



IPWEEK

A review of IP Week 2020

**Defining the industry's role, delivering
a low carbon future**



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INTRODUCTION

Welcome to the IP Week 2020 review, which highlights the key issues, messages and takeaways from the conference which was held on 25–27 February and addressed the theme ‘Defining the industry’s role: delivering a low carbon future’.

For the first time in IP Week history, delegates had the opportunity to hear environmental groups and climate experts as well as energy industry representatives discuss how to approach a low carbon future, better understanding their differences and, surprisingly often, finding common ground.

Attendees also had the chance to pose questions from the floor during a series of panel sessions across the three-day programme. There were extensive networking opportunities during coffee breaks and lunches at the Hilton Intercontinental Park Lane Hotel in London, which also housed the IP Week exhibition.

We hope you find the content of this report interesting and informative, and would encourage you to attend IP Week 2021, which will take place on 23–25 February 2021.

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Front cover photos (l–r): Mathios Rigas, CEO, Energean Oil & Gas; Sinead Lynch FEI, UK Country Chair, Shell; Al Cook, Executive Vice President, Equinor; Bernard Looney FREng FEI, BP Group Chief Executive; Wale Olafisan, General Managing Director of Amni International; Okechukwa Mba, General Manager Gas, Seplat; Audry Joe-Ezigbo, CEO of Falcon Corporation

Delivering a low carbon future

The energy transition and the climate emergency were centre stage at IP Week 2020. Drawing together a diverse range of speakers from both inside and outside the oil and gas sector, leading climate experts, major oil and gas operators, national oil companies (NOCs), regulators, industry institutions and non-governmental organisation (NGOs) discussed their roles in delivering the transformation required to meet sustainability development goals (SDGs) globally for access to clean energy, while at the same time, cutting greenhouse gas (GHG) emissions and developing technologies to reach net zero.

Call for rapid action

The oil and gas sector has been responsible for building and powering the global economy as we know it today, still meeting more than half the world's energy needs.

However, as EI President Steve Holliday FREng FEI noted in his opening address: 'The great irony of where we are today is that the fuels that have provided the great foundation for human progress are in part responsible for the emergency in which we find ourselves.'

He continued: 'The science is beyond all reasonable doubt... Global energy related emissions may have flat-lined last year, but the challenge remains enormous – to underpin the global economy with a radically transformed energy system. Stakeholders and society are demanding it. Mainstream and disruptive voices have forced the urgency of the challenge up the agenda. So the necessary response is clear. We must urgently remove greenhouse gas emissions from our energy system.'

Noting the widespread – and to his mind the totally misguided – view that the oil and gas sector can only ever be the problem, Holliday stressed: 'This sector is capable of tremendous things. It's changed the world for the better for many before – and it can do so again.'

Part of the solution

In his keynote address, Dr Fatih Birol HonFEI, Executive Director of the International Energy Agency (IEA) was keen to stress that energy 'is a good thing'. But it was emissions that were 'bad', with the oil and gas sector responsible for some three-quarters of global GHG emissions, a prime cause of climate change. However, he also noted that the industry could be part of the solution as it was well-positioned to advance decarbonisation ambitions given its engineering prowess, deep pockets, wealth of skills and know-how.

Decade for delivery

However, a number of speakers over the course of IP Week warned that the 2050 net zero target was 'dangerously far off', to quote Holliday, perhaps tempting some into the mistaken belief that the industry can put off action until later. Instead, the general consensus was that the speed of transition needs to increase rapidly and that the decisions and actions taken over the next decade will determine whether or not temperatures can be contained well below 2°C, as required by the Paris Agreement, ideally 1.5°C.

'The industry needs clearer short-term targets and to show demonstrable, rapid change, in what it does, and in the products it sells,' commented Holliday at the IP Week Dinner. 'Government and society have equally important roles to play,' he said. 'This has to be the decade of delivery,' he stated.

IP Week Dinner Guest of Honour, Bernard Looney FREng FEI, Group Chief Executive, BP, echoed many of Holliday's statements, and emphasised that the industry now has a commercial, as well as moral, imperative to reduce its carbon emissions. 'Consumers everywhere,



'This sector is capable of tremendous things. It's changed the world for the better for many before – and it can do so again.'

Steve Holliday
FREng FEI,
President, Energy
Institute

not just richer countries, want energy that's clean as well as reliable and affordable. Governments want help with their low carbon commitments and aspirations. And investors increasingly want sustainability as well as performance,' he said. 'You can say that we need to change to meet those demands, but I believe we should want to change – not just because it's the right thing to do, but also because it's a tremendous business opportunity.'

Shifting the narrative

It was abundantly clear from the speakers at IP Week 2020 that the oil and gas sector knows the scale of the challenge that lies ahead of it in the move to a low carbon future and is embracing the potential it has for shaping a zero-carbon world.

The industry is keen to open the dialogue to *all* stakeholders, both within and outside the sector, increasing its transparency to public and investor scrutiny, and better communicating to the wider world exactly what it is doing in response to the climate emergency.

Indeed, IP Week 2020 was seen as a good start to opening up the wider debate. Raphael Vermeir CBE FEI, Chair, IP Week Programme Board, said: 'IP Week 2020 provided an opportunity for response to the dual challenge of climate change and growing demand for energy, with many different points of view, great networking and opportunities for collaboration, as well as a forum for listening to different voices at a time of energy transformation.'

The following pages provide an insight to what was discussed during IP Week 2020, providing food for thought and whetting your appetite to become part of the open and collaborative debate. ●



'I believe we should want to change – not just because it's the right thing to do, but also because it's a tremendous business opportunity.'

Bernard Looney
FREng FEI, Group
Chief Executive, BP

'Last year, protestors glued their hands to the doors of the IP Week conference venue, complaining of record winter heat. This year, climate experts were invited in and given the floor.'

Matthew Carr, Reporter, Bloomberg

VIEW ONLINE

IP Week video:
<https://www.ipweek.co.uk>

EI President Steve Holliday's opening address:
bit.ly/HollidayIPWk

BP Group Chief Executive Bernard Looney's IP Week Dinner speech:
bit.ly/LooneyIPWk
and
bit.ly/LooneyIPWkVideo

Leading the energy transition



Bernard Looney FREng FEI, Group Chief Executive, BP (above); Steve Holliday FREng FEI, President, Energy Institute (below)



In the year since IP Week 2019, the oil and gas industry has had to face a difficult reality – business-as-usual is no longer an option. As freak weather events and global protests continue to make headlines, public awareness of the climate emergency has reached new highs. Oil and gas firms now know all too well that this heightened consciousness translates into greater scrutiny of their operations.

The energy transition was the resounding focus of this year's IP Week Conference, which concluded with the annual IP Week Dinner at London's Grosvenor House Hotel on 27 February. The evening's speaker and Guest of Honour, newly appointed BP Group Chief Executive Bernard Looney FREng FEI, emphasised that the industry now has a commercial, as well as moral, imperative to reduce its carbon emissions.

'Consumers everywhere, not just richer countries, want energy that's clean as well as reliable and affordable. Governments want help with their low carbon commitments and aspirations. And investors increasingly want sustainability as well as performance,' Looney told the near 1,000-strong audience. 'You can say that we need to change to meet those demands, but I believe we should want to change – not just because it's the right thing to do, but also because it's a tremendous business opportunity.'

Carbon reduction obligations aren't obstacles. They're opportunities for the oil and gas sector to bring clean and reliable energy to the world, argued speakers at this year's IP Week Dinner. The key is for sector leaders to match ambition with action, writes Jennifer Johnson.

BP is one of the industry's foremost leaders when it comes to climate ambition. In mid-February, just a week or so after Looney took up the Group Chief Executive post, the company announced it would strive to go net zero carbon across its operations by 2050. In a related news conference, Looney stated that BP was striving to 'earn back the trust of society' following criticism from shareholders and environmental activists.

He also identified the problem of trust in his IP Week Dinner address and pledged to work alongside all stakeholders in the global energy system to meaningfully shift the narrative around the company. To do this, Looney said BP will advocate 'much more actively and forcefully' for policies that support progress to net zero. It also intends to stop its corporate reputation advertising campaigns and redirect those resources toward low carbon advocacy projects.

'I am speaking only for BP here, but I know we have an issue with trust. Some people think we say one thing and do something else,' Looney said. 'As you might imagine, that is not the BP that I have come to know over the last 28 years. But I get why people might feel that way, and rather than argue about it, we need to accept that that's their view, and work together to change that perception.'

In his opening speech, EI President Steve Holliday FREng FEI acknowledged the fact that the industry must also contend with the widespread – albeit misguided – view that the oil and gas sector can only ever be 'the problem' when it comes to the climate. The industry, he argued, has provided crucial energy to billions of people, powering global economic development and improving living standards. Now it must change the world for the better once again.

'The question is whether everything possible is being done to tackle fugitive emissions of methane, to bring on vital carbon capture and storage, hydrogen and electrification to move us more quickly towards net zero,' Holliday said. 'The engineering capabilities are certainly here in this room, as are the financial strength and the proven ability to deliver globally and at scale.'

While Holliday praised the countries and companies which have thus far adopted net zero by 2050 targets, he also offered words of caution against complacency. Because 2050 is 'dangerously' far off, he said, industry and policymakers could be lured into believing that action on greenhouse gas emissions can be delayed.

'Decisions and actions made within the next 10 years will determine whether or not we can contain temperatures, meaning a decade for this sector to prove itself,' Holliday said. 'To pass that test, this industry needs to show demonstrable, rapid change, now. In what it does, and in the products it sells.'

Just two months into the 'decade of delivery', it's clear that the oil and gas sector knows the scale of the challenge ahead of it. Now is the time for it to embrace the potential it has for shaping a zero-carbon world. And it all starts with the people at the top.

'We need a new kind of leadership,' said Holliday. 'One brave enough to place value on achievement beyond the short-term bottom line, one that listens and has the emotional intelligence to be responsive to the social and environmental agendas that are shaping our world, not just at a scientific level but at an emotive level.' ●

A decisive decade

The next decade is key to the oil and gas industry responding to mounting pressure from the public, policy makers, financiers and advocacy groups who are concerned about the role of fossil fuels in the climate emergency, writes Maria Kielmas.



'Today, 15% of global energy-related GHG emissions, mainly methane, come from the process of getting oil and gas out of the ground and to consumers; minimising these emissions should be a first-order priority for all companies.'

**Dr Fatih Birol
HonFEI, Executive
Director, IEA**

The pace of change of the energy transition needs to increase rapidly and the oil and gas sector must transform its operations over the next decade to curb greenhouse gas (GHG) emissions and meet decarbonisation goals, while simultaneously supplying an expected growth in global energy demand. This was the key message of IP Week 2020, the over-riding theme of which was 'Defining the industry's role: delivering a low carbon future'.

For the first time in IP Week history, representatives of environmental groups shared the platform with energy industry representatives to engage on these big themes, to understand their differences and, surprisingly often, to find common ground. With 54% of the world's energy sourced from oil and gas, and these expected to remain a major component of the global mix until 2050, what form will this low carbon transition take?

Speakers pointed to solar, wind and other renewables, electric and hydrogen fuel cell vehicles, and the use of biofuels for land, marine and even aviation transport. But how will intermittency issues from renewable power generation be addressed when the battery technology is not yet ready? Who provides the lithium and rare earth elements that are critical to the new energy technology? These are important issues yet to be resolved.

Activist investors worried about the climate's long-term future have

been organising the withdrawal of financing from corporations who do not meet their low carbon goals. But how does the move to low carbon renewable energy help nearly 800mn people worldwide with no current access whatsoever to electricity or electric grids? What does this transition mean to regions of dire poverty? These were just some of the questions posed during this year's IP Week. Another recurring question was what speakers wanted to come out of the COP26 meeting in Glasgow later this year – the main call was for clear policy direction.

Aligning plans and goals

Dr Fatih Birol HonFEI, Executive Director of the International Energy Agency (IEA) and keynote speaker on the opening day of the programme, said no oil and gas company will be unaffected by this transition to cleaner energy, but the industry needed to reconcile two goals – 'On the one hand, short-term profits; on the other hand, a social licence.'

The oil and gas industry still has to align its investment plans with the goals of the Paris Agreement that aims to limit global temperature rise to well below 2°C above pre-industrial levels, and a preferable 1.5°C, said Birol. This implies reducing or removing GHG emissions from the use of fossil fuels alongside investment into low carbon energies such as solar and wind power. But the capital investment budgets of major oil and gas companies worldwide devote 99% of funding to fossil fuels and a mere 1% to clean energy, according to IEA analysis.

'Today, 15% of global energy-related GHG emissions, mainly methane, come from the process of getting oil and gas out of the ground and to consumers; minimising these emissions should be a first-order priority for all companies,' stated Birol. He also noted that the industry's methane emissions could be reduced at low to zero net cost, and with existing

technology. 'It's a very easy win,' he commented.

The industry is well-positioned to advance decarbonisation ambitions given its engineering prowess, deep pockets, wealth of skills and know-how, added Birol. So it should concentrate on exploring all means of developing clean energy technology, particularly carbon capture, storage and use (CCUS) and hydrogen.

Andrew Smart, Global Energy Lead, Accenture, echoed this sentiment, noting that the energy industry 'needs to work with the sectors it serves to fundamentally change how it jointly produces and consumes'. He said: 'Business must play a leading role in this change, innovating for new forms of value creation,' adding that the circular economy not only presented a framework for this change, but also a significant business opportunity.

A mixed legacy

'The great irony of where we are today is that the fuels that have provided the great foundation for human progress are in part responsible for the emergency in which we find ourselves,' said Energy Institute President Steve Holliday FEng FEI. 'We need more, cleaner energy and we need it fast,' he continued. 'When I hear about the 2050 target – it is a long way off... My own belief is that the next 10 years will determine success or failure.' The oil and gas sector has a 'decade to prove itself' with demonstrable, rapid change, he said, while recognising the road ahead would be 'bumpy'.

The continued production of fossil fuels risks the industry's own 'obsolescence and destruction', warned Bob Ward, Policy and Communications Director, Grantham Institute on Climate Change and the Environment at the London School of Economics, adding: 'The entire energy sector must own the transition to net zero.' Edward Mason, Sector Lead, Climate 100+ and Head of Responsible Investment, Church Commissioners of England, also noted that: 'Companies should get on board to support climate change goals or risk losing critical financial support.' Meanwhile, Andy Kinsella, CEO of London-based Mainstream Renewable Power, said 'fossil fuels are no longer a sure-fire investment.'

Mark Gyetvay, CFO and Deputy Chairman of Yamal-based Novatek, Russia's second largest gas



Arnaud Breuillac (second from right), President Exploration & Production, Total, fielded a number of questions from the floor after his presentation in the 'Engaging and responding to commercial pressure' session

producer, pointed out: 'The world will need more energy in the future, not less... There has been an ongoing debate between the energy industry and the green movement. The energy industry has moved to the middle and cleaned up its act, but there [has been] no real dialogue with the greens, just shouting and yelling from that side.'

Indeed, this is one of the reasons why IP Week opened its doors to a wider audience in 2020, providing a forum for those inside and outside the industry to engage on climate issues.

Meanwhile, Arnaud Breuillac, President, Exploration and Production, Total, presented a scenario suggesting that oil and gas will still constitute over 50% of the global primary energy mix by 2040. There will also be a need to replace at least 70bn barrels of oil from new discoveries while gas demand growth will be significant, he noted.

Long-term outlook

Christer Tryggstad, Senior Partner at McKinsey & Co upheld this growth in demand. The management consultancy's future demand scenario projects that half of the passenger cars on the road in the US are expected to be electric by 2050, the chemical industry will use three times more power than today, and there will be a 30% increase in power used for space heating in buildings.

All of this leads to a doubling of energy demand with electrification and as wealth increases. Oil demand will peak in the early 2030s, with 50% of its growth driven by the chemical industry. There will be a 30% decline in demand for road transport use and an overall fall in demand by 30mn b/d by 2050. But investment in oil and gas will still be needed as 45% of this projected oil demand has yet to be discovered.

The McKinsey outlook projects

that by 2050 low cost renewable energy producers will dominate the power markets, generating 11 times today's output capacity. Gas-fired power generation will increase by 12%, while coal-fired power generation will fall by 50% but will not disappear from the energy mix.

On the climate side, the McKinsey reference case scenario pessimistically projects that global temperatures could be 3.5°C higher than pre-industrial levels, well above the Paris Accord targets.

Joan MacNaughton, CB Hon FEI, Chair of the Board of The Climate Group, presented an even bleaker future for the US coal sector. This industry was never interested in helping with the climate issue, she said, adding: 'It thought it would be alright on the night.'

Suggesting the oil and gas sector take heed of the coal industry's complacency, she noted that half the US coal industry had gone bankrupt since 2016, ostensibly because of its replacement in power generation by non-conventional gas. An ongoing energy transition and public pressure could lead to a 95% cumulative loss of asset value in US coal by 2050, MacNaughton added.

Meanwhile, many IP Week speakers pointed out that industrialised countries' concern about diversifying the energy mix is seen as an alien concept in some parts of the developing world. 'It would be very misleading to say that everyone is in the same boat,' said Dr Carole Nakhle, CEO, Crystal Energy. 'Of course we are facing the same challenge, but our interpretation of what should be done is different from one region to another.'

Major international oil companies (IOCs) come from countries whose governments have aggressive climate policies, but what they spend on renewables is 'peanuts' compared with oil and gas, she explained. If the OECD

member governments become even more aggressive in their climate policies and cut oil and gas production, who fills the gap? Nakhle answered her own question – the national oil companies (NOCs) in the rest of the world.

Coronavirus impact

IP Week opened as the economic impact of the coronavirus COVID-19 epidemic in China was becoming apparent. Much of this year's expected Chinese oil demand will be lost as a result of reduced economic activity and travel restrictions in China and beyond, said Russell Hardy, Group CEO, Vitol.

The virus has reduced China's oil demand by about 4mn b/d, or some 4% of global consumption. It could have a total impact this year of about 200mn barrels, he warned. This has caused the lowest oil demand growth for 10 years and the first quarterly contraction in oil demand for 10 years, according to IEA figures. The agency has slashed its 2020 demand growth forecast by 365,000 b/d to just 825,000 b/d. This may have to be revised further as the facts of the virus spread worldwide.

However, an unusual oil market phenomenon has been how the barrel's price has remained in the \$50–60s range despite a string of adverse geopolitical events, Birol observed. These events include the Venezuelan crisis, the attack on Saudi oil facilities, the killing of Iranian general Qasem Soleimani, and the war in Libya that has paralyzed oil production. If only one of these events had happened a few years ago, prices would have spiked. But now there is a huge abundance of oil supplies. 'This, together with coronavirus, may be a further downward pressure on prices,' Birol said.

A further market unknown is the future of the US shale oil boom and its impact on the global gas market. The incentive oil price for US shale fracking is between \$55–60/b. But the industry needs to drill or re-drill up to 20,000 wells annually to 'stand still' and maintain current oil production levels. The industry can still produce about 14mn b/d, said Vitol's Hardy, but once this declines, the power in the oil market will shift back to OPEC plus Russia and others.

US shale production has also affected the global gas market. Asian countries continue to be a major growth region for gas demand but need more infrastructure to bring in supplies, despite the recently commissioned



'Investors seeking to understand climate risk need to understand that the fossil fuel sector is no longer a "blue chip" investment in which they can expect steady, powerful growth in cash and value. The renewables sector has now taken that position.'

**Andy Kinsella,
CEO, Mainstream
Renewable Power**



'The industry will absolutely need oil and gas in the future, but ultimately the assets that are investable will have to be low cost and low carbon; and I believe, with oil, they will have to have a shorter payback period.'

**Andrew Inglis,
CEO, Kosmos**



Left to right: Allan Taylor, Co-head, EMEA Corporate Practice, White and Case, and Chair of the 'Strategies for delivering a low carbon future' session; Dr Carole Nakhle, CEO, Crystal Energy; Patrick Allman-Ward, CEO, Dana Gas; and Gustavo Baquero, Senior Vice President, Operations Technology Excellence, Development & Production International, Equinor

Power of Siberia gas pipeline from Russia and plans for a second pipeline along the same route. Hardy observed that there was no point in bringing higher cost US LNG to Europe because everyone in that region is operating on pipeline gas from various parts of Europe or North Africa.

Meanwhile, Asia's increased demand, gas use in replacing coal for power generation, as well as the rise in nuclear power generation in China, Korea and Japan, have all contributed to a flat-lining of carbon dioxide (CO₂) emissions in 2019. According to IEA figures, even as the world economy expanded by 2.9%, CO₂ emission levels remained at 33 Gt, principally due to lower electricity generation emissions.

Pathways and payers

As the international energy industry plans the path to lowering its GHG emissions, what are the practicalities it faces in the future energy transition?

Deborah Byers, Americas Sector Leader at management consultant EY raised six questions about the pathway industry should adopt towards cleaner energy – How fast should the transition be? How complete will the transition be and how can companies balance conflicting investor demand for traditional returns versus concerns about climate change? How will industry balance the need to invest in the future with the uncertainty in demand? How much can governments afford to subsidise and/or tax to accelerate the transition – ie who pays? How will capital markets respond?

Vitol's Russell Hardy believes that regulation and policy from governments are essential to solve the energy transition. 'We are short of this and need some broad-based solution that the industry can get behind,' he said.

For OECD-based companies such as Total, governments should set a carbon pricing mechanism. Total already uses a carbon price of €40/tCO₂eq internally, noted Total President, Exploration and Production, Arnaud Breuillac.

But Crystol Energy's Carole Nakhle stressed the dilemma of major oil producing countries, especially in the Middle East and North Africa, whose economies are not diversified. 'Where is the money for the transition going to come from? The governments? The NOCs?' she asked.

In Germany, Nakhle observed, the government claimed at the outset of that country's energy transition, the *Energiewende*, that

the costs would be just €1/month per person. These costs were forecast to rise to €1tn by the 2030s.

Arab Gulf countries have commitments to investing in and expanding renewable energies. However, NOCs such as Saudi Aramco and Kuwait Petroleum both spend about \$500bn in their capital investment budgets on oil and gas while their spend on green energy is just in the millions, not billions like some OECD majors, she said.

In contrast to the OECD majors, these are companies that have to meet the aspirations of their governments. In these countries budgets are based on oil export revenues. If a government wants to invest in the energy transition, the funding will come from the revenues of the NOC. The NOC, in turn, will have to produce more oil and gas to fund the new transitional investment. 'The outcome will be politically driven, not commercially,' Nakhle stated.

However, political planning of economies does not have a good reputation. 'We know from experience that planned economies are not as efficient as market-based economies,' commented Patrick Allman-Ward, CEO of Sharjah, UAE-based Dana Gas. 'But politicians at least need to set a carbon price.'

Government actions

Governments worldwide have moved into action to varying degrees in response to the climate emergency. China has pledged an overall CO₂ reduction of 40–45% by unit GDP below 2005 levels by 2020 and an increase in the share of non-fossil fuels for primary energy consumption to 15% by 2020. How coronavirus will affect this remains an open question.

Meanwhile, the European Union's Green Deal aims to make the EU the first carbon-neutral geography by 2050. It intends to mobilise €1tn from the as yet undetermined and much contested EU budget as well as public and private funds to get the project moving. The US Congress is contemplating the Energy Innovation and Dividend Act that puts a price on carbon-emitting fuels at source.

And the UK's Oil & Gas Authority (OGA), the energy regulator, is considering how it could help meet the goal of cutting emissions to net zero by 2050 while at the same time safeguarding jobs and investment in the North Sea. This means that North Sea operators will have to shrink their carbon footprints by

reducing flaring and methane leaks. 'I think we can go further and faster [on emissions reduction],' commented Andy Samuel, Executive Director, OGA.

Over the last year Russia, too, has started taking climate issues seriously, reported Chris Weafer of consultancy Macro-Advisory. Russia signed up to the Paris Agreement last year, although the late- and post-Soviet economic decline has meant that Russian carbon emissions are already 30% below those of the 1990 base case in the Paris Accord. He also claimed that oil plays a smaller role in the Russian economy. In 2013 Russia needed an oil price of \$115/b for its budget to break even; now this has fallen to \$40/b, Weafer reported.

The scale of the challenge for the oil and gas industry, however, remains enormous, noted Dana Gas' Allman-Ward. 'You need as much of renewables as possible; more, not less, nuclear; and more gas until the intermittency problem is solved,' he said. The battery technology does not exist yet to provide a realistic baseload power supply from intermittency-afflicted wind and solar generation, he noted. He also called for the industry to put forward 'correct facts' about the future of energy given that there was a 'huge amount of misinformation that is influencing public policy'.

Meanwhile, Manish Chawla, Global Managing Director, Energy & Natural Resources Industries, IBM, noted that disruptive forces are 'driving seismic shifts' in the energy sector. 'To successfully navigate these disruptions, the sector must rapidly move from the experimentation of the recent past decade to holistic transformation at scale, to become a "Cognitive Enterprise",' he said.

Speaking at the digitalisation briefing, his colleague Sonia Van Ballaert, Global Client Director, IBM Global Markets, noted: 'Energy leaders will have to scale a very steep ladder to achieve a green business. They must innovate products and services that are innately sustainable; reduce GHG emissions and carbon footprints of their current business; and manage the business risk of climate change at existing operations.'

Industry moves

Oil companies are more aligned with climate goals than is commonly imagined, even though the public debate is becoming more polarised, observed Sinead Lynch FEI, UK Country Chair, Shell.



Coronavirus COVID-19 has reduced China's oil demand by about 4mn b/d, or some 4% of global consumption and could have a total impact this year of about 200mn barrels, Russell Hardy, Group CEO, Vitol, told delegates at IP Week.



'Events like [IP Week] are absolutely critical. It's very important that we get different voices in the room, rather than different voices shouting at each other from different rooms. In a polarised world, it's really important that we have panels that look not just at the challenges but also the solutions.'

Al Cook, Executive Vice President, Equinor



Oil companies are more aligned with climate goals than is commonly imagined, even though the public debate is becoming more polarised, observed Sinead Lynch FEI, UK Country Chair, Shell, during the 'Engaging and responding to public pressure' session.

'The aim is getting a ship to sea that does not add carbon,' she said, while carbon-neutral motor racing is also a Shell ambition, reported Paul Bogers, Shell Vice President for Fuels Technology. 'People think that if anything had to go [as a result of climate change measures] it would be motor sport,' he said. However, Shell has a deal with Italian car maker Ferrari to make Formula 1 events carbon neutral from 2030. 'If Formula 1 can achieve this so can large-scale music events and the like,' commented Bogers.

Meanwhile, Norway's Equinor has launched climate ambitions to reduce the absolute GHG emissions from its operated offshore fields and onshore plants in Norway by 40% by 2030, 70% by 2040 and to near zero in 2050. Gustavo Baquero, Senior Vice President, Operations Technology Excellence, Development & Production International, Equinor, said offshore wind will be an important part of the company's portfolio. The company's goal is to become a major in floating offshore wind, a spin-off from its experience in offshore oil operations, with a focus on the company's regional clusters including the North Sea, Baltics and US East.

According to Jean-Luc Guiziou, Managing Director, Total E&P UK, over the past 50 years, North Sea oil and gas investment has been based on two pillars – the safety of working in a harsh environment, and cost control to ensure price sustainability. 'There is now a third requirement,' he said – the reduction of GHG emissions. Total is investing 10% of its capital investment budget in low carbon projects and 14% in research on



CO₂ reduction. Already 20% of the company's CO₂ emissions' reduction is the result of digitalisation, he noted.

'Gas is key to the energy transition in the eastern Mediterranean,' said Mathios Rigas, CEO of UK independent Energean Oil & Gas, which is developing Israel's Tanin and Karish offshore gas fields and working in eight Mediterranean countries. The company aims to reduce its carbon intensity by 70% over 2020–2022, with executive pay linked to ESG (environmental, social and governance) goals from 2020. This gas production will enable Israel and Greece to opt out of coal and lignite based power generation, respectively, while Energean can remain an independent gas-focused E&P company in the eastern Mediterranean, he reported. Meanwhile, North African countries can take advantage of gas development in and around the Mediterranean region by becoming net exporters of gas to Europe while securing affordable, sustainable and continuously available energy.

Looking ahead

Climate change is increasing pressure on governments,

Drawing together a diverse range of speakers from both inside and outside the oil and gas sector, leading climate experts, major oil and gas operators, national oil companies (NOCs), regulators, industry institutions and non-governmental organisation (NGOs) discussed their roles in delivering the transformation required to meet sustainability development goals (SDGs) globally for access to clean energy, while at the same time, cutting GHG emissions and developing technologies to reach net zero.

consumers and the energy industry to focus on decarbonisation in the production and use of all energies. Electrification – 'molecules to electrons' was a signature phrase at IP Week – digitalisation and energy efficiency are key factors at play, as is the development of new markets such as the electricity flexibility market. 'But in the end you can't electrify everything,' noted Kate Dourian, Regional Manager, Middle East and Gulf States, at the World Energy Council London Secretariat.

The 21st century will not witness the demise of oil and gas. Despite climate activists' claims that fossil fuels face obsolescence, and some energy company executives' saying they have nothing to apologise for, the move towards a low carbon future will take time, technology, finance and much deliberation. For most delegates attending IP Week the aim was not to look for problems, but to seek out the best opportunities. How to move forward by reducing costs and emissions, and improving efficiency.

Geography is key. While OECD countries aim for energy diversity, other regions don't have the luxury of diversified economies and the provision of food, water and energy to regions of vast poverty remain the priority. Indeed, as the EI's President Steve Holliday noted: '[While] oil and gas is responsible for building and powering the global economy as we know it and currently meets well over half of global energy needs.... there are still at least 800mn people with no access to electricity and 3bn people who rely on dirty, inefficient and polluting cooking fuels, like wood and animal waste.'

Who in the end will pay for the energy transition, anywhere in the world? The choice is wide – IOCs, NOCs, governments through general taxation or carbon taxation on both companies and individual households? And who will enforce the regulation of this new world of low carbon production and consumption? Perhaps these are questions to be addressed at the COP26 meeting in Glasgow in November 2020? ●



'Gas is key to the energy transition in the eastern Mediterranean.'

Mathios Rigas, CEO, Energean Oil & Gas



Building talent and skills for tomorrow's leaders is a key priority for the oil and gas sector. 'There is still much to do,' noted Louise Kingham OBE FEI (left), Chief Executive EI and Chair of an insightful session at IP Week. Helena Charlton (right), Deputy Director, Oil & Gas Policy, BEIS, emphasised the role the UK government has to play by putting into statute obligations to reach net zero by 2050, and policies on gender and diversity, that will set the pathway for an actionable future. 'The evidence is clear that companies with more diverse workforces are more successful,' she said. As a geoscientist, Carla Riddell (second from right), Senior Vice President, West of Shetland, Spirit Energy, was concerned there has been a 50–70% decline in geoscience applicants in the UK. 'This is the canary in the mine... it's not just geoscience but throughout all the talent we need,' she said. Pippa Jones AMEI (centre), Geophysicist and Business Advisor, CNOOC International and Vice Chair, Energy Institute London and Home Counties Young Professionals Network (YPN), made the point that: 'Every challenge is an opportunity'. Furthermore, she noted: 'The [energy] transition is an opportunity to broaden skills.' Encouraging talent is vital said Tricia Nelson (second from left), Partner, People Advisory Services Leader for Change, Talent & HR Transformation, EY, and noted that in the age of technology: 'One robot can maybe replace 50,000 humans. But 50,000 robots will never replace an extraordinary human being.'

The emissions challenge

The emissions reduction challenge was a key subject of debate at IP Week 2020, with a broad spectrum of opinion from both inside and outside the industry, writes Nnamdi Anyadike.

Opening IP Week 2020, EI President Steve Holliday stressed that the science of climate change ‘is beyond any reasonable doubt’. He stated that the oil and gas industry must move to remove greenhouse gas (GHG) emissions from across the energy value chain as quickly as possible as it strives to meet an anticipated 25% increase in global energy demand by 2040. He noted that the next decade would be key to the sector proving itself. He also emphasised that the industry needs to extend its dialogue with those outside the oil and gas sector, in particular NGOs, environmentalists and consumers, and to be ‘open to scrutiny’.

The message was taken up by Dr Fatih Birol HonFEI, Executive Director of the International Energy Agency (IEA) and keynote speaker, who noted that if the oil and gas sector wanted to be part of the solution, about 15% of global GHG emissions from extraction needed to be cut as a first priority. The most potent of GHG emissions is methane, and Birol stated that much of this could be cut ‘at little or no cost’ with current technologies. He also noted the need to reduce carbon dioxide (CO₂) emissions, adding that carbon capture, use and storage (CCUS) would be ‘critical’ in helping cut

carbon emissions and offering the oil and gas industry ‘a huge opportunity for a social licence’.

European companies like Total, Repsol, BP and Shell are in the vanguard of the energy transition, actively targeting emissions reduction from their oil and gas operations. As an example, Arnaud Breuillac, President E&P, Total, noted that the company was ‘targeting at least a 13% reduction in greenhouse gas emissions at our operated oil and gas facilities in the 10 years to 2025’. The company also has an ‘ambition’ to reduce the carbon intensity of energy products sold to its customers by 15% in 2015–2030. Meanwhile, Equinor’s Gustavo Baquero, Senior Vice President, Operations Technology Excellence, Development & Production International, said the Norwegian company is looking to reduce the absolute GHG emissions from its operated offshore fields and onshore plants in Norway by 40% by 2030, 70% by 2040 and to near zero in 2050.

Role of hydrogen and CCUS

Chairing a special session on the role of hydrogen and CCUS in enabling a net zero carbon energy system, John MacArthur FREng CEng FEI Chartered Petroleum, VP Group Carbon, Shell, commented:

‘The time is ripe to tap into hydrogen’s potential.’ He also argued that CCUS and hydrogen are ‘not either/or’s’ as CCUS can be an enabler for the clean production of hydrogen.

Corin Taylor, Principal Consultant, DNV GL, warned ‘there is no single pathway to a decarbonised energy mix’, and that emissions reduction ‘is harder in some areas than others’. ‘Progress so far has been mixed,’ he added. According to DNV GL research, there has been a 21% emission reduction in the US power sector since 2010, compared with 23% in the EU; an 18% reduction in the EU housing sector, compared with 0% in the US; and a 2% rise in emissions in the EU transport sector, with 5% rise in the US.

Taylor said that to achieve zero carbon ‘every furnace and kiln has to switch to electricity, hydrogen or bio-sources, and CO₂ must be captured from other industrial facilities’.

He went on to explain that hydrogen is increasingly being seen as the means by which to tackle ‘hard to decarbonise’ sectors in industry globally, where it can be used as a replacement for natural gas. It can also be used in home heating, where it can be blended with natural gas by up to 20%. Indeed, in new appliances 100% hydrogen can be used.

To demonstrate this point, Taylor mentioned the H21 project in the UK for decarbonisation of heat at major North of England urban conurbations. And a home heating project in the Netherlands, due for completion in 2023, where 100% hydrogen is being used as heating fuel. The project is in a residential apartment block in the Rozenburg area of Rotterdam and is the second phase of the ‘Power2Gas’ programme led by Stedin, a Dutch gas and power grid operator, and managed by DNV GL.

By 2050, the Hydrogen Council (a global initiative of leading energy, transport and industry companies with a long-term ambition for hydrogen to foster the energy transition) sees over 500mn t/y of hydrogen being



‘The time is ripe to tap into hydrogen’s potential.’

John MacArthur,
Vice President
Group Carbon,
Shell, and Chair,
OGCI Climate
Investments



‘It’s really fantastic that the energy transition, the need to address climate change, has been put front and centre of the [IP Week] agenda. So I want to congratulate the sector and the people who’ve organised the event for taking that very bold step.’

Joan MacNaughton
CB HonFEI, Chair,
The Climate Group

El raising awareness

As a global partner to the energy industry, the Energy Institute (EI) is working hard to equip professionals for the energy transition. It is a supporting organisation to the *Methane Guiding Principles* and uses every opportunity to raise awareness of the need to bear down on this potent greenhouse gas.

In addition, the EI Technical Department’s good practice programme is actively supporting the oil and gas sector in the transition to a low carbon economy. Last October, the EI held carbon capture, use and storage (CCUS) and hydrogen workshops to identify non-competitive scientific and technical challenges that need to be overcome to facilitate deployment. CCUS workshop Chair Andy Brown emphasised: ‘CCUS is absolutely fundamental to achieving decarbonisation targets, it is vital that it is seen to be safe and affordable.’ Following the hydrogen workshop, the EI published *Guidance on hydrogen delivery systems for fuelling motor vehicles, co-located with petrol filling stations*.

Meanwhile, the EI Knowledge Service team will publish *Energy essentials: a guide to hydrogen* later in March, looking at hydrogen’s potential applications, user experiences, associated costs and safety risk.

produced, equivalent to 18% of total final energy demand and resulting in a 6bn t/y CO₂ abatement.

'Sourcing the substantial levels of investment required could still be a problem,' noted Taylor. However, he argued that hydrogen could follow the same track as wind and solar, which benefitted from over 15 years of price support. 'There is no reason why we can't see the same for hydrogen and CCS,' he said. Costs could be reduced through a combination of economies of scale; technological progress, including bigger turbines and floating turbines; and the reduced cost of capital as risks to investors.

The overall message from the session was that blue hydrogen derived from natural gas equipped with CCUS 'will help pave the way', while green hydrogen from water using renewable power will increasingly be used to meet the 2050 net zero carbon reduction target.

Focus on fugitive methane emissions

Steve Holliday, President of the EI, pointed out at the start of IP Week that it was hard to think of a more obvious place for the oil and gas sector to start tackling the issue of GHG emissions than by addressing fugitive methane emissions from its production and transportation facilities. So important is this issue, that it was the theme of a closing session on the final day of the IP Week programme, featuring a mix of panellists including operators, an NGO, an industry collaboration perspective and two detection technology specialists.

Stressing the need for the oil and gas sector to deal with fugitive emissions if gas is to 'retain its credibility' as a fuel in the future energy mix, session Chairman Nick Turton, External Affairs Director, EI, noted the potential economic and reputational 'wins' for gas if emissions are curbed throughout the gas production and supply chain.

Jean-Francois Gauthier, Vice President, Sales and Marketing, GHGSat, began the session by outlining how high resolution satellites can be used to monitor methane emissions from oil and gas facilities, providing a 'top down' approach to detection. He stated that such satellites 'can address up to 70% of the total methane volume emitted from the source' and that artificial intelligence (AI) coupled with data from GHGSat and other third parties can be used to predict areas at higher risk of emissions.

Bart Wauterickx, CEO, The Sniffers, then presented his



Photo: Kim Jackson

The 'Reducing fugitive emissions from the natural gas value chain' session featured a diverse range of speakers. Left to right: Rhea Hamilton, Managing Director Ventures, OGC Climate Investments; Richard Mortimer, Vice President Engineering, BP; Simon Denn, General Manager, Environment and Carbon for Integrated Gas & New Energies, Shell; Poppy Kalesi, Global Policy Director, Environmental Defense Fund; Bart Wauterickx, CEO, The Sniffers; and Jean-Francois Gauthier, Vice President, Sales and Marketing, GHGSat

company's 'bottom up' approach, utilising sensor equipment and a wide range of services to detect and quantify emissions, energy losses and pipeline network defects. He noted how methane reduction could be accelerated through benchmarking (both internal and external), driving continuous improvement. He also called for industry to stop reporting figures based on emission factors and modelling, focusing instead on actual measurement data.

Simon Denn, General Manager, Environment and Carbon for Integrated Gas & New Energies, Shell, and Richard Mortimer, Vice President Engineering, BP, presented viewpoints from the operator perspective. Highlighting what each company was doing to reduce methane emissions, both pointed to the importance of 'leading by example', not just tackling emissions from their own operated assets but also encouraging joint venture partners to adopt best practices in order to 'build credibility across the full gas business'.

Such best practices are key to the development of international standards, which, in turn, feed into regulation, they noted.

Shell has a target to maintain methane emissions intensity below 0.2% by 2025 to complement its ambition to cut the net carbon footprint of its energy products by around half by 2050.

BP recently unveiled plans for a 50% cut in the carbon intensity of products it sells by 2050 or sooner, and to install methane measurement at all the company's major oil and gas processing sites by 2023 and reduce methane intensity of operations by 50%.

Rhea Hamilton, Managing Director Ventures, OGC Climate Investments outlined the organisation's investment strategy

to reduce methane emissions, with the focus on 'detect', 'measure' and 'mitigate' technologies. Noting that 'multiple solutions will be required in multiple areas', Hamilton said the good news was that the technologies exist today. Echoing Wauterickx' call for a focus on actual measurement data, she stated that there was a significant amount of data out there already and stressed the need for industry to 'go beyond detection and move to mitigation and fixing'.

Meanwhile, Poppy Kalesi, Global Policy Director, Environmental Defense Fund, pointed to what she saw as a 'very narrow window of opportunity for policy makers and regulators to act as a catalyst for real change and the take-up of innovation in this industry'. Stating that 'collaboration is key to tackling climate change and the emissions challenge', she called for industry, policy makers and regulators to 'join hands, rather than point fingers' and said that now was the time 'for meaningful leadership and ambitious action'.



'It is hard to think of a more obvious place for the [oil and gas] sector to start [tackling the issue of GHG emissions] than fugitive methane emissions in its production and transportation facilities.'

Steve Holliday
FEng FEI,
President, Energy
Institute



'There is a very narrow window of opportunity for policy makers and regulators to act as a catalyst for real change and the take-up of innovation in this industry... now is the time for meaningful leadership and ambitious action.'

**Poppy Kalesi, Global Policy Director, Environmental
Defense Fund**

Exploring low emission pathways

As a major emitter of CO₂, the transport sector will require a transformation to meet the goals of the Paris Agreement, with a wide range of technologies needed for the sector to evolve to a low emissions future. Nick Cottam reports.

A net zero target for transport is a tall order, with a 30% increase in travel forecast by 2040, noted Jim Herbertson, Technical Director, Climate and Energy, IPIECA, who moderated a lively and informative session on 'Exploring low emission pathways for transport'.

Green hydrogen points the way for shipping

With IMO 2020 entering into force on 1 January this year, shipping was the dominant focus for the morning. Peter Norfolk, S&P Global Platts' Editorial Director, Global Shipping & Freight, highlighted the impact of the regulations. 'The requirement to reduce the sulphur content of shipping fuel from 3.5% to just 0.5% caused an awful lot of consternation in the industry,' he said. In short, ship owners could invest around \$3mn and retrofit scrubbers to take the sulphur out of existing marine fuels, and those that had invested in scrubbers had 'enjoyed a \$10,000/d premium for their investment'. Alternatively, and as has proven to be the case with the majority of shippers, they could move to low sulphur fuel oil as their transport fuel.

Norfolk also noted the use of alternative fuels as a medium- to long-term necessity on the voyage to net zero. Hydrogen, he said, was 'increasingly attracting energy market participants as a potential new clean fuel for transportation.' Alternatively, inspiration could be taken from the futuristic Oshima Ultramax 2030, a vessel powered by a mix of old and new technology – utilising a hard sail at the front, solar panels, a battery with shaft generator and LNG fuel,

and claimed to have a 50% better EEDI (energy efficiency design index) than comparable vessels. The overall message, he said, was: 'The market always finds a way. There could be a restructuring in ownership. I don't see a global subsidy to help out the shipping industry so we have to accept that costs will rise.'

The need for partnerships and collaboration to accelerate the development of low carbon technologies was emphasised by a number of speakers. Guy Platten, Secretary General of the International Chamber of Shipping (ICS), highlighted a proposal being put to the IMO for the world's first collaborative shipping R&D programme to help eliminate CO₂ emissions from international shipping. Core to the proposal is a \$5bn fund over a 10-year period, paid for by a mandatory \$2/t fuel levy. Camille Bourgeon of the International Maritime Organization (IMO) also noted that the industry needed incentives 'to get it right', which would require more research and innovation.

Meanwhile, Dr Alexandra Ebbinghaus, Shell Shipping's Manager for Strategic Projects, spoke of the company's position at the cutting edge of new thinking and change in the sector, introducing Shell's investment in a 10 MW PEM electrolyser to produce 1,300 t/y of hydrogen and its launch of the world's first liquid hydrogen carrier.

Shell's electrolyser project with ITM Power at the Wesseling refinery in Germany is designed to decarbonise hydrogen production and is a possible first step towards changing the core business model of a traditional refinery. Hydrogen



The shipping panel fielded a number of questions from the floor. Left to right: Dr Alexandra Ebbinghaus, Manager for Strategic Projects, Shell Shipping; Camille Bourgeon, International Maritime Organization (IMO); Peter Norfolk, Editorial Director, Global Shipping & Freight, S&P Global Platts; Guy Platten, Secretary General, International Chamber of Shipping (ICS); Javier Martinez, Business Development Technical Officer, Port Authority of Huelva; Jim Herbertson, Technical Director, Climate and Energy, IPIECA

is currently a byproduct of the refining process and while this, the world's largest PEM electrolyser, will help decarbonise the refinery, it will also allow Shell and ITM to explore other applications for green hydrogen.

The session concluded that the shipping sector needs to adopt a range of measures if it is to join the net zero club. Alternative fuels have a role to play, with hydrogen appearing to top the wish list for long distance, low carbon travel. Indeed, Ebbinghaus stated: 'There's no way you can get to 2040 and achieve the net zero ambition without having alternative fuels which are zero carbon.' However, other factors are required, with improved logistics and fleet management, for example, needed as part of the solution.

Low carbon take-off for aviation

The session then moved on to address how the aviation sector, responsible for 10% of the transport sector's greenhouse gas (GHG) emissions according to Herbertson, was doing with regards to CO₂ reduction. The good news, reported Martina Di Palma, a Sustainability Analyst with the European Regions Airline Association (ERA), is that a flight you take today produces 50% less CO₂ than a similar flight in 1990. The 1.15mn flights ERA represents annually are undoubtedly becoming more energy efficient, she said, but thanks to its cost and the absence of targeted regulation there is still only 0.01% penetration for sustainable aviation fuel (SAF).



'The challenge for SAF is the expense as it costs 5–7 times that of conventional jet fuel.'

Martina Di Palma, Sustainability Analyst, European Regions Airline Association



Sustainable aviation fuel (SAF), hydrogen and electric vehicles (EVs) were on the agenda in the afternoon transport session. Left to right: Daniel Hayes, Project Manager, LowCVP Partnership; Bryan Stonehouse, Global Aviation Biofuels & Carbon Manager, Shell Aviation; Martina Di Palma, Sustainability Analyst, European Regions Airline Association; Dr Stephen Herbst, Technical General Manager, Hydrogen, Toyota Motor Europe; Natasha Patel, Director, Baringa Partners; Jim Herbertson, Technical Director, Climate and Energy, IPIECA

This is despite the bullish assertion of Shell Aviation's Biofuels and Carbon Manager Bryan Stonehouse, that a million commercial flights this year will be powered by SAF, encouraged by airports such as Los Angeles and San Francisco requiring SAF to be added to the aviation fuel used at their facilities. 'The penetration [of SAF] is low, but the number will keep growing,' he said. 'The industry really needs a drop-in solution and if you achieve a 100% replacement of Jet-A1 with SAF this will lead to a 63% reduction in CO₂ emissions.'

With more people flying, the solution has to be mixed with a four-fold basket of measures, suggested Di Palma. Technology design, operational improvements, the wider user of SAFs, and market-based measures such as the EU-ETS and the Carbon Offsetting and Reduction Scheme for International Aviation (known as CORSIA) would all be required in the future, she said. Stonehouse also indicated the need for a new generation of advanced (non-crop) biofuels and policies to support the cost and investment challenge of creating a SAF industry.

Refinery of the future

While alternatives to liquid fuels dominated the transport session, there was a robust defence of refineries and their capacity for change by John Cooper, Director General of Fuels Europe, the European refining industry business association. 'A refinery can evolve to become a new hub for different types of material,' he said. 'We can supply the same market as today, but with climate-neutral fuel,' noted Cooper optimistically. 'We can't be competitive with petroleum, but we are looking at

what's affordable.' Improving fuel efficiency while reducing carbon intensity could itself produce a 'cost neutral' result for the end-user, he suggested. 'If the volume of fuel you use goes down as the price goes up, the price to the end user can stay the same.'

Liquid fuels, said Cooper, had to be part of the future transport fuel mix, as hydrogen, electrification and improved energy efficiency probably wouldn't be enough along the road to carbon neutral. The challenge for refineries was to scale up to ensure that measures such as carbon capture, use and storage (CCUS), and green hydrogen, were viable. The vision, he said, was to turn the refinery into an energy hub surrounded by associated industry.

Heavy duty vehicle challenge

'There will be challenges for heavy duty vehicles (HDVs) getting to zero emissions,' noted Daniel Hayes, Project Manager of the Low CVP Partnership. 'Multiple solutions will be required in the short- and long-term.'

'Battery electrics are fine for scheduled services like city buses or urban delivery vans. But batteries are generally too heavy and not energy dense [ie energy efficient] enough for long-haul vehicles. There needs to be far more R&D,' he suggested.

Therefore, 'the short-term option is a move towards HVO (hydrotreated vegetable oil) and CNG/LPG using biomethane or bio-propane or bioLNG.' But he also maintained that: 'Hydrogen is the holy grail... and should be green,' though it is very costly and with little or no supply chain at present.

Looking forward, Dr Stephen Herbst, Technical General Manager, Hydrogen, Toyota Motor Europe,

forecast that: 'Hydrogen will be a cost competitive option by 2030, especially for heavy duty trucks and coaches.'

Waiting for the EV mass market

Meanwhile, with cars and vans accounting for 47% of energy-related GHG emissions, the emerging electric vehicle (EV) market was being enthusiastically embraced by the market, explained Natasha Patel of Baringa Partners. Investors had invested \$220bn since 2010. 'We can see this ecosystem coming together,' she said. Patel predicted a tipping point in 2023 as more mass-produced EVs come onto the market and large-scale producers like VW take more control of the supply chain.

The caveat? 'At the moment, charging an EV can be an incredibly painful process and governments with investors and other parties have a role to play in creating a more uniform infrastructure,' she said.

The battery supply chain

A key issue for EVs will continue to be battery supply and performance, a state of affairs highlighted in a Breakfast Briefing on the battery supply chain. Speaker Simon Moores, Managing Director of Benchmark Mineral Intelligence, also spoke of the need for a more integrated infrastructure. 'Nickel and lithium will be the fundamental challenges,' he said. 'It's both a quality and a volume game, and you have to control the EV supply chain.' The EV sector had grown four-fold in the last four years, he said, and the challenge is to scale it 10-fold over the next decade.

Baringa Partners' Patel was even more bullish in her presentation during the transport session, predicting an EV production rate which could rise from 40,000 vehicles a year today to 1.8mn by 2030. 'EVs have brought the transport and energy solutions together,' she said. 'This will help to ensure that transition is sustainable. ●'



'There will be challenges for heavy duty vehicles (HDVs) getting to zero emissions. But there are multiple solutions.'

**Daniel Hayes,
Project Manager
of the Low CVP
Partnership**



'Hydrogen is the holy grail [for HDVs] and should be green.'

**Dr Stephen Herbst,
Technical General
Manager, Hydrogen,
Toyota Motor
Europe**

'Climate urgency permeated the room at IP Week 2020 in a way I haven't experienced before at an oil and gas conference.'

Ben Ratner, Senior Director, Environmental Defense Fund

'If [IP Week] felt like a mediated confrontation between the tensions of public pressure over climate change, and what the future of energy companies will look like, it was still a notable shift.' Katherine Dunn, Associate Editor, Fortune Magazine

NOCs gain green momentum

National oil companies face a pivotal decade in their transformation from followers to leaders in the energy transition. Can the petro giants evolve in time? Yes, but they must work – hard, writes Sean Evers, Managing Partner, Gulf Intelligence.



Photos: Gulf Intelligence

The Middle East national industry panel (left to right): Dr Dawood Nassif, Chairman, Bahrain Petroleum Company (BAPCO); Dr Bassam Fattouh, Director, Oxford Institute for Energy Studies; Talal Al-Awfi, Chief Commercial Officer, OQ



'It is the early days of IMO 2020, but Fujairah's position as a world class energy hub at the heart of the South-South Corridor – linking the Middle East, Asia and Africa – gives it a natural advantage.'

Captain Salem Al Hamoudi, Director, Fujairah Oil Industry Zone (FOIZ)

Speedy adaptability. This is the key goal for national oil companies (NOCs) that emerged from the 4th Gulf Intelligence Middle East Energy Summit at IP Week 2020, attended by high-level energy executives.

The historical epicentre of fossil fuels faces its greatest overhaul since modern oil first bubbled from local soil in 1908 – to remain relevant and profitable in a lower carbon future. Shying away is not an option, especially as it is not solely an environmental conversation. Ever-improving NOCs' effectiveness in this radically changing landscape is paramount to sustaining energy and economic security in the Middle East in the 2020s and beyond.

Evolution underway

NOCs' ability to transform into international NOCs (INOCs) is crucial to maximise profitability, 66% of respondents to a GIQ Industry Survey said at IP Week. Yet the transition to a lower carbon economy is the biggest obstacle to becoming INOCs, flagged 68%. Consider this against the fact that 53% of respondents believed the Middle East risks being left behind in the energy transition and missing out on a potential \$1bn/yr of economic rewards.

Many NOCs have already made impressive progress; the region is home to some of the world's largest (and cheapest) renewable energy projects, for one.

But this is the tip of the iceberg. The Middle East (and the world) is still not doing enough. Collective global ambition must increase more than five-fold over current levels to deliver the cuts needed over the next decade for the 1.5°C goal detailed in the Paris Agreement, the UN has warned. The clock isn't ticking – it's booming.

Next steps?

Eliminating subsidies for consumers in the Middle East – notably power, water and fuels – is pivotal to the region's green transition, highlighted 74% of respondents in the GIQ survey. But even if this is done, the region will not achieve its climate goals without putting a price on carbon, stressed 69%.

Middle Eastern stakeholders believe the most realistic carbon pricing method is a country-specific mechanism (a carbon tax or an emissions trading scheme (ETS)), instead of a region-wide mechanism that risks taking decades to implement.

And therein lies an overarching challenge for all NOCs' green evolution – the need for more supportive policies that champion change with minimal risk to balance sheets and energy security. Investors are ready to support the region's transformation, but lagging government policy will slow progress in 2020, cautioned 74% of survey respondents.

Juggling act

The intensifying volatility in energy markets over the last 12 months cannot hamper NOCs' transformation. From geopolitical

clashes – US-China, US-Iran, Iran-Saudi and others – to oscillating crude oil prices, downward revisions for global economic growth and the rapid spread of the coronavirus... the list of pressure points appears to get longer every month.

Unsurprisingly then, the need to build trust among stakeholders – public and private – was frequently voiced at the Summit. The near-seamless implementation of the International Maritime Organization's (IMO) ruling on 0.5% sulphur in bunker fuel from 1 January this year was one much-needed affirmation. It bolstered confidence that the Middle East can adapt at speed to environment-driven regulations, including the UAE's Port of Fujairah, the world's second largest bunkering hub.

Amid the complexity of the energy transition, one point is stark – NOCs are quickly evolving, but not quick enough. They must hurry. As the writer H G Wells said: 'Adapt or perish, now as ever, is nature's inexorable imperative.' ●

Gulf Intelligence International Energy Diplomacy Person of the Year Award



Mohamed Jameel Al Ramahi, CEO, Masdar

'Abu Dhabi has actually exceeded its 7% renewable energy target [set for 2020]. Obviously, Masdar pioneered that evolution and transformation into the energy mix and there are a lot of players today. When we started, there were none.'

Meeting demand sustainably

IP Week shone the spotlight on Asia in a session looking at how the region can meet demand and achieve sustainability. Kim Jackson reports.

Asia's continued economic growth and rising standard of living will make its constituent nations pre-eminent energy consumers for the foreseeable future, noted Peter Godfrey FEI, Managing Director, Energy Institute Asia, on opening the Asia outlook session.

He pointed out that Asia demand growth now represents well over 50% of global growth and is likely to dominate global energy markets over the next decade despite the economic slowdown in China. In contrast, energy demand among the 36 nations in the OECD, which includes most big economies in the Americas and Europe, will basically be flat.

How the region transitions to a low carbon future will vary from country to country. 'It is easy to paint a picture of wealthy and mature economies and what they should be doing to decarbonise and improve efficiency,' commented Godfrey. 'It's far more difficult to paint this same picture in countries where energy consumption remains low and vital for economic development.'

This was a point picked up by Dr Michal Meidan, Director, China Energy Programme, Oxford Institute for Energy Studies. She explained that: 'While the OECD can see clear pathways to managing the triple challenges of energy access, security and sustainability, developing Asia still struggles with access, local air pollution and supply security.' Coal will remain an important part of the energy mix in Asia even as the share of renewables grows, she said.

'The industry faces a dilemma – how to supply these growing markets amid growing regulatory and investor pressure to limit their fossil fuel footprint.' She also noted that international and national oil companies (IOCs and NOCs) are no longer competing on a level playing field in terms of financing.

China focus on clean energy

Wang Qi, Minister Counsellor, Embassy of the People's

Republic of China (based in the UK), emphasised that: 'China is determined to make an important contribution to sustainable development and the global efforts against climate change.'

He highlighted the country's accelerated efforts to transform, noting that the share of clean energy in China's total energy consumption reached 24% in 2019, while China's installed renewable energy capacity accounts for 30% of the world's total.

He also pointed out that China accounted for 29% of the world's green energy patents.

Minister Wang went on to state that China has focused on a number of new technologies and new business models in recent years, including smart grids, electric vehicles (EVs), large-scale energy storage and the smart use of energy.

'As of the first half year of 2019, 3.44mn new energy vehicles have been sold in China, accounting for half of the world's total. Pilot exploitation of offshore natural gas hydrate has been successful,' he reported.

He also noted the concrete steps China has taken to address climate change, reporting that carbon intensity per unit GDP had dropped by 45.8% compared with 2005, which had led to a reduction of 5.26bn tonnes of CO₂ emissions. In 2019, China's energy consumption per unit GDP dropped by 2.6% year-on-year.

India's 'four pillars' for success

Moving to India, Dr Leena Srivastava, Deputy Director General – Science, IIASA, explained that the 'four pillars' on which the country's energy policy were based were energy access, energy efficiency, energy sustainability and energy security. Two key technologies are driving the sustainable energy transition in India – solar and wind, she said.

She highlighted the country's ambitious set of Nationally Determined Contributions (NDC) in response to the Paris Agreement, which could be summarised as three main targets – an unconditional target of 33–35% reduction in emissions intensity of GDP by 2030 from 2005 levels; achieving around 40% renewable energy share by 2030 (conditional

on green climate fund support); and creating a carbon sink of 2.5–3bn tCO₂e through forests.

She explained that despite technological progress and improvements in efficiencies of options over time, improved access, a move to cleaner modern fuels and better lifestyles are pushing up energy requirements across sectors in India.

She noted that with high economic growth and greater electrification, India could need more than 400 GW of non-fossil fuel capacity by 2030, far beyond the 175 GW target for 2022.

Opportunities for LNG

Alastair Hensman, Senior Vice President, Europe, Middle East and Asia Region, Nexant Energy & Chemicals Advisory, provided an insight to the developing markets, trade and opportunities for LNG.

He noted that although 2019 had looked like a boom year for LNG, beneath the surface all was not well, with weaker demand growth in Asia, a collapse in the Middle East and North America, a surge in new supply and declining spot prices.

He added that the coronavirus outbreak had hit the LNG market, with China, one of the largest gas markets, significantly contracting and Chinese LNG buyers becoming 'distress sellers', 'with unsold cargoes floating and hanging over the market'.

While stating that: 'In the bigger picture there remains good potential for an LNG transformation,' Hensman warned that this outlook was 'not guaranteed'. He pointed to the Asian power mix being transformed to allow for considerable increase in renewables; other LNG markets (industry, city gas) under threat as they consider introducing hydrogen; and gas/LNG could 'struggle to maintain its social licence as the acceptable hydrocarbon if not seen to be tackling methane emissions and embracing CCS'.

He also noted that: 'Low gas prices give LNG another immediate transformational opportunity – replacing diesel as an industry and transport fuel. ●'



'China stands ready to join hands with all parties to implement the Paris Agreement on climate change and build a fair, reasonable and win-win global governance system for climate change.'

Wang Qi, Minister Counsellor, Embassy of the People's Republic of China

Changing the narrative

Africa has the potential for global transformation, but needs actionable solutions that will meet the twin objectives of power for all as well as ensuring clean energy, writes *Brian Davis*.

The narrative on Africa is different from the rest of the world,' explained African session Chair Audry Joe-Ezigbo, CEO of Falcon Corporation and Chair of the Nigerian Gas Association. Sub-Saharan Africa has a population of 1.1bn and over 600mn have no access to power 'in a clean form or not' and with unprecedented poverty. However, 'Africa has potential for global transformation as a resource rich country, rich in people,' she said. But there is a disconnect between the growth in population and the low speed of development, 'and that mismatch can only be addressed by making sure that the continent is lit up'.

'We want to make sure that lighting up the continent meets the twin objectives of access to power for all as well as ensuring clean energy,' she maintained. Joe-Ezigbo emphasised: 'The great imperative for us here is to get actionable solutions we can take back to our different countries and industries.'

Reframing development

The session began with a presentation by William Pollen, Programme Director of Invest in Africa, a not-for-profit organisation that works with SMEs (small and medium-sized enterprises) across Africa. Its purpose is to upskill these organisations so they can get into the supply chain – be it energy, oil and gas, mining, construction or finance.

Although access to finance is a huge challenge for these small companies 'none of this can be done without energy or power', he noted. Lack of reliable power and black-outs are an everyday challenge. And the Sustainable Development Goals (SDG7, SDG13 and SDG11 in particular) are 'like a wish list on how to make the world a better place', he added.

He recognised that energy is the spark for poverty reduction, with huge market potential. The Sub-Saharan Africa electrification rate is merely 45% and is expected to rise to 65% by 2030. 'This looks

good, but when you factor in longer term population growth, by 2050 you're back to 700mn people with no access to electricity.'

So what's the answer? Pollen suggested that 'SDGs will be achieved by a better energy mix, with renewables, gas-to-power and LNG. He recommended reframing development around SMEs and taking the supply chain local. He stressed that despite big distribution and policy improvements, 'More of the same won't do. Most of the 600mn who lack electricity are in rural disconnected regions, so the distribution discussion is irrelevant.'

Unfortunately, to achieve universal access to electricity by 2030 would require tripling the current rate of annual connections, and doubling the investment level to \$15bn/y. However, 'the least expensive way to make the most progress is, not surprisingly, renewables,' he said. Typically, by increasing grid-connected electricity generation from renewables (solar and wind) and using decentralised solutions, like small-scale and stand-alone systems that can be run off grid. He cited the success of Azuri Technologies solar systems, as an example.

'A rethink is required. Its not necessarily grid-based, its not coal, oil or gas – it's and, and, and ...' he said. However, 'being poor is expensive', with charging a mobile in Kenya up to 70 times more expensive than in the UK. But considering 120mn households (with 4–5 people) don't have access to power and spend \$240/y on power on average, that's an annual market opportunity of \$24bn.

Connecting the dots

In the panel session, Wale Olafisan, General Managing Director of Amni International, reflected on the availability of solar and wind options. 'Can you imagine the power of energy for everybody? All we need to do is connect the dots,' he said. Khady Dior Ndiaye, Regional Vice President and

Country Manager, Senegal and Cote d'Ivoire for Kosmos Energy, agreed: 'We need to think more about a move towards cheaper as well as cleaner energy during the transition.' Kosmos currently produces 0.1% of oil and gas worldwide and fully subscribes to the SDG goals, she said. 'We can't talk about the energy transition without gas, like our major gas projects in Senegal and Mauritania which are low carbon intensity.'

A new approach

Okechukwa Mba, General Manager Gas, Seplat, maintained: 'You have to adopt a new approach. Since 2000, 40% of gas discoveries have been made in Africa, led by gas resources and LPG development in Nigeria.' But he recognised that power generation has not made much progress on the continent and emphasised that 'market forces should dictate prices all the way into electricity'.

Galen Treadgold, Acting Managing Director of Amni International, described the company's West Africa success story, with active exploration in two fields offshore Ghana – the Tubus and Ima gas developments – and their first foray into deep water, which is a 2bn barrel opportunity.

Lessons from partnering

Alex Josiah Adzew, Chief Operating Officer of indigenous oil company GOIL, described lessons from partnership with BP in the development of 50–100bn cf of gas off Senegal and Mauritania 'in a clean, climate friendly way – which shows that working in parallel with NOCs is crucial'. While local content is focused on the increasing use of domestic resources, Treadgold admitted there are lots of issues in Africa around inadequate local capacity, skills and expertise; a focus on 'content levels' rather than development of capabilities; issues around 'fronting'; and inadequate monitoring. 'As one of the largest oil companies in Ghana, it makes you think what small companies have to go through,' he said. ●



'Africa has potential for global transformation as a resource rich country, rich in people.'

**Audry Joe-Ezigbo,
CEO, Falcon
Corporation**



'We need to think more about a move towards cheaper as well as cleaner energy during the transition.'

**Khady Dior Ndiaye,
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Country Manager,
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