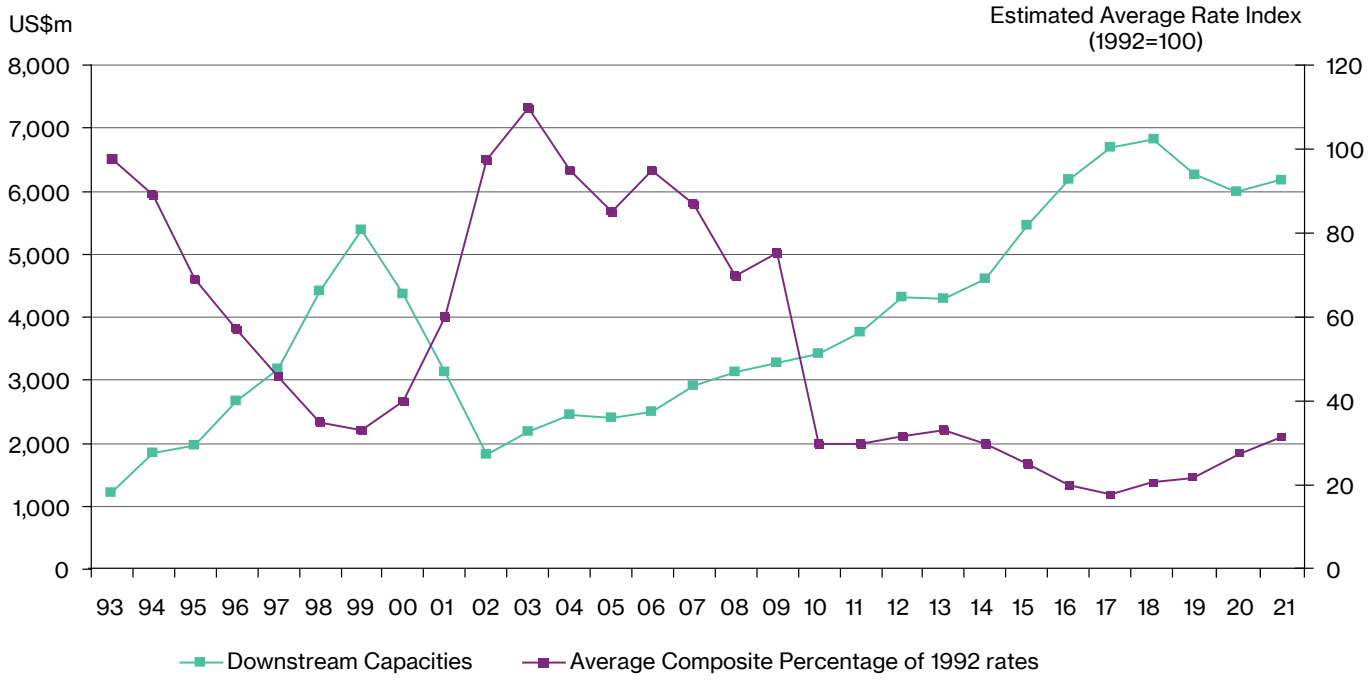
It's true that insurers have always maintained that they do differentiate between good and bad business; however what we have not seen until recently is the schism between business whereby the technical rate has been achieved and that where it has not - regardless of location, Nat Cat exposure or type of asset. In the past, insurers have differentiated far more on the basis of these criteria; however, after two years of market hardening, it is now not so much that one type of asset or location is responsible for more losses and therefore needs to be addressed more vigorously than other asset types of locations. Instead, each programme is being judged more strongly on what comes down to two simple metrics above all others:

1. Has the programme in question been treated sufficiently severely during the last two years to bring it now to technical rating adequacy?
2. Can the insurer's participation in the programme be justified, given its ESG profile?

If the answers to these questions is yes, then we are seeing more modest rises being applied; if the answer remains no, then the drive to impose the draconian rating increases that we have seen over the last two years remains.

Of course, within the two tiers, there is still plenty of variation possible, and the previous criteria that we have mentioned will still come into play within the ranges

Fig 7: Global Downstream capacity versus estimated average rating levels, 1993–2021 (excluding Gulf of Mexico Windstorm)



Rating levels in the Downstream market have now recovered to where they were five years ago. However, they are still low by historical levels.

Source: Willis Towers Watson

identified in Figure 6 on the previous page. It's also true that different types of asset continued to be rated differently – an LNG plant, for example, will never attract the same rates as a refinery in the same location – and the Nat Cat element amongst others continues to be an important factor in underwriter calculations. Furthermore, those programmes featuring plenty of spread of risk and premium income will continue to be looked on more favourably than others.

But what needs to be remembered is that the continuing rate of market hardening going forward. It is the new rate which will be less for those programmes where the insurers feel that the price has already been paid, whereas the new rate of increase for those programmes that are still technically inadequate will be much more significant.

Is searching for the best price always the right answer?

This development simply supports the message we have been suggesting for some time now in this market; shopping around to get the best price at all costs is unlikely to prove to be the best strategy in the long term under these market conditions. In the event that a given programme now requires the support of more orthodox markets due to an increase in values or - more probably - the impact of a sizeable loss, such buyers are inevitably going to have to put themselves at the mercy of insurers who will most decidedly place their programme into the second of these tiers.

In contrast, those buyers who have remained loyal to their key insurers during the last two years will almost certainly be placed in the first tier, as the correct underwriting measures will have already been imposed on the programme by the existing insurers.

Conclusion: the outlook for 2021

Our final chart (Figure 7 above) is useful from a historical perspective in that it shows how official capacity and average rating levels have interacted over nearly 30 years. It can be seen that the level of volatility in both capacity and pricing has smoothed especially during the last five

years or so; the period between the demise of the 1990s soft market and the ten years following the tragic events of 9/11 were particularly turbulent. It should be noted that rating levels are still only where they were ten years ago after four years of consecutive market hardening, and nowhere near where they sored to in the immediate aftermath of 9/11 20 years ago.

Figure 7 also shows that both prices and capacity are increasing at the same time - a "false equilibrium" of price and supply. As we referenced in the Upstream market section, this does happen sometimes (for a while, at least) and reflects the degree of control that senior management currently is exerting over conventional economic laws. In light of the pandemic, Texas freeze and the unprofitability of the remainder of the P&C portfolio, it seems that this control will continue to be maintained for at least the next 12 months.

Impact of the "softer" factors

So many of these "softer" factors – management control, increased retention levels, better risk management, better data, tighter wordings, lower sub-limits and an improving loss record – have to be factored into this chart to explain what's really happening in this market. But figure 7 chart does demonstrate that this is a much less volatile market than in the past, even if conditions are by no mean perfect from a buyer perspective. While we do think that the curve is flattening for "Tier One buyers" – and the signs are that there is potentially more capacity waiting in the wings for to compete for this part of the portfolio - unfortunately the same cannot really be said for those buyers who, for whatever reason, are still being labelled "Tier Two."

Time for a strategic re-think?

What can buyers do to ensure that they qualify for "Tier One" treatment? As the world begins to emerge from lockdown, there is no doubt that climate risk is becoming an increasingly significant factor in insurer assessments, as well as all the other factors that we have discussed in this section. We recommend consulting with your risk intermediary on all of these issues; only when a modern, relevant strategy is in place to convince the market that they should partner with you will your company be able to reap the benefits of a long term rather than a short term risk management strategy.

"As the world begins to emerge from lockdown, there is no doubt that climate risk is becoming an increasingly significant factor in insurer assessments, as well as all the other factors that we have discussed in this section."

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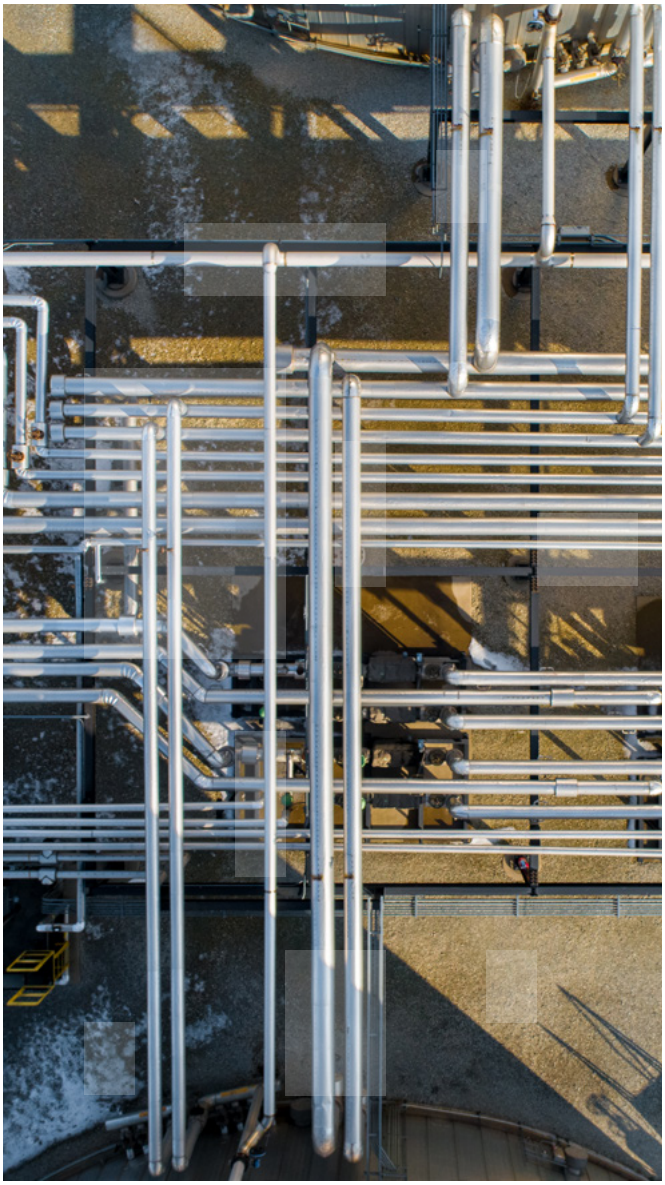


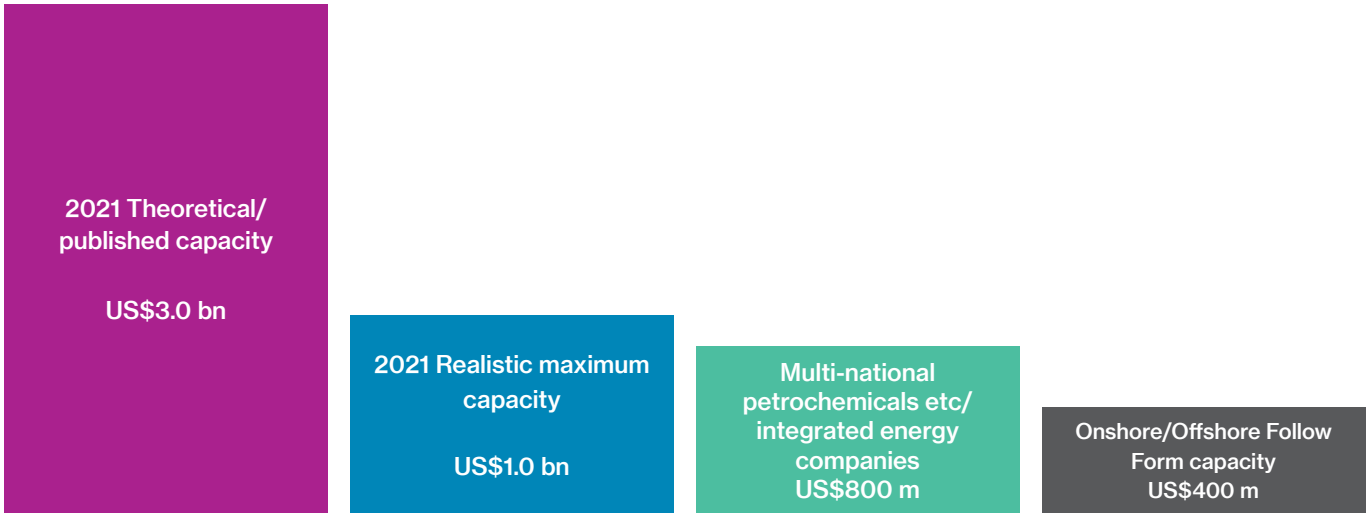
Liabilities: hardening dynamic continues

International Liabilities: continued gloom for buyers as ESG pressures bite

As we suggested in our October 2020 Update, there is still little comfort to be had from a buyer perspective from the International Liability insurance market. While it is true to say that the Property markets are hardening but still not truly hard, the International Liability market is indeed just that. If the definition of a truly hard market is one where capacity above a certain limit is unavailable at any price, then this really is where our market are as we move further into 2021. To understand why we are now experiencing these unprecedented conditions, we should examine current capacity, loss levels, underwriting results and litigation trends before determining how buyers should respond.

In addition to the hard market, the last 18 months has seen increasing pressure on buyers' ESG procedures which has in effect added constantly developing and unquantifiable influencing factor on the International Liability market. Announcements by Zurich in July 2019, and subsequently by Lloyd's in December 2020, have made firm commitments that certain industries will not be supported by insurers, namely coal and oil sands, which has had a profound effect on the capacity available to drive competition. Consequently, these industries are seeing more significant increases.

Fig 1: International Liability capacity, 2021



Only one third of theoretical maximum market capacity is available of International Liability risks – with even less available for certain lines of business

Source: Willis Towers Watson

Fig 2: International Liability market dynamics for Energy programmes, April 2021

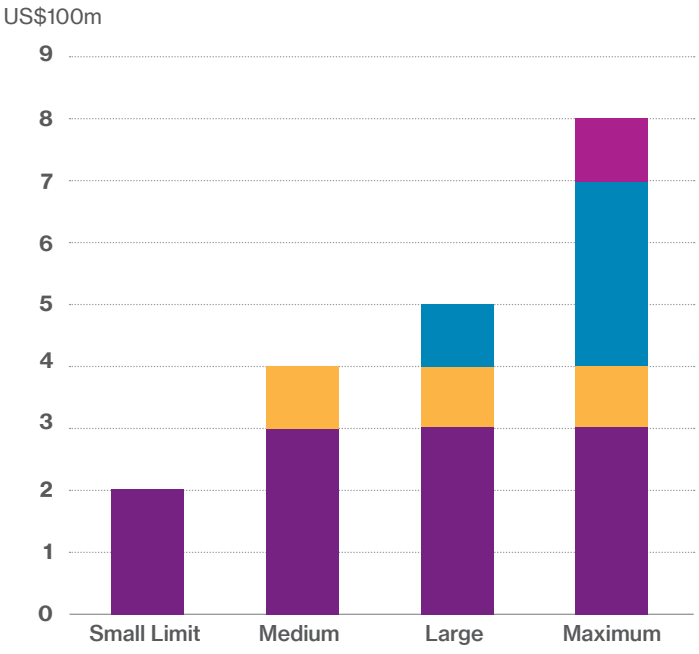
4 Key Market Segments:

Core Existing Markets:
Measured and "fair" rate increases

New Markets:
Minimum rates often higher

Volatile Existing Markets:
Erratic. May totally re-rate pricing

Opportunistic Markets:
Highest price they can achieve



The larger the limit, the greater the price volatility

Source: Willis Towers Watson

The capacity crunch

For the last three years, even theoretical – i.e. the amount that insurers publish themselves – capacity has been gently reducing, from US$3.2 billion in 2018 to US$3.0 billion today. However, in this market that is by no means the end of the story. The theoretical amounts on offer from the market bear little if no relation to the amount of capacity available in practice, as Figure 1 on the previous page demonstrates. While in the Property markets the realistic capacity is at least 50% of the theoretical, in our markets this figure stands at 33%, with even less available for most Energy programmes.

There is of course little doubt that major energy companies often require Liability overall programme limits well in excess of this figure, but we must advise that achieving any higher limits is nigh on impossible in this market, without resorting to alternative risk financing solutions.

Furthermore, the withdrawal of some Liability markets has been compounded by the restrictions in average line size that have been deployed per risk by many insurers

An opportunity for the opportunists!

This scarcity of available realistic capacity has enabled some new, volatile and openly opportunistic insurers to target this market to secure increasingly favourable terms from their perspective from buyers that are keen to secure whatever additional cover they can. This dynamic is reflected in Figure 2 above; the core existing markets, with whom buyers share established long-term relationships, can now only offer as little as US$300 million in total – no more than a minimum working limit for most energy company programmes. Added to these long-term players are some recent entrants to the market, offering another US$100 million of capacity. So perhaps a total of US$400 million can be accessed, bearing in mind that the minimum rates required from these markets are often more stringent than the existing insurers' terms.

However, above this figure buyers are now having to access more challenging markets. First of all, they are now having to approach insurers whom they would have probably been able to avoid during the previous hard market - insurers who are not encumbered by the

Fig 3: Lloyd's H1 underwriting loss by line of business, 2020

	GWP (£mn)	Net earned premium (£mn)	Net incurred claims (£mn)	Net operating expenses (£mn)	Underwriting result (£mn)
Reinsurance	7,759	3,880	(2,756)	(1,380)	(256)
Property	5,104	3,317	(2,885)	(1,434)	(1,002)
Casualty	4,404	3,355	(2,358)	(1,383)	(386)
Marine, aviation and transport	1,585	1,121	(665)	(446)	10
Energy	761	445	(219)	(164)	62
Motor	405	424	(242)	(160)	22
Life	29	27	(16)	(9)	2
Total from syndicate operations	**20,047**	**12,569**	**(9,141)**	**(4,976)**	**(1,548)**

Unlike the Energy Property portfolio, Lloyd's Casualty business has made a resounding loss for the first half of last year

Source: Lloyd's

programme's previous history and whose pricing can, to put it politely, appear somewhat volatile. Unfortunately, from a buyer perspective, the amount of capacity on offer from these volatile insurers will exponentially increase, depending on the required limit. Finally, we have now the true opportunists – those who are now sensing an opportunity to obtain highly preferential terms from those buyers who have no choice but to accept their terms.

Furthermore, those buyers operating in those energy industry sectors highlighted as part of the increased focus on ESG –such as the Canadian oil sands– are now being affected more than others. Economically viable capacity for buyers whose sole focus is the oil sands sector is now at around US$ 200 million in London, whereas 18 months ago it would have been closer to US$500 million. A number of insurers in Bermuda can help in achieving the limits required, but at higher premiums and more restrictive terms.

Why has it come to this?

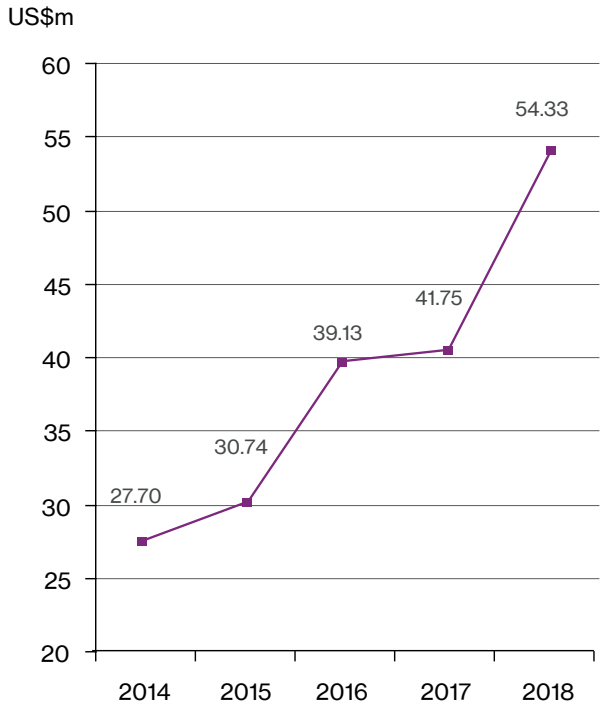
Buyers may be wondering why insurers have adopted an increasingly cautious approach to this part of their portfolio. First of all, let's take a look at recent underwriting results.

Although Lloyd's represents only a part of the overall global Liability capacity available, their results do provide a realistic indication of the state of the overall portfolio. Figure 3 above shows that while Energy (Property) has produced a positive overall underwriting result for the first half of 2020, the overall Liability (Casualty) result (across all lines of business) has resulted in a £386 million loss; to put this figure in perspective, the corresponding result for H1 2018 was a £40 million profit[1]. There can be no doubt that a similar underwriting loss for Liability/Casualty has been experienced in the composite company market.

On top of that, the overall underwriting result from Lloyd's for the first half of 2020 is also a loss of over £1.5 billion.

[15] https://www.lloyds.com/investor-relations/financial-performance/financial-results/interim-report-2018

Fig 4: Top 50 US verdicts median average, 2014-18



Source: Shaub, Ahmunt, Citrin & Spratt
As quoted in Insurance Insider, October 22 2019:
https://mvvsp1.5gcdn.net/eac2fddf5b9b403c84c35ebc1bf20320

Why social inflation is resulting in larger underwriting losses

There can be no doubt that one of the key reasons for the losses that have impacted this Portfolio is the advance of social inflation, particularly in the US. We believe that the underlying factors responsible for this are fourfold:

1. **Statute of Limitation reforms.** There is now an improved understanding of trauma, which has led to the realisation that disclosure of abuse may be substantially delayed. Statute of Limitation reforms include reviving expired statutes, extending the time allowed for victims to sue, lengthening the tail of liability and exposes the prior year portfolios to further deterioration.
2. **Litigation funding is growing.** A popular alternative asset class, the litigation funding industry has grown significantly since 2012 and is now considered a mainstream method to fund litigation. Furthermore, there are an increasing number of cases being pursued to full litigation as financiers' push plaintiffs to trial and not to accept settlement below a set threshold in the quest for an acceptable return. And on top of that, there is now pressure on claims costs due to increased litigation cycle time and defence costs.
3. **Jury awards are rising** (see Figure 4 to the left). The media is playing a broader role, fuelling concerns over new exposures, shaping perceptions of just awards and making juries increasingly sympathetic to plaintiffs. There is now a common perception that only a stratospheric award will 'send a message' with the belief that the corporation/insurer can 'afford it'. In large cases, the damage awards are also not always based on the facts of the case nor the level of blame assigned to the defendant.
4. **General costs of repair are increasing.** General claims inflation has resulted in increasing costs of repair for damage, especially to components with embedded technology and to property with aggregation of assets having materially higher valuations.

Recent losses in the Natural Resources sector

The Natural Resources sector (including Energy) has by no means been immune from the overall deterioration of the global Liability/Casualty portfolio. In particular, we have seen an increase in both frequency and severity of claims in respect of:

- Midstream/pipeline pollution incidents
- Wildfire
- Tailings dam failures
- Gas pipeline explosions
- Refinery and chemical plant explosions
- Salt caverns
- Product liability losses

Some of the most significant loses have been the aggregate losses following the recent Californian and Australian wildfires, the collapse of certain tailings dams, particularly in Latin America, a gas explosion in the USA, a water utility pipeline rupture in Peru, an oil leak at an offshore platform in Newfoundland and a major oil spill in the Bahamas.

Furthermore, this portfolio will continue to be impacted by the wider implications of overall COVID-19 insured losses. All lines of business will need adjusting to recoup the significant losses expected across multiple lines in the industry, and although International Liability programmes have not yet been directly hit by the obvious losses caused by the pandemic such as Business Interruption, we do expect buyers to receive accusations of COVID-19 infections arising from work environments not fit for purpose.

Rating levels

Faced with such disappointing underwriting results, International Liability insurers are now under strict instructions from senior management to secure as steep a rating increase as possible to offset these recent losses. Indeed, we are now witnessing a wholesale recalibration of existing pricing models, with a focus on rate adequacy and risk profile rather than a percentage change on expiring terms.

Average increases in premium spend for our International Liability portfolio between October 2020 and February 2021 were generally between 25-40%, depending on individual risk profiles and perceived rate adequacy (we have seen well in excess of 50% for some programmes which have not achieved this adequacy) . We have not had any pure Upstream programmes renew during this period as this line of business predominantly renews between April and July but market intelligence suggests that standalone Upstream Liability rates are increasing between 10 and 12.5%, but for those with charterers exposures, where industry losses have been particularly poor, rate increases of 20% or more have been imposed. It is also worth noting that any energy companies buying limits in excess of US$250 million saw reductions in the overall programme limit purchased.

An inconsistent and segmented market

However, this simple overview of rating levels disguises some significant variations in an inconsistent and segmented market. The terms offered usually depend on a number of factors, including:

- The perceived rate adequacy of the expiring programme
- The limit required - an obvious issue of supply and demand
- The type of industry – midstream energy is proving particularly challenging
- The quality of information and strength of the buyer's existing market relationships
- The desirability of the risk in question, generally governed by loss record, territory, ESG profile and ownership
- Which markets need to be accessed by geography – local markets tend to be the most competitive, followed by London, Bermuda and other international markets, with business that is referred back to "head office" usually emerging with the most expensive renewal terms

Key insurer concerns

In general terms, all markets are reviewing coverage terms & conditions, seeking to restrict "exotic"/peripheral coverages such as Cyber, Charterers Liability, Pandemic and Pure Financial Loss.

As well as ensuring rate adequacy, insurers are taking a deep interest in buyers' ESG credentials, particularly when reviewing oil & gas programmes. Midstream programmes featuring significant pipeline operations are also coming under particular scrutiny. Both Cyber and Drone coverage are generally excluded or written back at a significant additional premium, while COVID-19 exclusion clauses are now universally applied across all policies; indeed, an Insured's overall pandemic response and its effect on CAPEX, maintenance and turnarounds are all being studied carefully.

The buyer reaction – reduced cover

No wonder several major clients have chosen to self-insure part of their programme or to reduce the overall programme limit rather than be held as a "hostage to fortune".

Other buyers, for whom the option to self-insure more of their programme is not possible, have had to face the fact that the limit that they would usually buy is either unavailable at any price or to voluntarily buy less limit if they consider the renewal pricing exorbitant and/or uneconomic. Indeed, we have seen at least 10 major programmes forced to accept a reduced insurance programme limit for one reason or another during the last few months.

Conclusion: the outlook for 2021

Although the market was seeing increases in the first quarter of 2020, it hardened at a much more significant pace from May 2020 onwards. There are therefore a number of buyers who were "ahead of the upward curve in 2020" and whose programmes are going to be on insurers' radar for more significant premium adjustments. Until these renewals have taken place, we really don't see any let up in the increases that we have seen over the last few months.

Given the current market conditions, we must advise buyers to be as fully prepared as possible to meet the current market challenges full on. Until this portfolio returns to profitability - an unlikely scenario in the short term - buyers should expect more of the same as we move further into 2021. Eventually, like all hard markets, this one will pass as more capital decides to invest in this market, supply and competition increase and in time price rises level off.

Until then, we will do all we can to prepare our clients for the challenges ahead. We must continue to emphasise that the market positively differentiates those buyers who are long-standing customers, who offer an outstanding risk profile and who understand the level of data required to secure renewal capacity.

Sufficient preparation, planning and realistic expectation management, combined with a flexible approach to retention levels, captive utilisation and limit purchased will ensure the best post possible outcome in a rapidly hardening market environment.

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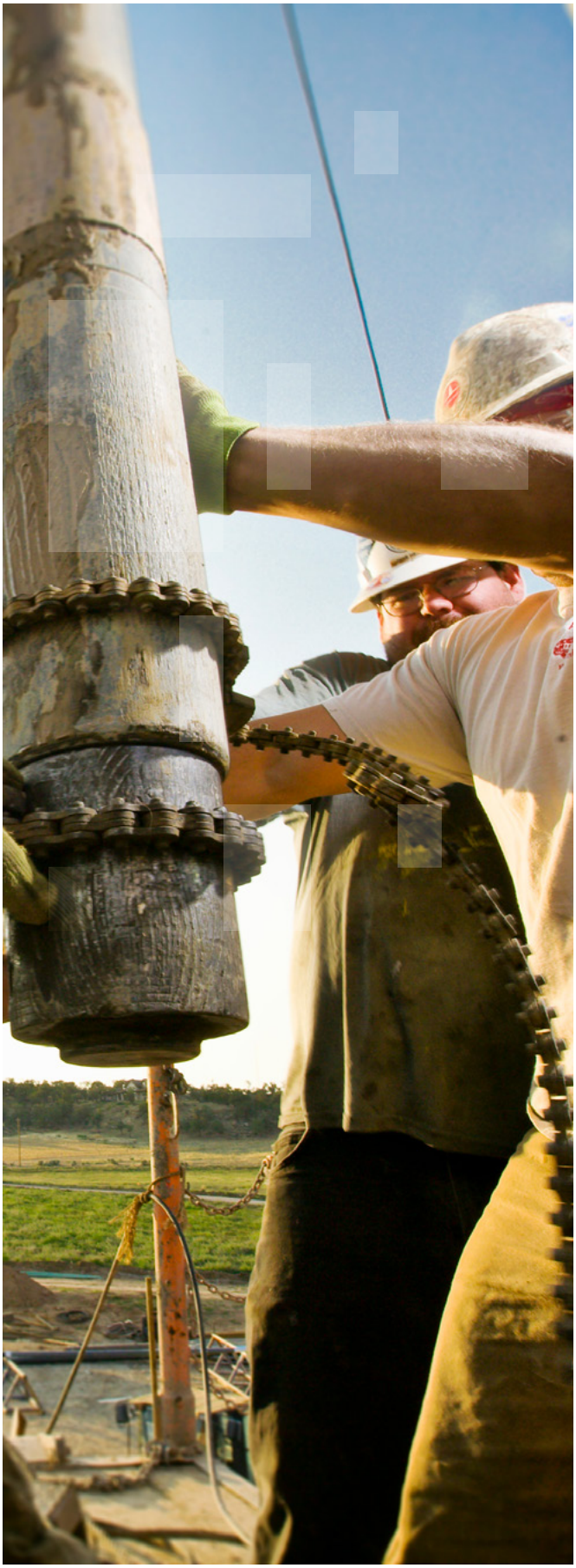

North American Excess Liabilities

Introduction: a classic hard market

Little can be said about 2020 that would surprise anyone now; for Excess Liability buyers, the impact of the worldwide pandemic only made the 2020 buying process even more stressful and angst-ridden. We saw a classic hard market, one for textbooks and lore. And as we move further into 2021, we are seeing the effects of the dramatic results of the overall experience, and true to expectations, the meteoric rises in premiums and compression of conditions have slowed in early results.

Emergence of two-tiered approach

From the standpoint of the Excess Liability marketplace, we now recognise a two-tiered treatment of buyers by insurers, which will likely continue through the year and which deals with differentiation;

- The potential top-tier energy programs are recognized by quality of risk, stronger loss and incident records and acceptable operational exposure, especially in the areas of Environment, Social and Governance (ESG).
- A second tier consists of those programs whose assets and operations are considered more difficult to underwrite as compared to the first tier, along with problematic losses.

While this can be viewed as the way the Excess Liability marketplace works for the industry, the impact of the hard market from a premium perspective is now moderating when it comes to the first tier.

The hard market in 2020 moved through the year in relentless fashion; buyers saw increasingly difficult repercussions with respect to realistic available capacity. By the middle of the year, underwriters seem to bring on another round of program limit curtailment, further exacerbated by premium income levels, which tend to alter the ability of many insurers to entertain new business or limits for programs with even the strongest buyer-insurer relationships.

Limit reductions

Renewal results last year showed increases in the lower half of double-digit territory; however, higher-positioned Excess Liability layers saw increases approaching as much as 100%. For difficult risks, the market was demanding even higher increases, and buyers were faced with the decision of whether or not to spend the money to accommodate insurers' demands. North American buyers were faced with alternate methods to replace lost or "nonsensical" underwriting capacity, including increased retentions within a program structure, captive insurance use and reducing the total limit purchased. On the latter issue, some buyers could only muster limits of less than half of that provided by their expiring programs. And to rub salt into the wound, insurers seemingly used any opportunity to predict more of the same for 2021.

Losses driving harder market conditions

The driving force, as it has been for the previous two to three years, was the losses hitting the underwriters' ledgers, both attritionally and spectacularly. We are now accustomed to insurers describing their individual impact of "nuclear" events, not all of which belong to the natural resources realm; however, effecting the same underwriters who also write the energy liability renewals. 2020 had its fair share of catastrophic events and natural catastrophes.

2021: not so much "confound and astonish" but no real let-up either

We expect the results of Excess Liability renewals in 2021 to be just as difficult as the 2020 outcomes; however the process is not likely to "confound and astonish" much as it did in 2020. In North America, renewals have shown only a few signs of letting up from the pace of increases seen in the second half of 2020; this is most likely to be prominent within the primary and lead excess placements, where the market has few leaders and none new appearing on the horizon. We believe insurers such as Chubb (Westchester), Liberty (Ironshore), Starr, Allianz and Everest will continue to support Energy Liability, and we reiterate that increases in rating in this area are not anticipated to abate at least through the first half of 2021. Zurich may support certain classes, as will AIG, while Upstream Liability will continue to be supported by Markel, Berkley and Travelers.

Opportunistic increases?

What increases are expected? Notably early in the year, certain markets have been up front with brokers and clients on their expectations for 2021, including Aegis, OCIL and AXA XL. Others are looking to be opportunistic - at times predatory -with regard to certain business. Capacity continues to be meted out sparingly, with income levels for insurers up dramatically compared to the tellingly reduced capacity offered. More often than not, line sizes are bound for US$10-15 million; under fewer and fewer scenarios will insurers offer as much as US$25 million.

Large capacity players flexing their muscles

Furthermore, insurers with the ability to deploy up to US$50 million or more acknowledge the commanding position they enjoy, and this is shown in their pricing. We expect anywhere between 20-35% increases for capacity that can offer up to US$50 million, with this escalation dropping off somewhat for the higher excess placements. As we experienced in 2020, it takes very little for the incremental year-over-year percentages to move beyond what we have stated.

New investments from Bermuda and Lloyd's

As expected, the Liability prices and rates in play through 2020 and expected in 2021 have brought in new investments. However, this capacity is expected to play within the current commercial levels and will not be enough to start driving premiums down. We expect extra capacity for certain classes of business to emerge from Bermuda-based Arcadian, Ark and Vantage Risk among others, with Aspen's Bermuda operations possibly expanding its remit to include the Energy portfolio. New Lloyd's syndicate Inigo, together with the expanding ERS and Sirius, have committed Excess Liability expertise to certain classes of natural resources business. However, capacity for contractor business has all but withdrawn from the Energy Liability sector in London.

Minimum price per million benchmark increases

The "minimum" price per million benchmark has moved from circa US$4,000 to approaching US$6-7,000, and this may move even higher. The percentage increase that originates in the renewal of higher excess layers then finds its way through into lower layers, where the impact of the increases is magnified for these programs.

Broader communicable disease/pandemic exclusions will be increasingly required

Policy conditions continue to be reviewed at each renewal; we expect, given the renewal of reinsurances at the end of 2020/start of 2021, that broader communicable disease/pandemic exclusions will be increasingly required, particularly so for capacity from London/Europe and Bermuda. London capacity will also deal with cyber exposure, looking to tighten any writeback previously afforded. We continue to see a sustained review of policies' pollution exclusions, scrutinizing time element parameters, named perils and treatment of waste operations as well as their understanding of the specific exposure to wildfire.

It is also noted that insurers are coming under public pressure from shareholders and stakeholders to address their overall portfolio of business when it comes to supporting buyers in certain energy industry segments. Continued emphasis will be placed on buyers' ESG commitments and on their operational sustainability progress and goals.

The outlook for the remainder of 2021: expect more stress

As we move further into in 2021, the renewal process will again be stressful for buyers, underwriters and brokers. Most buyers will likely be running through their second virtual renewals, and another year of visits and facility/asset tours. Buyers should plan on off-cycle discussions with core insurers, determining the impact of shrinking capacity and moving attachment points, retentions, stress points on coverage and conditions and cost expectations. The role of analytics as a tool to assist in the renewal process is now prominent and is being used to assess various options for setting excess points, layer costs and structuring, limits and advanced benchmarking.

With very few exceptions, multi-year contracts, or ones longer than annual terms, are not being offered, at least not without the opportunity to re-rate and assess at anniversary date.

Renewal information should include payroll, general liability information, well counts and footages, drilling details, cyber exposure (protection and practices), refinery throughput and turnaround schedules. It should also specify third party surroundings around any facility, pipeline and gathering system information, including integrity details, regulatory reports, rail exposure, specific auto fleet details (including use of autonomous vehicles) and capital expenditures. Regarding capital expenditures, buyers should expect questions on where the impact of any cuts being made will be felt.

Marine Liabilities

The Marine Liability market will continue hardening during the remainder of 2021, following several new large market losses and the significant deterioration of existing claims. General pricing increases in the region of 10–15% are to be expected for renewal business, even for programs with clean loss records; however, higher increases are required on programs which have adverse loss records or that are considered to be under-priced at current rating levels. Pricing allowances are only being considered on programs with significant material reductions in exposure levels, when pricing levels are already considered to be adequate. Buyers should expect increased risk scrutiny (including a strong focus on risk management), pressure on capacity and longer lead times during the renewal process.

The London Marine market hardened considerably over the past two years, caused by continuing deterioration in profitability levels over the past 5–10 years. Despite corrective action taken over the past 24 months, many insurers are still showing loss positions. This is partly due to the poor performance of the P&I and Charterers Liability Reinsurance portfolio, which has suffered significant losses and continued back-year deterioration.

Remarketing options remain limited on programs where more complex exposures are covered and/or where higher limits are purchased. Programs with high limits are also facing increased scrutiny in terms of their structure, with re-layering required on placements with long “stretches”, as well needing to demonstrate pricing adequacy and technical rating in order to secure full market support. In the Ports and Terminals sector, Property risk underwriting is being scrutinised more closely. The pricing of Property and Handling Equipment cover in catastrophe risk areas has come under particular pressure, with higher than average increases being applied. Bulk liquid terminals have produced several large market losses during 2019 and 2020 which have resulted in a contraction in underwriting appetite, together with more rigorous reviews of underwriting information, for this type of operation.

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Environmental Liability

Unlike several other related classes, the Environmental market has remained relatively stable over the past year with just a small uptick in renewal rates, averaging between 5–10%. Dependent on attachment point and exposure, some buyers are even enjoying renewals at the same rates as last year.

Gradual pollution cover in great demand

The gradual pollution cover that our market offers is increasingly in demand to provide balance sheet protection; these transactional programmes surrounding mergers and acquisitions or disposals are extremely effective deal facilitators, unblocking impasses in sales negotiations where the seller wants a clean exit from an environmentally distressed business but the buyer is reluctant to take on responsibility for unknown historic risks that are difficult to quantify financially. Venture capitalists, banks and lawyers increasingly see the deals available in the Environmental Liability market as a valuable tool to ensure a deal moves ahead by transferring these risks to an insurer for a one-off premium payment for a policy of 7-10 years' duration.

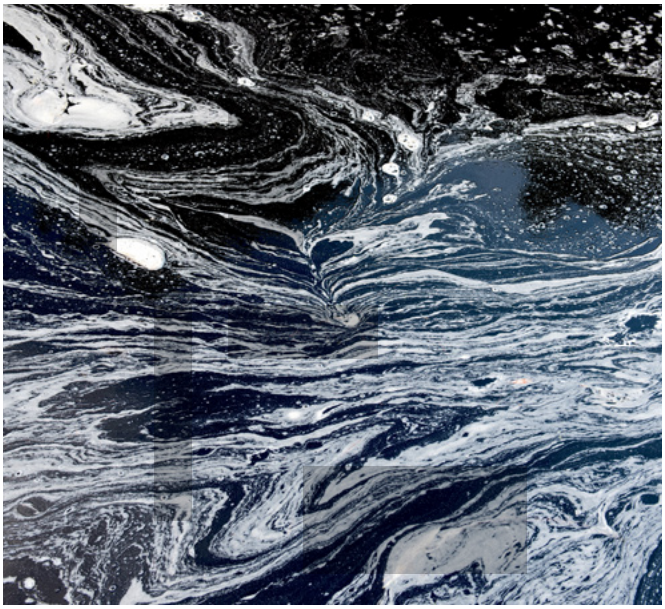
Cover continues to evolve

Environmental coverage and capacity continue to evolve as a result of the market's heightened awareness of increased exposures, legal liability and regulatory risk. The risk of biodiversity damage and complementary or compensatory remediation costs attached to rectifying this is increasingly a big-ticket item that the market can provide protection against.

The market's appetite for Energy risks remain fairly broad, even to the extent of still being able to provide cover for TMFs (Tailings Management Facilities). Particularly for Energy environmental risks, London remains the main centre for underwriting outside the USA, with developing markets emerging in Australia and the EU supporting rest of world placements.

Providing seamless Pollution cover

Generally, Environmental programmes dovetail around the Energy Liability programme to provide seamless pollution protection for pollution from any cause, whether that be sudden & accidental or gradual. As the Energy Liability market hardens and contracts, we also continue to use the Environmental Liability market to provide additional sudden & accidental cover at the top end of Energy Liability programmes, or occasionally to infill gaps mid-programme. The Environmental market can write onshore and offshore risks quite comfortably and USD200 – 300 million + limits are readily available in this sector.



Niche product demand continues to increase

The niche products mentioned in last year's review continue to be in demand:

1. **Mexico – Offshore**
   Mandatory Environmental Liability cover required by the Mexican environmental regulator (ASEA) since 2016 for offshore oil & gas E&P-related construction activities, processing and refining. No local environmental liability cover is available, but London now has a bespoke solution with a wording acceptable to ASEA.
2. **Canada – Onshore**
   Local Canadian GL markets stripping out sudden & accidental cover but London have an energy specific, cost effective solution in the environmental liability market.

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"Environmental coverage and capacity continue to evolve as a result of the market's heightened awareness of increased exposures, legal liability and regulatory risk."

Energy Construction: a market in transition

Introduction: hardening market dynamic continues

Over the last three years, the Energy Construction market has undergone a drastic change, transitioning firmly out of a very soft market. The previous fifteen years of reductions in insurance premiums and broadening coverage has now made way for restricted and regularly challenged policy coverage, together with increased rates and deductibles/ excesses, as the markets seek to alleviate their exposures.

Effect of COVID-19 and Nat Cat losses

While the full extent of COVID-19 is not yet known, the pandemic and continuing natural catastrophe losses have accelerated the market's transition. Insurers' behavior has suggested that conditions will remain in transition into 2021, as the global market assesses the impact on its Energy Construction portfolio. Most insurers are requesting to impose COVID-19/pandemic exclusions, often as a direct result of treaty restrictions and regardless of whether a real exposure is expected.

Increasing centralisation

Insurers began to show a significant change in underwriting appetite and approach during 2020, noticeably evidenced by a more centralised control authority exercised by Global Line of Business Chief Underwriting Officers. Product line underwriters showed more hesitation in agreeing new opportunities without referral to senior management, engineers, or both. This trend of referral has continued into the first quarter of 2021 and it seems clear that losses in 2018/2019 and the beginning of 2020 caused many insurers to evaluate their guidelines on projects and in regions that could be exposed to major perils.

Reduction in regional market participation

Globally, one of the most noticeable changes was the reduction in active participation and capacity provision in the key regions of Dubai, Miami, Singapore and, for domestic risks, Australia. Even domestic markets previously considered strong, such as in South Africa, Turkey, Germany and Brazil, showed signs of reduced capacity.

Less leadership options in Lloyd's

There were no new Lloyd's withdrawals, although the Construction Consortium that represented a viable alternative to the major leaders was heavily affected; while these syndicates still lead risks, they now do so only for small to middle-market projects.

Reduced overall capacity

The 2020 reinsurance treaty renewals produced a further shake up in capacity, resulting in global PML capacity reducing to approximately US$3.8-4 billion on a best risk basis. It should be noted that insurers are not using their full capacity for the vast majority of risks; on the contrary, they are only using a percentage of their "best risk" capacity, thereby reducing the global availability by a considerable margin.

Rate and deductibles increase

In 2020 rates increased on average by 10% to 15% across the Energy sector globally, although higher increases were seen for risks in areas where underwriters have concerns over supply chain and risk management. Deductibles also increased, often by 20% to 30% for the critical areas of technology risks, commissioning and natural perils.

Focus on stricter coverage conditions

As a result of the transitioning market conditions, insurers are imposing stricter coverage conditions, more aligned with those seen as "standard" for many years rather than the wider/higher sub-limit extensions negotiated in recent years. Each risk is considered on its own merits and pricing is being influenced by type of project and geography.

Reduced line sizes as insurers focus on PMLs

We are also seeing much reduced line sizes being offered on major projects by some key markets; these insurers are now basing their line sizes on the programme's Total Insured Values (TIVs) rather than its Probable Maximum Loss (PML). This generally results in much reduced line sizes being offered.

With insurer capacity reducing at the same time as project sizes are increasing, there is potentially a serious problem on the horizon. This is highlighted in the oil, gas and petrochemical sectors, where high project values and high losses are resulting in a cautious approach being generally taken by insurers. This is leading to capacity-driven placements, with a corresponding impact on coverage and premium, and/or first-loss limit placements at MPL or MFL levels which do not incorporate full reinstatement values.

The need for differentiation

Some of the claims in the LNG sector in particular have resulted from a common set of causes that underwriters are seeing consistently at present. It will therefore be vital for Sponsors/Projects to evidence to the market the specific risk management initiatives that have been initiated to differentiate each risk. There is no doubt that whilst construction premium levels will ultimately plateau, the quest for the perfect cover designed and tailored for each project should be continued. Financing parties who are committing significant funds to projects will continue to insist that the insurance market plays a meaningful part in risk mitigation and protection.

Focus on Passive Fire Protection

Highlighted by the issues surrounding the events at the Ichthys LNG plant and other process areas of hydrocarbon inclusion plants, the market is focusing heavily on and applying strict conditions to the Passive Fire Protection, particularly on the quality controls on the supply of fire proofing practices. Going forward, we expect this to continue to receive attention, with coverage being provided in accordance with what the markets feel each Sponsor/Project is dealing with this matter.

Stricter approach to Defects cover

With all market cycles, changes in terms become a gradual process and to address adverse claims experience, insurers use three main levers: premium levels, deductible levels and coverage. Since the market started to "become less commercial, premiums rates have risen by significant levels, deductibles have increased (depending upon the type of risk) and coverage has been restricted, especially with relevant conditions that insurers feel they are vulnerable to in the event of a claim.

Fundamentally, this means that in respect of Defects cover (i.e. design, faulty workmanship or defects in materials), the emphasis now is on a far stricter approach in terms of providing post-completion risks during the Maintenance, Warranty or Defects Liability period. The widest form of Guarantee Maintenance has and will continue to be very hard to obtain and will only be achieved with information and technical details that shows a compelling and justifiable reason for this level of Maintenance cover.

Of course, most insurers feel that providing Guarantee Maintenance seeks to replace or substitute a Contractors obligation to repair or a manufactures warranty, which is why it has always been selectively provided, more so of course in softer market climates. We feel the same issue applies (and will continue to do so) to coverage in respect of the widest form of Defects (commonly LEG 3 or DE5). Similarly to the Maintenance cover, it will only be achieved when supporting evidence can be provided that this coverage is a justifiable requirement.

Energy Construction losses

When it comes to the Energy Construction sector, large losses are, of course, not unusual; LNG project pipeline defects (Australia), hydro-electric power collapse (Colombia and Georgia), thermal power plant filter failure (Middle East), refinery flood (Middle East) and many others are well documented and certainly caused global insurance markets to take notice of what could happen.

Natural Catastrophe events such as earthquakes, hurricanes and typhoons have always existed and are increasing in frequency and severity as climate change affects weather patterns. Official Nat Cat zones are increasing in size (Bangkok is a good example) while flooding and forest fires across several continents have produced hundreds of millions of dollars of damage. Away from natural disasters, 2020 also saw several other high profile/high-value insured loss events in the Energy Construction sector.

Conclusion: small green shoots of optimism?

To conclude on a more positive note, major insurers in the Construction market such as AIG, Allianz, Axa XL, Axis, Generali, Munich Re, SCOR and Swiss Re have confirmed their continuing commitment to provide coverage and capacity. With continued investment and development in the key sectors of oil and gas, infrastructure, property development and power globally, the capacity from all construction and engineering insurance markets remains critical in facilitating global economic growth.

Impact of the Chinese market

Furthermore, the Chinese insurance market has emerged as a major player in Construction; this development initially originated from the extensive funding and construction activities of Chinese contractors in many parts of the world, especially in Asia and Africa, although this capacity is greatly reduced where there is no Chinese interest. Conversely however, if a project has Chinese involvement, the capacity that can be obtained from this market can be very significant. The actual amount available varies depending on the project profile but with an overall capacity of around US$1 billion, it's clear that this is a market that cannot be ignored.

Finally, we not only have new entrants to the Energy Construction market but also existing markets returning to the sector, with capacity now being provided by the likes of Axa XL, Berkshire Hathaway, Castel, Hollard's Mirabilis and TMHCC.

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Terrorism & Political Violence: smaller, more frequent events lead to larger BI losses

Introduction: recent Terrorism and Political Violence activity

Events in US, Chile and Hong Kong have precipitated significant Strikes, Riots and Civil Commotion losses to the global insurance market, with many losses having been insured in the Property/All Risks market. These events have focussed attention on understanding the underlying socio-economic issues, and indeed have additionally highlighted the wider implications of COVID-19 and the consequential impact on civil unrest.

In previous years we have noted that large catastrophic-type losses have been generally replaced with smaller attritional losses, with small-scale damage often being caused. This is likely to be a continuing theme through 2021; however, the ability for such damage to lead to much larger Business Interruption (BI) losses should not be overlooked.

Insurance market update: increased underwriter scrutiny

For most classes of insurance, the outlook for 2021 is markedly different to previous years, and the global Terrorism & Political Violence market is no different. There is increasing instability around the world as a result of public unrest, together with general discontent around a number of issues such as:

- racism and inequality
- climate change and the environment
- social activism and the unequal distribution of wealth
- the economic hardship fuelled by the impact of COVID-19

The resulting effect of these factors has been a demonstrable increase in insurer scrutiny of the conditions under which they offer coverage, particularly around the provision of Strikes, Riots and Civil Commotion coverage globally, with appetites waning in certain high risk territories such as Latin America, Africa and now even the United States.

New market entrants offset primary capacity reductions

Capacity for 2021 remains generally fairly static; however, there are now some new entrants set to begin writing Terrorism & Political Violence coverage. Ki, Argo, Sompo, ERS, Inigo and Mosaic are examples of new insurers looking to capitalise on the current favourable market conditions.

However, this new capacity is expected to be offset by the partial shrinking of primary global capacity, as insurers demonstrate caution in deploying large line sizes and look to manage exposures in emerging market risks.

Headline capacity figures are now in the region of US$3.5 billion for Terrorism, and US$2.5 billion for Political Violence. Global capacity for Nuclear, Chemical, Biological and Radiological Terrorism coverage stands at around US$650 million, while capacity for Cyber Terrorism is approximately US$1.9 billion.

Modest energy industry losses

The Terrorism and Political Violence market continues to experience losses in the Energy sector, although the majority are deemed small and not catastrophic. Demand for Non-Damage Business Interruption continues to rise, and at the very least remains a hot topic of conversation.

Along with terrorist attacks and both global and localised conflicts, the threat of Strikes, Riots, Civil Commotion and Malicious Damage remain a real risk to the energy industry. In addition, many new construction projects around the world will continue to face environmental activism and local opposition, including those where land disputes and population displacement may arise.

Pricing update: flat for Terrorism, more for Political Violence

Rates for Terrorism coverage continue to remain stable for the most part, with many markets pushing for flat rate renewals where they can. However, the rating environment for broader Political Violence (PV) peril coverage is showing an upward trend, with additional insurer due diligence. General price projections are as below:

- Claim-free, non-volatile territories: flat to +5%
- Volatile territories or broader peril coverage given: multiple percentage increases
- Active claims experience: treated on a case by case basis

Rising reinsurance costs could also have a material impact on rating as we move further into 2021. As treaties renew and reinsurance costs increase, this will generally be passed on to buyers.

Conclusion: are you buying sufficient cover?

All around the globe social interconnectivity, combined with extreme political polarisation, has exacerbated the need for organisations to rethink how they approach Terrorism & Political Violence risks. The energy sector remains vital for infrastructure globally and will continue to be a key target for terrorist organisations and possible political violence activity.

With a constantly evolving risk landscape, it is imperative that the energy industry buyers consider whether the coverage they currently purchase is appropriate, and whether their terms and conditions are truly fit-for-purpose against the backdrop of a wave of global unrest.

The Terrorism & Political Violence market is on hand to replace gaps in coverage – whether in full or in part, subject to available capacity – that may be left by All Risks insurers in the event that Strikes, Riots and Civil Commotion perils start to become more widely excluded for energy sector buyers.

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International market round-up: outside China, signs of retrenchment continue

Beijing

Upstream

In our 2020 Review, we advised that there was around US$500 million of theoretical Upstream capacity in the Chinese insurance market. We have not seen any significant change in this figure over the past year; however, realistic capacity has slightly decreased, mainly because Chinese underwriters are becoming more rational as they become more experienced. In 2020 we did not see much competition being generated within the market for certain programmes, especially those with unsatisfactory loss records. Meanwhile the Chinese market has still not experienced anything like the hardening dynamic that has affected the London and other international markets.

Indeed, Chinese insurers have continued to maintain a profitable Upstream portfolio as there was no major loss affecting this market during 2020. As a result, rating levels continue to be relatively stable.

Looking forward to 2021, we are not expecting stronger competition or additional capacity to challenge existing markets but would rather hope that talented underwriters emerge to move the Chinese Upstream market forward to a new, healthy and sustainable era.

Downstream

At the beginning of 2021, overall Chinese Downstream capacity was maintained at similar level to 2020 following the renewal of non-marine reinsurance treaties at January 1 2021. Some insurers were hit by the recent loss of an Australian Terminal, and the time element of this loss this has now caused a restriction in underwriting overseas businesses. This has especially been the case for China Continent, which was known as the Chinese market placement leader for such projects, with a 15% line size. Due to additional rounds of motor insurance premium regulation being put in place, most Chinese insurers have been paying significant attention to the development of Non-Motor businesses (including Downstream) but they have also made it clear that the profitability of the combined portfolio (Motor and Non-Motor) needs to be above break-even. Rating levels for operational programmes that put pressure on capacity demand are generally flat, while levels for Construction/Erection programmes which place increased demands on available capacity have slightly increased. Meanwhile, market conditions for other programmes remain soft.

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Dubai and the wider Middle East

A long-term premium shift?

Following a turbulent 2020 where GCC-based (re)insurers and beyond focussed on correcting premium rating and deductible levels across their portfolio - effectively enacting an industry-wide revision of premium rating - many (re)insurers classed this as a return to technical pricing. As we begin 2021, and as the Energy sector adapts to the economic challenges that the global pandemic has brought, many have also questioned the long-term sustainability of a continued shift in premium rating through 2021.

Lack of capacity to replace recent withdrawals

It is clear that there is a lack of A-rated new capacity entering the GCC (re)insurance market to replace the notable withdrawals (or centralisations) relating to the Energy portfolio in 2019 and 2020; these included (but were not limited to) AIG, Allianz, Swiss Re and AXA XL. While several MGAs have ramped up their efforts in this sector during 2020, this activity has not been sufficient to create tangible alternative risk transfer options for buyers.

Furthermore, while certain local insurers have increased their net and treaty positions on Downstream risks, this has been out of a required inevitability rather than purely from a growing appetite for business, particularly when considering that these retentions are normally on a ground-up, quota-share basis.

Capacity reductions lead to more markets needed to complete programmes

With a smaller pool of reputable Energy leading (re)insurers sitting in the region, the additional challenge facing clients is that many (re)insurers have curbed their capacity deployed in the sector during 2020, which has required the inclusion of a larger number of (re)insurers to complete programmes, each deploying smaller levels of capacity per risk.

Recent deductible corrections to stand

With the issue of a restricted pool of lead (re)insurers in the sector, all taking a similar stance in terms of premium rating and deductible levels, buyers are understandably interested in how their stance will look in 2021 amongst the major leading markets, traditional follow (re)insurers, MGAs and national insurers. It would appear that the deductible corrections encountered by many clients in 2020 will stand as the required level of risk retention going forwards; whereas (re)insurers were looking for fixed increases in pricing across its portfolio during 2020, this year they seem much more focussed on specific analyses of individual programmes. Arbitrary rate increases in excess of 30% are limited to distressed assets with challenging loss records, whereas the better performing risks are attracting less onerous increases in the region of +10% to +22.5%.

Following markets take greater interest in choice of leader

The art of the subscription market has become an important feature of the energy market in the Middle East, particularly in the DIFC, with traditional following markets taking a far keener level of interest in the perceived calibre of the chosen lead market as well as the carriers who have agreed to follow these terms.

Drive to maintain technical rating levels

The second half of 2020 and beginning of 2021 has witnessed a move to ensure that Energy underwriting achieves and remains at technical levels consistent with the wider portfolio of risks held by any one (re)insurer. This has not only affected traditional rating levels but also a drive to ensure that Property Damage and Business Interruption deductible levels are corrected to a sensible level, in line with international standards.

Upstream rate rises level off as Downstream markets express interest

Specifically regarding the Upstream sector, the Dubai/ Middle East market has seen a levelling off of rate rises since the 1/1 renewal season, on risks with good claims records. Underwriters are particularly keen to maintain their market share on regional business that they would see as desirable; this has been a factor in keeping rate increases in line with (or slightly below) the London market. While there have been no notable new entrants in the Dubai Upstream marketplace, a small number of existing Downstream carriers are expressing an interest in providing follow capacity on stand-alone Upstream risks. Other than a handful of companies, most of the Dubai/Middle East market prefers to follow quota-share led terms; as a result, on international business the rating environment is very much in line with London's.

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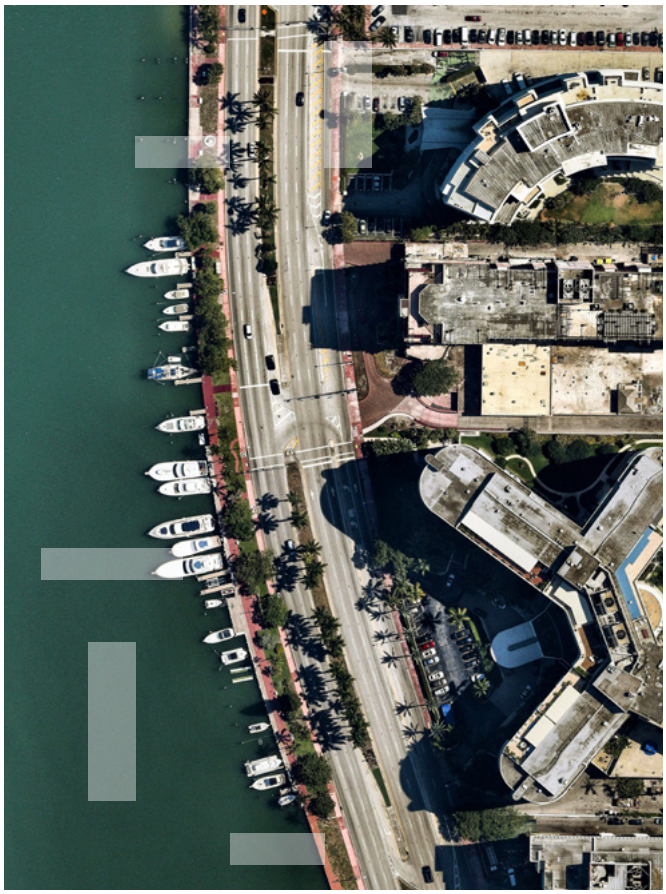

Latin America and Miami

Adjusting to remote working

As in many other markets and hubs around the world, the Miami and Latin American market was unexpectantly sent to work from home in the middle of March 2020. After a short period of adjustment and the expected ambiguity generated by the global pandemic, the market was ready for remote operation. One thing this market has been doing for some time is to stage negotiations, confirmations and stamp slips in a remote way, so the shock of not having face to face market interactions was not felt as strongly as in hubs such as London. However, the trend of longer negotiation processes that started last year continues, and we expect the timing of turnarounds of quotes and/or confirmations of covers to remain slow during 2021.

Capacity deployment reduces

In terms of capacity for Downstream Energy risks, although theoretical capacity levels remain unchanged, the actual capacity deployed in practice has reduced. Major players have withdrawn capacity, especially for risks which are perceived to be of below average quality. Underwriters in Latin America have shifted to more bottom-line oriented underwriting and were able to make up the lost top line by the increases obtained across the market.

Leadership panel remains unchanged

The main Midstream and Downstream market leaders remain the large (re)insurance groups such as AIG, Chubb, Liberty Specialty Markets, Swiss Re Corporate Solutions and Swiss Re Facultative out of Miami, as well as Munich Re, SCOR and Hannover Re from underwriting desks in the region. All these markets' capacity remains in close sync with their UK and European hubs which co-ordinate capacities, conditions and pricing levels.

Regional risk appetite remains high

Risk appetite for the region remains high for most insurers, with AIG planning on growing their book. A notable exception is Chubb, which is shifting all underwriting decisions for their net retention to London; this applies to the main marquee and large capacity programs.

MGA impacts

After a few insurer exits in late 2019, we saw new MGAs entering the market with niche offerings, which quickly occupied the space left by the market withdrawals. Three main MGAs have offered capacity for risks in the Energy sector; Brickell Underwriting Agency (BUA) writing primary layers, Specialty Lines Underwriters (SLU) focused on providing capacity in short excess layers and XS-Latam with a primary layer focus or buffer layers. In 2021, we expect to see consolidation of these new players for different risks in all the region.

Limited capacity for Offshore/OEE

Capacity for Offshore or pure OEE coverage remains very limited. Markets such as IRB and Austral offer their capacity and can write outside Brazil, albeit depending on regulatory acceptance.

Rate increases and terms tightening continue

In line with global trends, 2020 saw a rate increase for Energy and related sector risks, with an important tightening of conditions, especially in Business Interruption, where markets are moving to reduce volatility in unison. Furthermore, last year was a very benign year for insurers in the region, with no major natural catastrophe events and an absence of large man-made losses. This made 2020 a good year overall for the market and loss ratios are likely to close on a very healthy level, based also on the increased premium generated by the market.

Inflexion in the cycle in 2021?

Therefore, although the expectation for 2021 is to see further tightening in rates, and clients should expect some level of increases, these are not likely to be as stiff as those imposed during the last 12 months.

Conclusion: enhancing local understanding

The Latin American market is experiencing an interesting transition, whereby the global-local combination of large and niche players is key to providing the required capacity. But more importantly, this combination provides both clients and brokers with a cultural and language closeness that aims to enhance Latin American energy companies' understanding of their risks and exposures.

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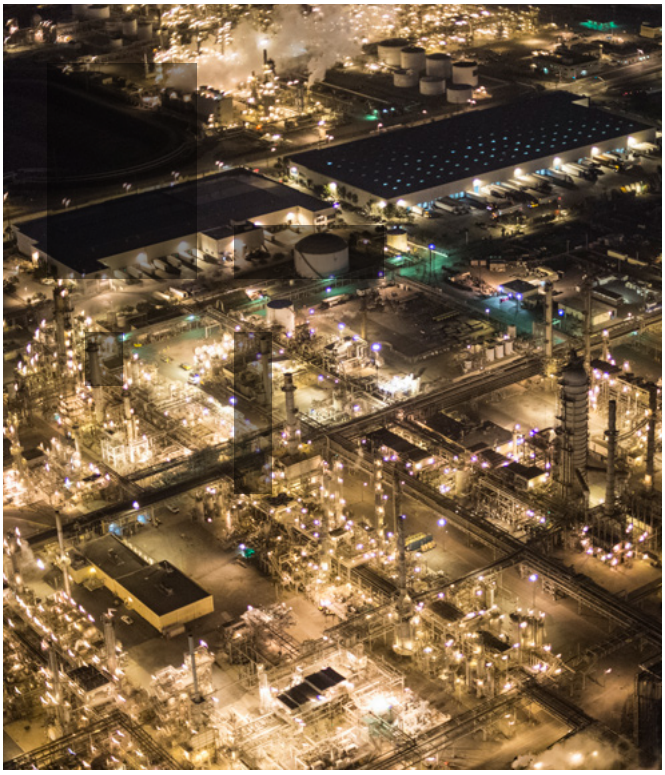

North America

Two years of hardening conditions

The North American Downstream Energy market has been on a recovery path since early 2019. After suffering 5-6 years of declining rates and increased losses, insurance companies have had to return to underwriting discipline and have increased pricing/rates accordingly. There were several companies that decided to "right size" their portfolios and others that simply could not sustain themselves and exited this occupancy. All of this led to a dramatic and sudden change in the market; reduced capacity, increased rates for treaty protection and underwriting discipline has caused one of the hardest markets in decades.

There was widespread inconsistency of terms, pricing and overall market responses. The market change in the past two years has resulted in many clients being forced to assume additional retentions, purchase lower limits, increase captive utilization and seek non-traditional risk transfer solutions.

A better year for insurers in 2020

As of December 2020, we started to hear that insurance companies were experiencing profitable years and loss reserves in the Downstream energy sector were reasonable. Having said that, 2020 was a year where many companies were experiencing substantial reserves due to COVID-19 or increased Incurred But Not Reported (IBNR) claims. The General Property loss experience was also quite poor, which affected some North American insurers because they share reinsurance treaty protections.

The outlook for 2021: a two-tiered market

Our outlook for 2021 is that the market will be looking be looking at renewals on a "two-tiered" rather than the "broad brush" basis which applied a general rate/ premium increase for all renewals which we have seen for the past two years. Using this "two-tiered" approach underwriters will segregate accounts based on certain risk characteristics:

- Natural catastrophe exposure (earthquake, flood and windstorm)
- Loss history
- Retention levels
- Risk engineering grading and recommendation compliance
- Updated valuations with regards to Property Damage and Business Interruption

Those risks that grade out "Best in Class" on the above criteria will received lower rate increases.

Rate increase deceleration

We therefore anticipate a deceleration of rate increases and less drama and upheaval during each renewal process for the risks in the Upper Tier. This is mostly due to two years of right sizing and wording changes that have been instituted across the board. The most notable of these wording changes are:

- The Business Interruption volatility clause
- Communicable Disease exclusions (COVID-19 and others)
- Cyber wording clarifications and restrictions

In 2020 there were small increases in capacity as new players entered the market and additional capital is being attracted to this vastly improved sector. However, it should be noted that one of the best strategies during this hardening market was to rely on long term partners; these partners responded very well to clients that found a way, despite all the market cycles, to keep relationships strong and continuous.

Conclusion: risk engineering still critical

Insureds must still be diligent and update their engineering reviews. Engineering is critical in this market; underwriters will require positive responses to historical recommendations and improvements. Response to COVID-19 restrictions, maintenance budgets and CAPEX figures will also be scrutinized. Values for Business Interruption as well as Property Damage will be closely reviewed, as years of trending proves to be inaccurate.

Some good advice for 2021 renewals would be:

- Start early
- Analyze the data, especially that relating to natural catastrophe, Business Interruption and Contingent Business Interruption
- Update all engineering
- Plan and seek alternatives
- Involve the buyer's and insurer's senior leadership
- Remain flexible
- Communicate clearly and transparently with your insurer partners

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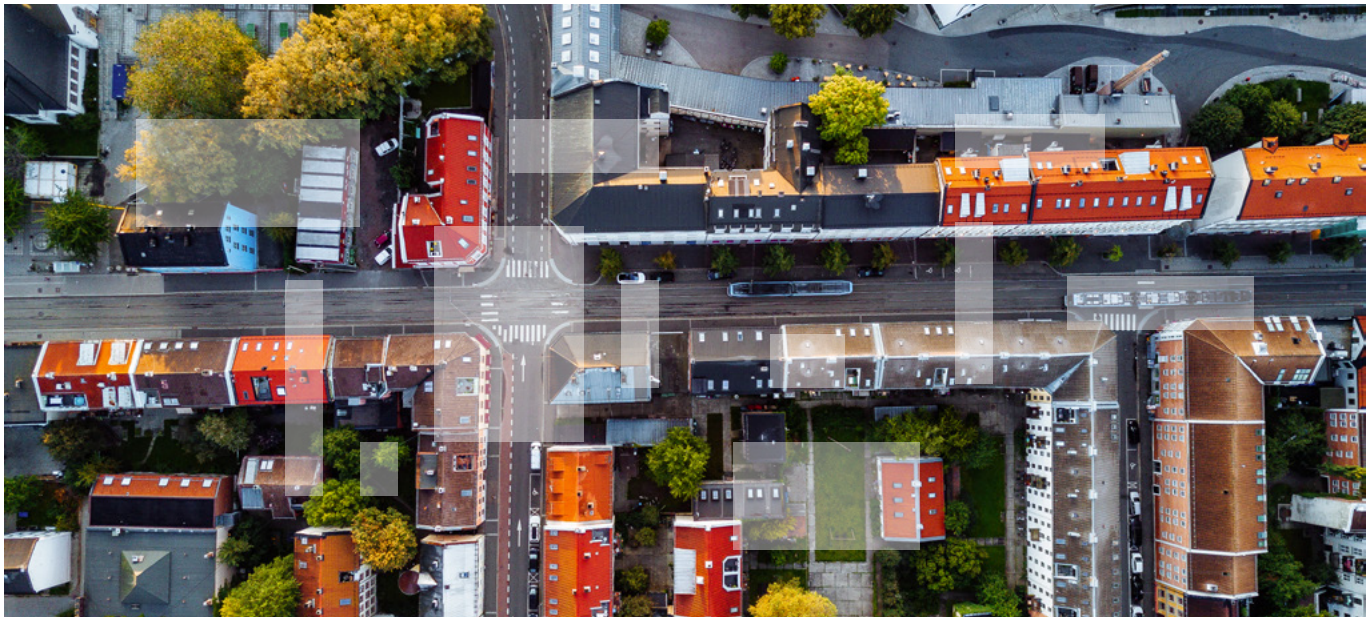

Oslo

Oil price rises boost optimism in the sector

Oil companies in the Nordic region have been buoyed by the fact that the oil price has recovered well since this time last year, especially considering the effect that COVID-19 restrictions have had on global consumption and the large inventories which had accumulated around the world as a result. A cautious, guarded optimism has therefore once again returned to the sector in this region, with a hope that more favourable and sustained trading conditions will now ensue in the future.

Norway

In Norway, 30 companies received offers of ownership interests in a total of 61 production licences on the Norwegian Shelf in the Awards in Predefined Areas (APA) 2020 in January 2021[1]. 40 exploration wells are expected to be drilled in 2021, while oil production is expected to rise from the current 1.7 million barrels per day to more than 2 million barrels per day in 2025[2].

The introduction of an improved taxation regime with regard to capital expenditure on any projects where Plans for Development and Operation are submitted before the end of 2022, and approved by the authorities by the end of 2023, is focusing minds on pushing through new and some formerly more marginal projects before these dates.

Denmark

At the end of 2020, the Danish government announced an immediate end to new oil and gas exploration in the Danish North Sea as part of a plan to phase out fossil fuel extraction by 2050. The 8th tender licencing round and all future tender licencing rounds have therefore been cancelled, although the agreement made does create security for existing approved activities and opportunities for future mini-rounds and neighbouring block licenses. Denmark has some 55 existing oil and gas platforms, across 20 oil and gas fields, which will continue extracting oil and gas.

Meanwhile the date of start-up of the rebuilt Tyra field has been delayed from 1 July 2022 to 1 June 2023 as a consequence of COVID-19, as a result of local government-imposed restrictions and the closure of several shipyards where the new Tyra facilities are being built.

Capacity remains stable as region suffers only one major loss

The Nordic insurance market remains relatively stable. Estimated maximum capacity accessible directly by our Nordic offices for any one risk remains around US$3.5 billion, including local Managing General Agents (MGAs) representing Lloyd's syndicates and other international insurers who would not otherwise enjoy a local presence.

In terms of losses, the only major incident of note in 2020 was when one of a major LNG plant's five turbines caught fire in September. Initial estimates put the Physical Damage loss at a modest US$15 million, but the ensuing BI and CBI loss could mean total claims to the insurance market into the low hundreds of millions of dollars.

Buyer concerns over Arctic drilling capacity

Certain buyers with exploration operations within a more northerly latitude have expressed concern regarding the commitments made by Lloyd's in the Lloyds' ESG Report 2020 concerning Arctic energy exploration activities and are seeking urgent clarification and guidance from Lloyd's as to what these commitments may mean for them in practical terms.

[1] https://www.npd.no/en/facts/production-licences/licensing-rounds/apa-2020/
[2] https://www.npd.no/en/facts/news/general-news/2021/the-shelf-2020-high-activity-and-significant-investments/

Rating increases remain modest as Gunnar Aasberg nears retirement

Despite the profitable loss experience, the lead insurers of Nordic upstream programmes are demanding increases of a minimum of +5% for clean sought-after renewals. However, it is interesting to note that certain Norwegian based lead insurers actually did not maintain the 'minimum' rate increase requirements at 1 January 2021 that London leaders were quoting, suggesting an increased underwriting appetite for this market. Meanwhile in a notable underwriting appointment, Radmil Kranda has been appointed the new Head of Energy Underwriting at Gard; he is taking over the role from Gunnar Aasberg, who will continue in a senior role in the Energy department until his retirement.

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Singapore - Upstream

As we move further into 2021, we see a slightly shrinking marketplace in Asia, with some insurers closing local offices and shifting them to London. Capacity remains stable with little change, except for a few markets that have downsized or removed capacity altogether, while cutting back on their quoting positions. We have observed that lead authority and requests for quotations are increasingly shifting to London, instead of being directed to Singapore, given that the number of local Upstream players are limited.

Reduced capacity – especially for Geothermal risks

Upstream working capacity is reducing, due to markets limiting their line sizes. The number of leaders remains restricted, as we observe a reduced appetite for Offshore Construction. Stand-alone Subsea projects and OEE also continue to be restricted, given that most insurers prefer not to write singleton risks.

The market for Geothermal risks is particularly limited, with capacity further reduced given that available insurers have pulled out or are reducing their line sizes. Currently, there are only 15 markets globally that can write this type of risk, potentially driving higher premiums and deductibles for operators, deploying approximately 50% of capacity (with commercial realistic capacity now standing at US$800 million, although there is theoretically US$1.5 billion available on paper). This suggests that a more conservative approach to limit exposure for each risk is now required.

Offshore Construction losses

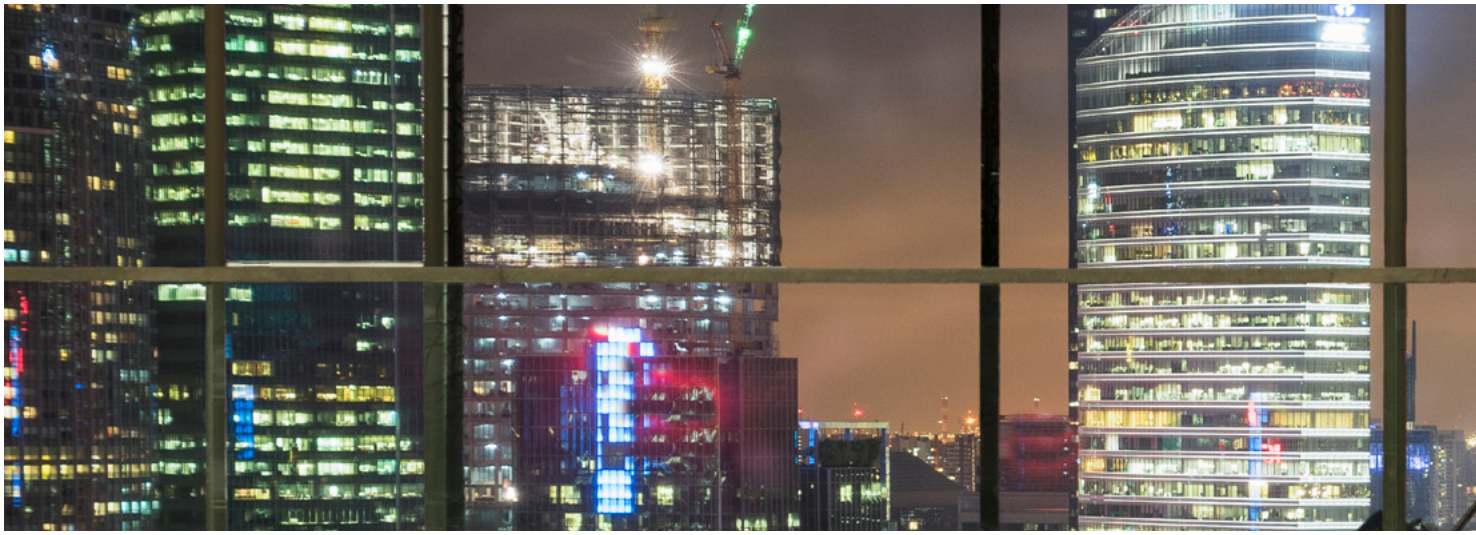
Overall, insurers are already seeing loss experiences from Offshore Construction, particularly in India and Vietnam. As a result, insurers and reinsurers have reduced their lines to limit their exposure and are increasingly selective about the clients that they onboard, preferring experienced operators or contractors.

Profitability maintained

We believe that the majority of portfolios remain profitable, although the lack of construction activities as a result of the COVID-19 fallout and low oil prices have affected new business targets for most markets. However, the recent recovery in oil price is attracting operators to start looking into new construction activities to ramp up production, prompting a possible change from the current situation.

Rating levels reflect a modest hardening

We continue to see flat to 5% increase in renewals, but we believe that this may develop into a median of 5% in the future, based on our assessment of the past 20-year cycle, and an estimate of the trends over the last 2 years.



Meanwhile, Offshore Construction Insurance continues to attract rates with a median of 1%, although we have seen some exceptions where the size of the project is moderate, and there is an operational relationship with the operator.

COVID-19 Exclusion clauses becoming standard

We have not observed any major restrictions, except for obvious COVID-19 clauses. Moving forward, it is our opinion that the COVID-19 clauses will remain a standard clause.

The recent events in Myanmar have also led to some restrictions on Myanmar-based risks such as Strikes, Riots and Civil Commotions. The situation is uncertain, as it is difficult to assess and gauge future events and implications for operators. During the time when Myanmar was under sanctions, we observed restricted coverages, shortage of capacity and limited supply, which amongst other issues impacted operators with increased premiums and incomplete placements.

Market developments/underwriter movements

Overall, we note no significant changes in the marketplace, except for underwriter movements within the following insurers:

- Robert Elliott has been seconded to AXA XL London since the last quarter of 2020 for two years.
- Rory Kane has joined Argenta Singapore as of 2020 and is looking to lead a medium-sized business, positively suggesting the continued role that Singapore plays in sustaining the regional market.
- Zurich SG's liability portfolio has been moved back to London as of January 1st this year, translating into less capacity in Singapore. Clients will need to look beyond Singapore and the region to support higher limits.
- Meanwhile, Deepak Gupta has started at Swiss Re, suggesting that Swiss Re might be a new player to lead and quote offshore liability insurance.

Outlook for the remainder of 2021

We anticipate the overall market to remain consistent. Insurers are firm about their requirements, translating into inelastic premium levels, costlier coverage/extensions and higher insurance costs. As a result, clients should consider setting aside some buffer in their insurance budgets.

With some recovery in the oil price, we are already seeing an increase in the number of construction projects. There's a higher number of requests for tenders compared to the previous year, suggesting an increase in new construction projects in 2021. Insurers will understandably be pursuing new business growth, which may drive some relief for premium rates.

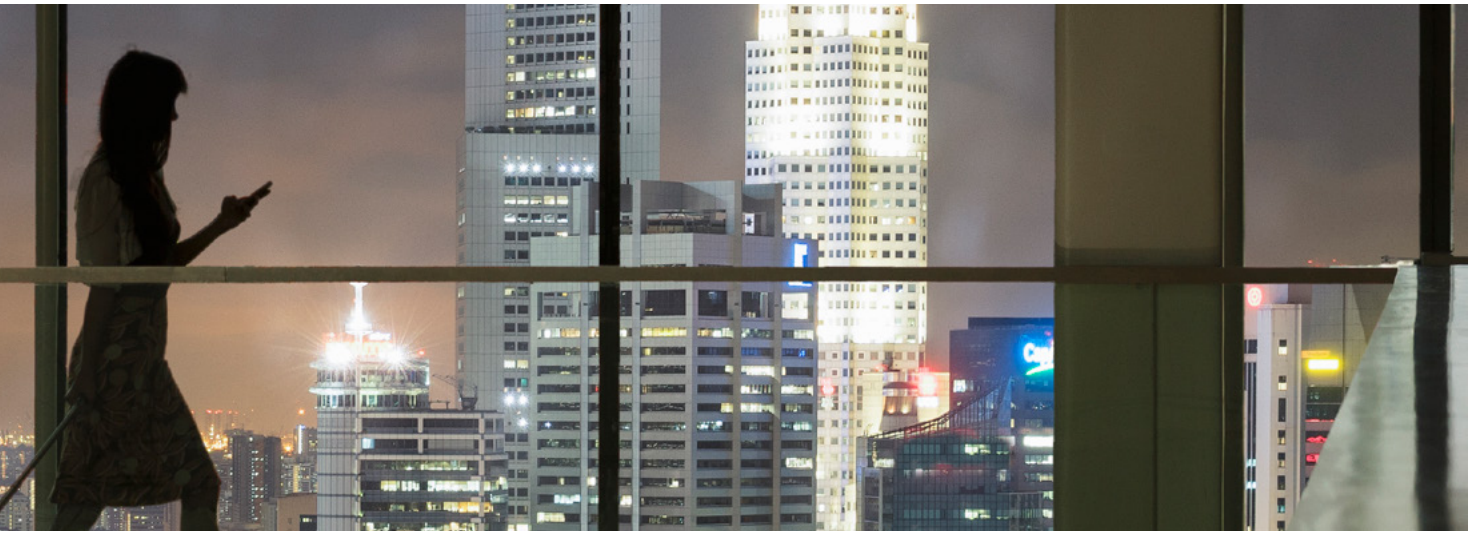
Aggregation is fast becoming an issue for risks that are based in Myanmar and Thailand, which might lead to restricting competition on some risks and future construction activities. Clients and E&P operators might need to source for new markets, in anticipation of higher premium prices and retention-levels. Self-insurance might become a necessity and should be factored into consideration by operators.

Singapore - Downstream

Capacity - reducing and selective

Capacity for Downstream risks is reducing, as most insurers are not fully utilizing their available capacity on a particular risk, suggesting a more conservative approach towards sector coverage. Realistically available capacity currently stands at circa US$1.5 billion, although theoretically at US$2.5 billion.

Overall, insurers are becoming very selective on renewals, influencing their decisions to deploy lower capacity on more adverse risks, while retaining capacity on risks that they favor. Favorable elements of risk currently include low hazardous natures, no exposure to Natural Catastrophes, and well-maintained plants, to name but a few.



A more profitable portfolio

In Asia, we expect a turnaround in terms of profitability, as market hardening remains consistent. While several lead markets are still struggling, there are pockets of positivity given that some reinsurers have started to report an improving combined ratio. There are a few significant Downstream losses in this region, apart from a handful of losses in South Korea.

Rating increases still significant

With regard to rating levels, we are seeing median increases of 25% on clean programs as the norm moving forward. However, small-scale and/or programs with patchy loss records are experiencing increases in excess of 50%. In addition, programs with natural catastrophe exposures may experience higher-than-average rate increases, due in part to the risky nature of their operations.

Terms & conditions

Insurers were quick to impose COVID-19 restrictions (with inclusion of Communicable Diseases clauses) with the obvious events of 2020. We are also seeing an increasing number of insurers imposing a Business Interruption Volatility Clause in their terms, with a stronger emphasis on the possible fallout from events that could occur to accounts in an increasingly connected world. Some insurers have also opted to impose SRCC exclusions in their terms.

Market developments/underwriter movements

Chubb's Matthew Bilbey has moved to Chubb London in late 2020, reshuffling Chubb Singapore to oversee only 'retail business', comprising small SME-sized businesses insured within a US$10 million limit. On the other hand, QMES is shifting their entire Downstream authority back to London, while Emerald Re has withdrawn from the market.

Outlook for remainder of 2021

Going forward, we expect to see a harder, more stringent Downstream market in Asia; despite this, we've observed that more tenders are coming in, especially those that are overdue. There is certainly more focus on "Broker Beauty Parade" type tenders, as insurers are keen to avoid capacity waste. Overall, we are also seeing more demand for captive solutions, with many clients working closely with their leaders to assess higher retention levels and moving from Full Limit policies to Loss Limit policies.

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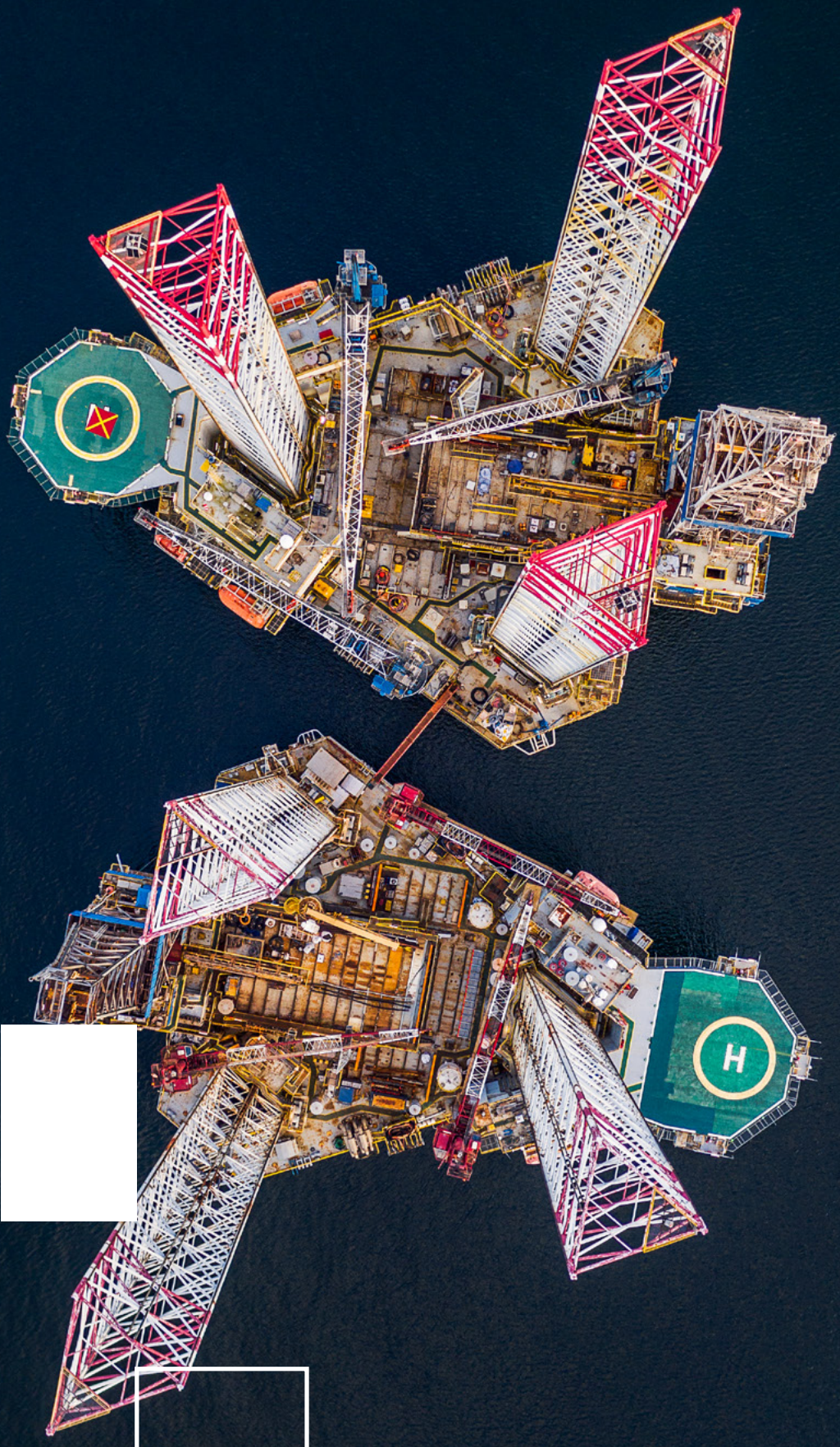
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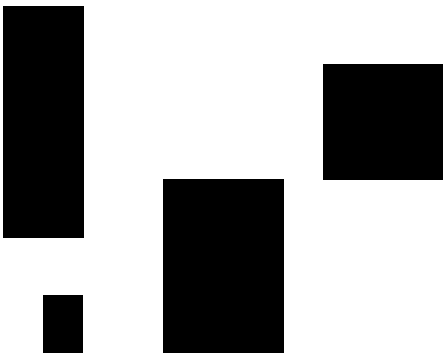

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