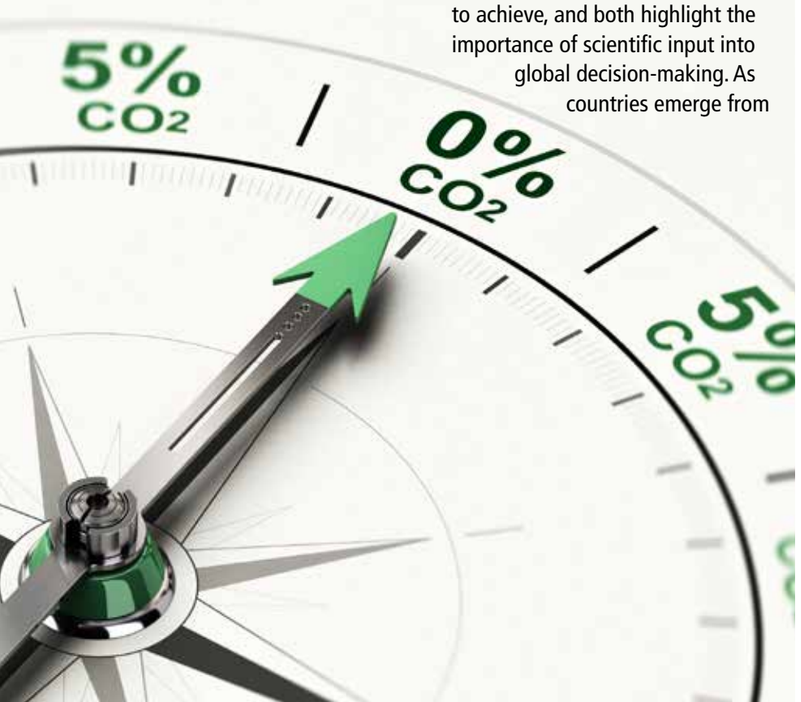
The greater (and greener) the challenge,

THE GREATER THE OPPORTUNITY

It has been another eventful couple of months for many countries around the globe. The COVID-19 situation continues to create havoc across the world, as countries deal with the fall-out of the health crisis and associated economic impact. Here *Professor Paul de Leeuw*, Energy Transition Institute, Robert Gordon University,* explains why the oil and gas industry, and the wider energy sector, has a very significant role to play in shaping and building the new energy future.

With around half of the world's population still in either full or partial lockdown, it is no surprise that the crisis continues to have a material impact on the global energy markets. Worldwide oil demand this year is expected to fall by up to 8% (or almost three billion barrels), equivalent to almost seven times the UK's annual oil production. This is likely to be the largest global annual demand reduction on record.

There are clear parallels between the COVID-19 crisis and the climate change emergency. Both are global problems requiring global solutions. Both require a level of global collaboration that is often difficult to achieve, and both highlight the importance of scientific input into global decision-making. As countries emerge from the lockdown, there is now a real opportunity for governments around the world to put climate change and energy transition at the heart of their economic recovery plans.



Doing so will be a powerful mechansim to demonstrate their commitment to the 2015 Paris Climate Change Agreement. This agreement was a "game-changer" for the world. It was the first ever legally-binding climate change agreement, setting out a global framework to avoid climate change by limiting global warming to well below 2°C, and pursuing efforts to limit it to 1.5°C. The climate agreement has now been ratified by almost 190 countries.

The Conference of Parties (COP26) summit in Glasgow in November 2021 is probably the next most important climate conference since Paris. In the last five years, the willingness of governments around the world to tackle the climate emergency has been mixed at best.

Professor Paul de Leeuw, Energy Transition Institute, Robert Gordon University,

The COP26 summit will need to ensure that country-specific plans and legally-binding commitments are in place to limit global warming by 2050 or earlier. Failure to do so will risk jeopardising our collective ability to manage climate change.

So what does this mean for the energy industry? It is clear that the debate around fossil fuels and the impact on climate change is getting increasingly polarised. What we urgently need is a more informed debate based on facts and evidence.

Maybe there is something we can learn from the beverage industry? … actually there is. With over two billion cups of coffee consumed in the world every day, coffee is a global commodity. Given some of the health concerns relating to caffeine, great strides have been made to create decaf coffee. Imagine if we could do something similar for the decarbonisation of natural gas at source, combined with associated carbon capture and storage (CCS) in the hydrocarbon industry, while supporting the climate change agenda at the same time. Basically, keep the good bits with the benefits they bring, but remove the polluting parts. This would be a real win-win.

> *There are clear parallels between the COVID-19 crisis and the climate change emergency. Both require a level of global collaboration that is often difficult to achieve, and both highlight the importance of scientific input into global decision-making.*

In 2019 the world produced around 160 million barrels of oil equivalent per day, of which circa 60% was oil and around 40% was gas. Some promising new technologies are currently being developed to decarbonise oil at source. However, it is already possible to produce "decaf gas" at scale by splitting natural gas into hydrogen and carbon dioxide (CO2), with new technologies being developed to improve these processes further. As hydrogen is a clean source of energy – the only by-product of using hydrogen is water – it is going to be a key part of the solution to deliver the world's net zero agenda.

The current use of hydrogen around the world is predominantly as an industrial feedstock and for the production of ammonia. In the future, it is expected that hydrogen will play an increasingly important role in the heating, transport and power generation sectors.

Progress is also being made in developing new technologies to transport hydrogen at scale to markets around the world. Companies in Japan are developing the world's first marine carrier to transport liquefied hydrogen between Australia and Japan. If successful, it has the potential to turn hydrogen from a regional, niche energy source into a global commodity.

Although there are almost 200 countries in the world, around 70% of the world's gas is produced in only ten counties, while approximately 60% of the world's gas is consumed in ten countries. Six countries – Russia, Canada, Iran, USA, China and Saudi Arabia – feature both in the top 10 producer and consumer list. Decarbonisation of natural gas at

source, combined with associated carbon capture and storage (CCS) in these six countries, would be a major lever to reduce global CO2 emissions, while also helping to accelerate the global energy transition.

Where decarbonisation at source is not a workable or economically-viable option, natural gas can be decarbonised instead at key landing points in specific user countries (e.g. at liquified natural gas (LNG) terminals, pipeline connection points, or at gas-gathering plants) with the hydrogen produced used as source fuel for heat, transport or power.

"Decaf gas" is likely to be a key part of the solution towards delivering net zero. Decarbonising at source or at key landing points can help to deliver the net zero agenda, because it can't be oil and gas versus renewables. It has to be about using all the world's existing resources in a more environmentally-sensitive, socially-acceptable, collaborative and economically-beneficial way.

The oil and gas industry and the wider energy sector has a significant role to play, contributing to the discussion as well as in shaping and building the new energy future. The sector has the assets, skills and capabilities to deliver the new, lower-carbon solutions at scale and at pace. The industry also has the global reach to ensure that new technology and best practices are shared, enabling other regions to decarbonise faster and more efficiently.

The oil and gas industry is a fundamental part of the solution and the role of the sector in the energy transition should reflect this. It will ensure that the sector attracts the best and brightest people to truly help to change the world's energy future.

Although Ireland currently only represents a modest amount (circa 0.1%) of global CO2 emissions, it is well positioned to be a driving force in managing the transition to a lower-carbon future. To do so will require courageous leadership and bold action.

As Washington State Governor Jay Inslee said: "We're the first generation to feel the impact of climate change and the last generation that can do something about it.

***Paul de Leeuw is a senior industry leader and executive with over 30 years' experience in the global energy sector. He has worked in a wide range of companies, including Shell, Marathon Oil, Amoco, BP, Venture Production and Centrica.**

He is currently the Director of Robert Gordon University's Energy Transition Institute, a Professor at Robert Gordon University, Chair of PlanSea Solutions, a board member of the Oil and Gas Technology Centre (OGTC) and a member of the Opportunity North East (ONE) Energy sector board.

Paul is an experienced non-executive director, with over 20 years' involvement in public, private and voluntary sector organisations. He is also a regular contributor to industry events and a commentator on issues and developments in the international energy sector.