

# SPE Review London



The official e-magazine of the Society of Petroleum Engineers' London branch

## The new aspiration: Zero emission platforms

### Also in this issue:

- Net zero 101: Carbon offsetting
- ESG for a UK independent oil and gas company
- SPE Coventry: Fresh ideas and a strong future vision
- SPE London Young Professionals: Innovative, interactive and skillful
- Arkwright: Identifying, inspiring, and nurturing future leaders
- Social-oriented business purpose: Profitability 301
- Evaluating limits to CO<sub>2</sub> storage capacity



BEHIND THE SCENES

LETTER FROM THE CHAIR

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## ABOUT US

The Society of Petroleum Engineers (SPE) is a not-for-profit professional association whose members are engaged in energy resources, development and production. SPE is a non-profit professional society with more than 156,000 members in 154 countries, who participate in 203 sections and 383 student chapters. SPE's membership includes 72,000 student members. SPE is a key resource for technical knowledge related to the oil and gas exploration and production industry and provides services through its global events, publications, events, training courses and online resources at [www.spe.org](http://www.spe.org). SPE London section publishes SPE Review London, an online newsletter, 10 times a year, which is digitally sent to its 3000+ members. If you have read this issue and would like to join the SPE and receive your own copy of SPE Review London, as well as many other benefits – or you know a friend or colleague who would like to join – please visit [www.spe.org](http://www.spe.org) for an application form.

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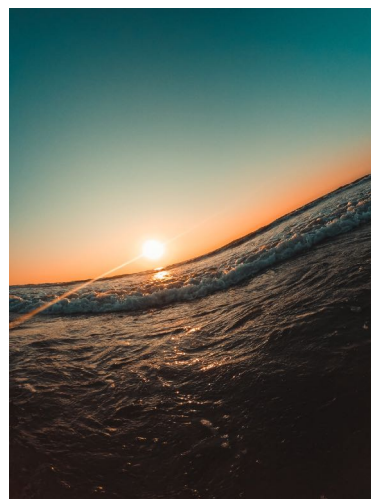


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# Behind the Scenes: SPE Review Editorial Board



## Elizaveta Poliakova, Editor in Chief

Elizaveta is a Reservoir Engineer at Trident Energy Management Limited. She has a Master's of Science in Petroleum Engineering from Imperial College London and a Bachelor's in Petroleum Engineering from the University of Leeds.

Elizaveta has been with SPE for more than five years. She was the President of SPE Imperial College Chapter and the President of SPE Leeds Chapter. Previously, she was also on the committee of SPE YP.



## Josh Beinke

Graduated from University of Adelaide in 2008 with a Petroleum Engineering degree. After several years with Chevron moved to Europe in 2016, now working as an Exploitation Engineer with Vermilion Energy.



## Mark Beleski

Experienced engineer, with deep understanding of industry practices, trends and challenges. Energy Loss Adjuster with AqualisBraemar, in London.



## Ffion Llwyd-Jones

Business editor and writer. Finding, explaining and sharing stories that people can understand and relate to. International experience in technology, environment, and animals as therapy.



## Justin Reynolds

Business writer focused on the energy and finance sectors. Currently writes for financial journals, has worked as communications officer for an oil & gas start-up, and features writer for The New European.

**A big Thank You! to all the organisations that support the SPE London section**



## Letter from the SPE London Chair



Dear SPE London members and colleagues,

Welcome to the April/May issue of the SPE Review.

We are already well into 2021 and I hope that you are all remaining safe and well.

The Covid19 pandemic continues to affect our daily lives, but in a less invasive way and I hope you are enjoying the loosening of restrictions in a responsible manner. The SPE, like many businesses, has suffered financially during the global pandemic so it was encouraging to see the AIME donate \$250,000 to SPE, which will go some way to lessening the financial impact.

The Covid19 pandemic has impacted many of us individually and collectively. In the section, we have seen a 50% drop in student membership numbers, which is concerning but somewhat inevitable as the UK universities rely on international students for much of their intake. The section will focus on working with those universities that have sustainable curriculums promoting the full range of energy topics to promote the benefits of joining the SPE through its student member program.

For those of us who are existing SPE members, I would remind you all that the SPE offers a tremendous volume of material to support you in your careers, no matter where you are in that journey. There are two areas I would like to highlight: Competency Management Tool Kit and the Business Management & Leadership Skills development. Both offer great resources for members to confirm their current skill levels, devise a plan to address shortcomings and to transition into leadership roles. If ever there was a need for strong leadership and capable management it is now!

The section continues to offer stimulating technical and non-technical content in its monthly programs. The Net Zero & Sustainability committee has developed a series of monthly events, some in collaboration with the Aberdeen Section that began earlier this month. These 1-hour or so events will run alongside the usual end of month presentations – both remaining virtually delivered during this current SPE year and free of charge. Over the coming months, you will see a focus on data science and its application within the oil & gas industry. The regionally supported Data Science Engineering and Analysis (DSEA) events will start this month, hosted by the London section with 3 monthly follow-on events hosted by our European colleagues in the Netherlands, Italy and Romania.

For those with a keen interest in data analytics the section is working to coordinate a European Region 'Hackathon' event during October this year. As this event matures information on the content, dates and venues will be circulated across the membership.

For the remaining time of my tenure as Chair the section will continue to offer virtual events. As a community we are now used to connecting virtually. This is now becoming the 'new normal' and I can share colleagues' views that we do suffer from virtual overload. To remain engaged with the membership we do need to make the virtual events as appealing as possible, content notwithstanding. Please share your thoughts on how we can improve our virtual formats. It's critical that we remain relevant to our membership. Nevertheless, looking to the future it is likely that previously held physical events will have a virtual component running in parallel, possibly opening them up to a wider audience who can access content at more convenient times.

The section is a volunteer led and industry supported organisation, so it's great to welcome a new annual sponsor: ERC Evolution, who will be associated with the Net Zero and Sustainability program. Thanks to ERC Evolution for supporting the section so it can continue to diversify the program offered to our membership.

If you believe your business would benefit from sponsoring or supporting the SPE London Section please contact me at [Oleumventures@icloud.com](mailto:Oleumventures@icloud.com)

I continue to look forward to sharing our 2021 SPE London journey together.

**Adrian Southworth, SPE London Chair**

## Letter from the Editor



Dear SPE members and colleagues,

Welcome to our second edition of SPE London Review in 2021.

As the restrictions slowly start to ease across the United Kingdom, the country is progressing with the roll-out of the vaccination program against COVID-19. Over 33 million people, nearly half of the UK's population, have received their first dose of the COVID-19 vaccine in the country, according to the BBC news.

In the meantime, SPE London, SPE YP London, and SPE UK Student chapters' committees are continuing with the online programs. Scroll down to get a taste of the latest events hosted since our previous edition. If you are not yet a member, join now to ensure you don't miss out on any of the future events!

With this publication, we are starting to publish Net Zero 101 articles written in collaboration with the SPE London Net Zero Team. Go to page 9 to read the first article of the series on Carbon offsetting. In addition, on page 7, you will find an abstract of the MSc thesis on the 'Use of a Simplified model to evaluate limits to CO2 storage capacity from injectivity, geography and costs' by Happiness Ativie, who pursued her master's degree in Petroleum Engineering from Imperial College London.

SPE YP and SPE Coventry student chapter shared their updates and vision with us on pages 18 and 11 respectively. On page DD of this publication, you will find our fourth article written by Adrian Gregory, who is a part of the SPE Net Zero committee, about social-oriented business.

With the energy transition growing stronger, read about the new aspiration of the industry – zero emissions, renewable-powered platforms on page 26. Furthermore, learn from Serica Energy how the company started raising the awareness of Environment, Society and Governance – this is a follow-up article to the SPE London talk held in March 2021, that you can find on page 14.

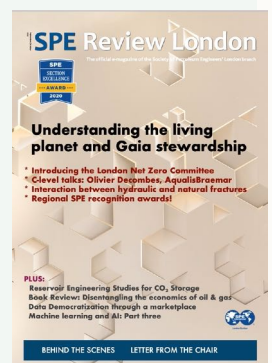
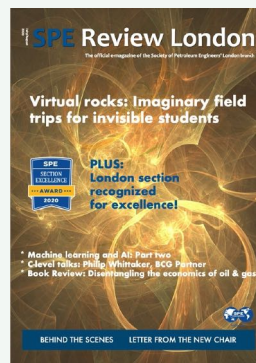
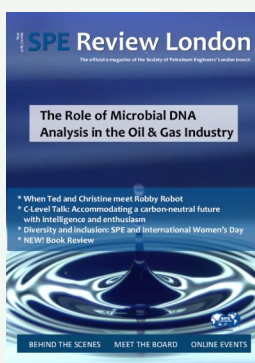
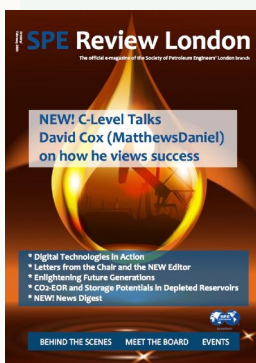
Join SPE to stay up to date with the latest industry updates, panel discussions, transformation stories and much more! Once you become a member, the vast majority of our events are free.

I would like to thank the Editorial team for their support and endless ideas, without whom this publication would not be possible.

Stay safe and take care.

Elizaveta Poliakova

[Click here to access past issues of the SPE Review London!](#)





# NEWS DIGEST... NEWS DIGEST... NEWS DIGEST

## Jersey Oil & Gas (JOG) acquired CIECO V&C

CIECO V&C, originally owned by ITOCHU and Japan Oil, Gas and Metals National Corporation, was acquired by Jersey Oil and Gas.

JOG plans to complete a development plan of Verbier oilfield in the central North Sea discovered by Equinor, the previous operator. The plan is a part of the Greater Buchan Area's new hub.

[Read more](#)

## CGG and dCarbonX sign an agreement to decarbonize exploration

CGG will support dCarbonX in assessing and de-risking their subsurface operations for the already-existing green energy projects in the UK and offshore Ireland.

These include storage sites for carbon dioxide, hydrogen, and

ammonia as well as geothermal energy.

[Read more](#)

## BP plans to end Permian flaring by 2025

With an expenditure plan of \$1.3 billion, bp announced its intention of building a pipeline and other infrastructure networks to collect and capture natural gas to eliminate flaring of unwanted natural gas in the Permian Basin of Texas and New Mexico.

[Read more](#)

## Shell joins one of the UK's first large-scale CCS project

Royal Dutch Shell teams up with Harbour Energy and project developer Storegga Geotechnologies to build a carbon capture and hydrogen hub, which could be one of the UK's large-scale projects in the area.

Earlier in 2018, French major,

Total, had expressed its interest in the project; but later stepped down as a part of its management strategy.

[Read more](#)

## Digital transformation to accelerate growth in the energy sector

Global industrial software firm, AVEVA, pointed out how rapid digital evolution has already started transforming the post-pandemic energy industry.

The company's CEO, Craig Hayman, said: "Integrating human insight and operational information including the way that we design, build and run assets can evolve to be more efficient, intelligent and sustainable. We believe that the future mix will be defined by what we call the three Ds: demand, digitalisation and ongoing disruption."

[Read more](#)



# Evaluating limits to CO<sub>2</sub> storage capacity from injectivity, geography, and costs



Happiness Ativie recently completed her master's degree in Petroleum Engineering from Imperial College London with a Distinction. During her degree, she served as the course representative and was actively involved in the SPE chapter. Before this, she completed her undergraduate degree in Petroleum Engineering from Covenant University.

Happiness currently serves as a committee member with the SPE London Net Zero and will be interning with the merchant bank division of Goldman Sachs this summer.

Carbon Capture and Storage (CCS) is an effective mitigation measure to reduce carbon emissions from the atmosphere. It involves the capture of CO<sub>2</sub> from large emission sources and transport to sites usually offshore, for injection into deep formations underground. Several methods have been suggested for the estimate of potential storage sites. The static methods provide storage estimates without considering the pressure build-up in the formation as a result of CO<sub>2</sub> injection. Numerical simulations provide estimates that account for pressure build-up in the reservoir and CO<sub>2</sub> plume migration but are computationally intensive. Analytical models are computationally efficient and can accurately predict pressure build-up during CO<sub>2</sub> injection.

A few commercial-scale CCS projects have been implemented. Several papers on the economics of CCS projects exist, most of which integrate these economics with system models of power plants and storage transport systems. However, little to no work has been done to implement these economics into system models of the subsurface.

This study implements the economics of a CCS project in a systems model of the subsurface. CO<sub>2</sub>BLOCK, an analytical tool, was used to provide estimates of storage capacity and maximum CO<sub>2</sub> injection rates for 24 storage sites located in the North Sea. The capture, transport, and investment are calculated using the injection rates generated by the CO<sub>2</sub>BLOCK tool. As a result, it was estimated that 64 Gt of CO<sub>2</sub> can be safely stored in the 24 sites after 30 years without considering any economic constraints.

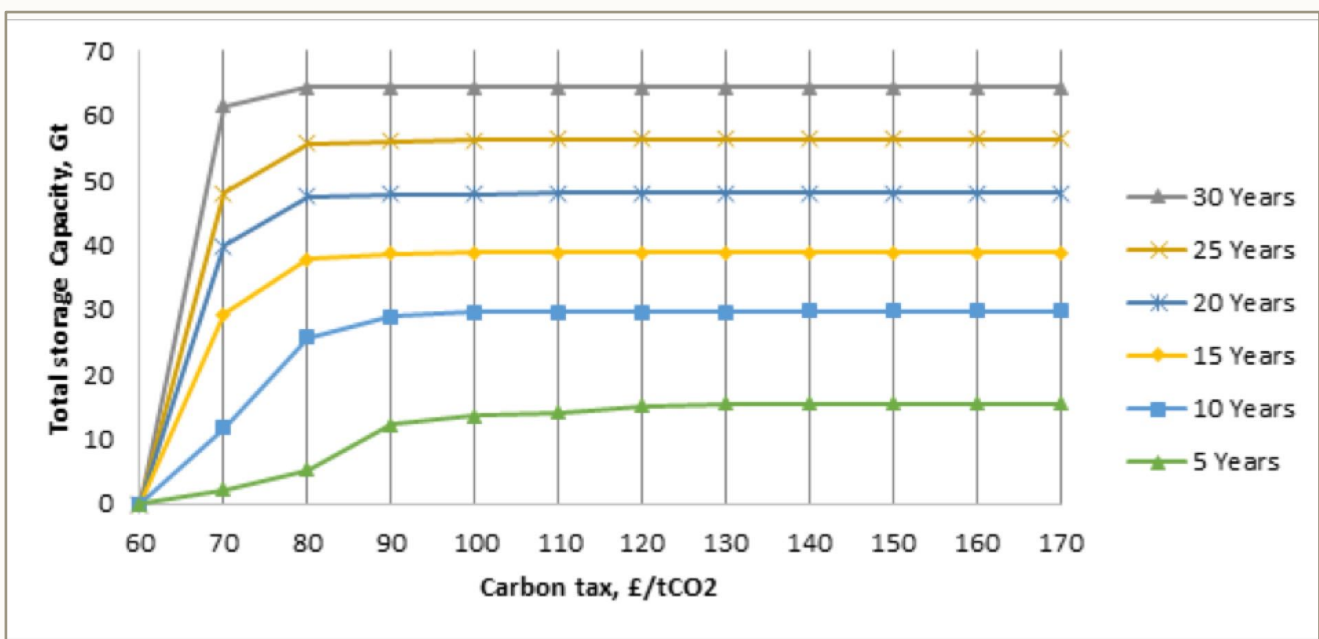


Figure 1: Maximum storage capacity of the 24 sites at various carbon tax prices for different injection periods.



## Evaluating limits... continued

When the constraints of storage costs and carbon tax are considered, the total storage capacity becomes zero at a tax rate of 60 GBP/CO<sub>2</sub> and remains the same at a tax rate of 170 GBP/CO<sub>2</sub> and above for different injection periods.

In addition, the study shows the number of years required to reach the break-even point\* changes based on the geographical location of the storage site. Figure 2 shows the number of years required for each storage site to reach the break-even point\* for carbon tax rates of 70, 80, and 90 GBP/tCO<sub>2</sub>.

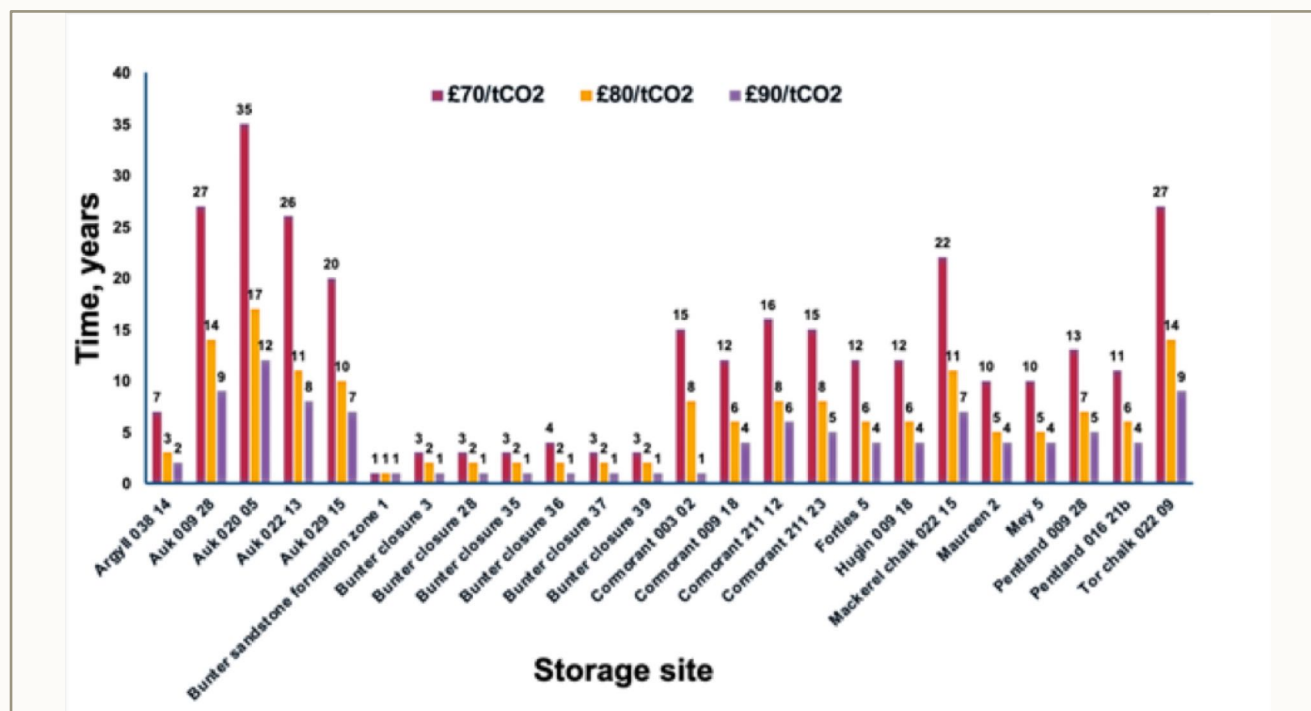


Figure 2: Number of years required to reach the break-even point for the 24 sites at different tax rates.

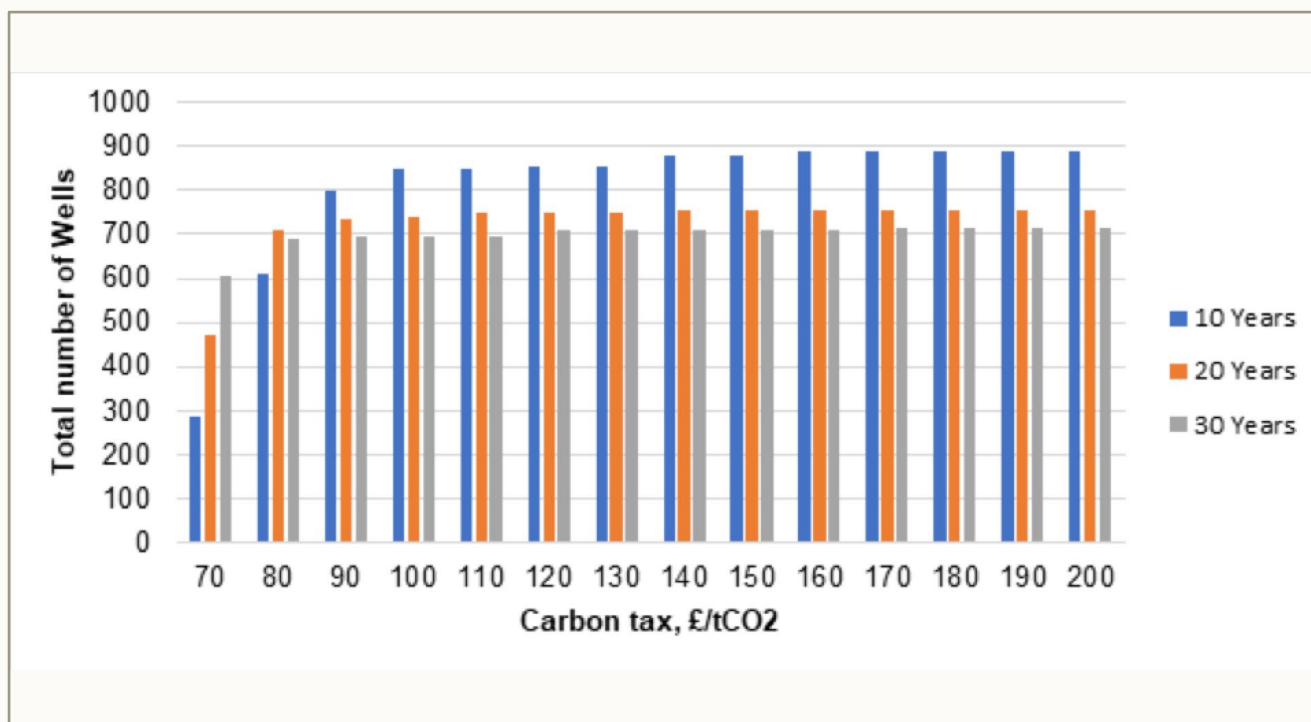


Figure 3: Total number of wells required for CO<sub>2</sub> injection at different carbon tax rate.



# Net zero 101: Carbon offsetting

**There is a lot of new terminology being used in association with net zero and sustainability goals. The London SPE committee members have written a series of articles giving their perspectives on the definition of these terms and their significance for our industry.**

**Here is the first in the series of articles. It was written by Maren Strandevold and Chris Orford.**

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The drive to reach net zero is a challenge for the oil and gas industry. While companies develop their production methods, diversify into renewable energy and work towards electrification of operations, they need to find ways to offset their current carbon output. Carbon offsetting is currently one of the preferred methods with all major energy companies having a portfolio of offsetting projects they support, from alternative energy development to the planting of trees.

Carbon offsetting originated in the adoption of the Kyoto Protocol in 1997 by the United Nations Framework Convention on Climate Change (UNFCCC). It created a number of tools to offset carbon. These include:

- Clean Development Mechanism (CDM);
- Joint Implementation (JI);
- Emissions trading.

In its simplest form, carbon offsetting is a tool that allows a party to in effect reduce their emissions by providing financial or technical assistance to other parties that are delivering greenhouse gas reduction projects. One offset credit is measured as removing one ton of carbon dioxide from the atmosphere. It is a key mechanism in compensating for unavoidable emissions which cannot be directly reduced at source. The four main types of projects that are usually used for carbon offset are:

- Forestry and conservation projects
- Renewable energy projects
- Projects aimed at introducing energy-efficient technology in communities
- Waste to energy projects usually involving capturing methane from waste.

Offsetting projects exist around the world and companies may choose to offset only against domestic projects, i.e. those projects based in the same country as the emissions that are being offset or they can be international, i.e. based elsewhere in the world. Typically, international projects give a wider range of possibilities for investment, however, there are some restrictions on how these can be traded.

The protocol requires that offsets meet a quality criterion including that the credit evidences that the reduction would not have occurred without the finance, that the credits must be removed from the market to ensure they are not double counted and ensuring that the emission reduction in one area does not cause an increase in emissions elsewhere.

These credits can be bought and sold on their respective Carbon Market to allow for greenhouse gas reduction through the most cost-effective and economically efficient allocation of these. However, some markets will only allow trading of credits from domestic offsetting, for example, the EU Emissions Trading Scheme discussed below does not allow trading of international credits, all credits must be from offsetting projects within the EU.

There are two types of market. The compliance/regulated market and noncompliance/voluntary market. The



## Net zero 101: Carbon offsetting... continued

EU Emissions Trading Scheme is a mandatory scheme that works alongside this and applies to those industries which create carbon dioxide, nitrous oxide and perfluorocarbons through actions such as the production of energy, commercial aviation or the energy intensive production of products like aluminum and certain acids. This scheme works on a cap and trade principle where there is a total cap on these emissions within the EU and companies can buy/receive emission allowances. This cap is reduced over time to ensure there is a total emission reduction year on year. Each company which is required to partake in the scheme must have enough allowance to ensure that its emissions for the year are covered under it, otherwise they will be heavily fined. The compliance market is regulated by the international rules defined in the Protocol. Here credits are underpinned by verification and regulatory processes. The credits that are contained within it are widely traded.

- CDM is one type of credit used. When used it produces Certified Emission Reductions (CERs). These CERs can be used by companies to meet their allocation under the EU ETS. CDM also offer the opportunity to go further by offering a CDM gold standard product which ensures that the project also has a measurable impact on sustainable and social development within the local communities.
- JI within the compliance market produce Emission Reduction Units (ERU) which can again be used by companies to meet their allocation under EU ETS. To be deemed a JI, the product must provide reduction in emissions by sources or an enhancement of removals by sinks which is additional to what would have occurred without the funding. It also needs to be approved by the host party and be authorised to participate by the parties involved in the project.

The non-compliance market is non-regulated and any products from this market cannot be exchanged for any compliance market credits. Many use third party verification and use some form independent standards such as the Voluntary Gold Standard or the Voluntary Carbon Standard.

Emission trading allows those that have emission units, CERs or ERUs that are spare to trade to those who are over their targets. Trading schemes such as the EU ETS can be created as climate policy instruments at national and regional levels. The EU ETS is the largest cap and trade scheme. Following Brexit, the UK has announced that it will also operate an ETS scheme which may in due course link to other international ETS schemes.

**Offsets are not without their controversy though as they do not deal with the lowering of emissions within the oil and gas industry, rather just preventing any further damage that they would cause, in effect passing on their own obligations to change. Planting trees only temporarily stores carbon and there is no guarantee that they won't be chopped down earlier than expected. There has also been concerns that only about 30% of the money provided from CERs go to the projects with the rest being consumed by verification, overheads and project developer profits.**

### The SPE London Net Zero Committee

Established to inform and engage the membership on sustainability and how the oil and gas industry is supporting activities to achieve Net Zero, the committee will strive to build better links with the wider energy community (renewables, academia, institutions, finance, government) where needed to achieve this.

As a committee, we want to help the London SPE membership adapt to a changing industry. We are also keen to positively promote our industry's role in working towards Net Zero and the wider UN Sustainable Development Goals within our community. This includes resurrecting a school's engagement program focused on the future of energy and encouraging students to consider engineering careers in the energy industry.

The Net Zero Committee will be the focal point for promoting sustainability activities from other SPE Chapters, such as SPE International's soon-to-be-launched Gaia Sustainability Programme.

**What is Net Zero? Find out more: [SPE London Section Net Zero](#)**

# Coventry SPE has a new Executive team, fresh ideas, and a strong vision for a net-zero future

**SPE Coventry Chapter was founded in 2012, delivering information about oil and gas industry activities, technologies and trends to students. Dr Babatunde Aniwofose is the current Advisor of the Chapter, a position he has held since the Chapter's foundation.**

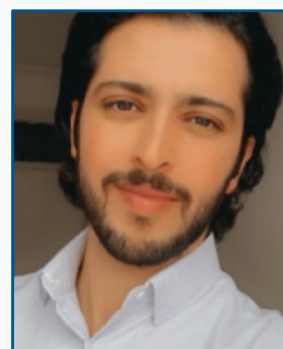
**The Chapter has most recently focused on the issues around greenhouse gases and the technologies coming to market to deal with this issue. However, the Chapter has also organized various seminars to reach students interested in a career in the oil and gas industry, providing useful information and motivating them to be active partakers of issues regarding the effects of greenhouse gases.**

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## Message from the Chapter president

It's the greatest honour to serve as president of SPE Coventry Student Chapter for 2020-2021, and I am proud to be part of a diverse team consisting of the vice-president, secretary and treasurer.

I feel privileged to have this opportunity, and my focus has been on addressing the challenges facing the world in the energy sector amid the unprecedented pandemic. However, we have chosen to consider these challenges as opportunities to learn how to stand out together as a community, and have used many motivational and inspirational tools to help people understand the true meaning of WeAreSpe#, while also addressing other issues raised by SPE members. As such, I have attended conferences, events and seminars, including the International Association of Drilling Contractors (IADC), International Petroleum Technology Conference (IPTC), the SPE conference on hydraulic fracturing, an offshore technology conference, and the UN Conference to share the message of SPE to its members and to the world.



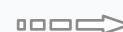
Yahya Alahmad  
Chapter president

Our current foremost issue is how to move towards sustainable energy consumption. Millennium development goals emphasize the sustainable energy levels the world has to achieve by 2030, and I believe this has to include sustainable exploration, oil consumption oil, and the gas sector and its products. I also believe much research and development is needed on the issue of zero carbon dioxide emissions, together with a consensus between the global north and south. I also feel a responsibility to highlight the importance of CDM (clean development mechanism) and ERU (emission reduction units).

The SPE sector must focus on environmental, economic, and social sustainability: if net zero emissions is to be obtained, SPE members should address the need for the implementation of REDD (reducing emission from deforestation and degradation) programs. In addition, to ensure an economically sound and environmentally friendly implementation, the carbon tax must be developed with consensus throughout the association.

Personally, I also pledge to bring talented people into the oil and gas sector, with due regard to gender equality and enhanced technical expertise. As an equal-opportunity provider, I believe in the need for world-wide equal participation to find the best possible solution for the global petroleum industry. In addition, we need to counter the economic downturn caused by the Covid 19 pandemic, which detrimentally affected the oil and gas sector's productivity. The fallout included fluctuation in supply and demand, losses due to purchased vessels and containers, and strained social cohesion as so many people are directly or indirectly affected by or affiliated with the oil and gas sector.

Overall, as an SPE Chapter, we strive to pursue our objectives and goals, welcome students as part of the Chapter and of the SPE association, and make sure SPE's mission and vision is shared with all students.





## Coventry SPE... continued

### Chapter achievements

#### 2019 – 2020

The global pandemic of January 2020 affected the Chapter's operations, discouraging large social gatherings, and challenging the Chapter to find a new strategy to reach its members. On March 2020, the UK Government declared the first lockdown, causing the Chapter to accelerate a solution to keep activities running.

The creation of platforms such as Moodle helped the Chapter reconnect with some of its members, although some students couldn't easily adapt to the new online system. However, other platforms, such as Microsoft Teams, Zoom, and Aula in Coventry University, provided great opportunities for the Chapter to reach students and, consequently, bring new projects on board.

In November 2020, new executives were appointed to lead the Chapter in the academic year 2020 – 2021.

#### 2020 – 2021

The current year executive includes the following people:

**President:** Yahya Alahmad, MSc Oil & Gas Engineering

**Vice President:** Ikechukwu Onyeje Edozie, MSc Oil & Gas Management

**Secretary:** Johnson Acheampong Adade, MSc Oil & Gas Management

**Treasurer:** Korkor Agyente, MSc Oil & Gas Engineering

### Carbon Capture Storage

The Chapter hosted its first virtual event about carbon capture storage (CCS), entitled 'The role of CCS in tackling the climate change', with **Dr Sayed Shariatipour** as guest speaker.

During the event, attendees could appreciate the major drop of CO<sub>2</sub> observed in 2020, with emissions reduced by 8% (2.6 gigatonnes) – as the speaker remarked, this massive reduction of emissions, due to the impact of Covid-19, is the largest ever observed in history.



Dr Sayed Shariatipour

### The Transition Game

A second Chapter event discussed the transition from greenhouse gases to renewables energy, with guest speaker **Dr James Milne**.



Dr James Milne

The event sought to provide answers to such questions as:

- Can Big Oil crack the code of how to become energy companies, while battling the transition to a low-carbon future?
- Will the end of the Covid-19 pandemic come soon enough to rescue the oil industry?
- Which renewable energy complements the strengths of Big Oil?
- As an O&G management qualified university leaver, should I be concerned about joining the industry?

### Some background data

- Global annual investment peaked in 2017 at \$326.3bn
  - In 2018, investment fell by 11.5% to \$288.9bn
  - In the first half of 2019, investment fell again [Bloomberg New Energy Finance]
  - Pre-pandemic, oil demand held steady at 100 mnbpd
  - The USA drove up demand, accounting for 40% of growth
  - The IEA estimated (2018) that 95 mn tonnes CO<sub>2</sub> emissions were avoided due to switch from coal to gas
- (All data provided is copyright James Milne, 19 March 2021.)



## Coventry SPE... continued

As observed by Dr Milne, the global pandemic in 2020 influenced the O&G market: Reduced international travel and trade affected the demand for oil and gas. The problem affected government policies and pushed companies to seriously aim for net-zero emission. The pandemic worked (and is still acting) as a catalyst to speed the transition to reach net-zero emission carbon emissions.

According to Dr Milne, a return to pre-Covid profitability within the oil and gas industry cannot happen before the end of 2022. However, there are also some contradictions in the transition from oil and gas to renewables:

- In the USA, President Biden's Green New Deal will need high oil prices to make renewables competitive when viewed against fossil fuels.
- Many US investors see oil as a sensible way of achieving solid and reliable returns.
- Spinning off renewable divisions could mean loss of operational synergies.

The problem facing the world is how to decarbonize while simultaneously improving financial returns by divesting renewables interests, which analysts believe are worth five to six times their value outside the oil company than within it. HSBC forecasts that six European oil majors' current net operating renewable capacity is equal to 8-9 GW; Iberdrola is currently at 32 GW and aiming for 60GW by 2050; Enel is targeting for 80GW by 2025 from its current 45GW.

In summary, the transition game will not take place without oil companies trying to defend their market position. However, positive news in this challenge includes the following

- The industry has a proven track record of adaptation and survival.
- It has an innate determination to survive, prosper and grow.
- The challenge needs an adaptable pool of talent
- The required skill sets are those found in graduate and postgraduate students, including an inquiring mind prepared to challenge conventional thinking, along with excellent communication skills.

The seminar concluded with Dr Milne encouraging students in the oil and gas industry to think outside the box, and be highly motivated to enquire about the market and bring solutions on the table.

### Chapter engagements

In addition to the two seminars, the Chapter actively took part in the PetroBowl Event 2021, reaching the quarter finals.

### Future Vision

The executive team has new plans for the Chapter, including the completion of an official SPE Coventry website, which will seek to do the following:

- offer information about the Chapter dynamics and the events
- connect Coventry students who want to know more about SPE and the O&G business
- be a new point of reference for future generations
- include the Chapter's annual reports



## The new aspiration: Zero emission platforms

In io consulting's (io) Powerful Thinking article 'associated gas – now it's your turn to stand up and be counted!' [1], we considered the challenges of meeting the environmental targets for associated gas in the context of oil and gas developments. Building on this work, in this article we focus on some of the current technologies for achieving Zero Emissions Platforms and their application to a real io case study in response to such challenges.

*Note: This article was first published by io consulting on 20 August, 2020. The author is Stephanie Ng, Principal Consultant, Development Engineering at io consulting.*

### the new aspiration: zero emissions platforms

There are very few examples of platforms which use alternative energy such as solar and wind. The renewable technology used on these platforms is typically hybrid; a combination of wind, solar panels and batteries. Shell Cutter and K17 platforms are known to be powered exclusively by renewable energy sources installed on the platform itself, which typically bring cheaper life cycle costs compared to a long power cable from a host facility. It is reported that the fabrication cost alone was around 40% of that of traditional platforms [2].

Renewable powered platforms are more suited to developments requiring low/minimal intervention on topsides facilities, e.g. low viscosity well fluids, no sand, no compression, and drill centres with a low number of wells (e.g. less than six wells). This is reflected in their minimal functionality demonstrated by the Shell Cutter and K17 platforms. Cutter is designed for a water depth of 32m and its key features include a 150te topsides occupying an area of 10.5m<sup>2</sup> including wellheads, HPUs, metering, fluids export riser, chemicals via an incoming umbilical, control system and nav aids. There is no requirement for a helideck, living quarters, water treatment, fire water pump or any onboard power generation using fuel gas and/or diesel. No diesel power generation is included, hence no requirement for diesel storage or diesel supply.

Cutter's power requirements [3] are supplied by a pair of wind turbines and a pair of solar panels. The power system comprises: two 6kW wind turbines (7m tall, 3.5m diameter blades); 68 solar photovoltaic panels with peak output of 51kW; two 6800Ah battery packs. The Cutter facility ruled out importing power from another facility and pared electrical use to the absolute minimum to enable power to be supplied from solar and wind.

This significantly reduces OPEX brought about by low maintenance, low frequency of visits and no requirements for diesel or chemical refills. Similar to Cutter and K17, further renewables powered facilities exist in the North Sea, including platforms for Nederlandse Aardolie Maatschappij's (NAM) L13-FI-1 and Oranje-Nassau Energie's (ONE) M07-A (shown in Figure 1).



Figure 1: From left to right: Shell Cutter, NAM L13-FI-1, ONE M07-A



## The new aspiration... continued

### io project case study

Over the last two years, io has seen an increase in interest from clients around zero emissions platforms and more broadly, the move towards energy transition. This article focusses on one of these case studies. It has demonstrated a true integration between io and its parent companies, Baker Hughes and McDermott to refine and improve certainty in its 'not business as usual' NUI solution.

### io's zero emissions Normally Unmanned Installation (NUI)

This case study is a real project example. Both the project and the client cannot be named for confidentiality reasons; however, the client is a supermajor.

In the client's asset portfolio, the installed NUIs in the area of interest were bulky and required a high degree of visitation due to the large amount of equipment and facilities on deck for maintenance and operation. Due to a heavy reliance on helicopter visits to their existing offshore platforms, the client aimed to significantly reduce visitation requirements to new NUIs. This meant a low frequency of visitation for maintenance and operations (once a year) and eliminating visits by helicopter.

At the start of the project, the client's objectives to io were to propose a design for a NUI while achieving the following:

- safe & reliable facility
- low CAPEX, low OPEX and maximising value
- repeatable for future NUIs
- remotely operated
- digital platform

io's first evaluation was to understand what the development could afford in terms of CAPEX by performing reverse economics. This determined the maximum CAPEX the development could afford in order to be economically viable. This made it clear that the wellhead platform design would need to be as minimal as possible in terms of equipment, weight and power.

In order to achieve these step changes, key elements to the design philosophy were proposed:

- W2W (walk to work) vessels are used for all visits and substitute helicopters. This effectively eliminated the accommodation module; welfare facilities; helipad and supporting systems; HVAC; sewage treatment; freshwater system. The W2W vessel acts as a temporary extension to the NUI when crew visit the NUI. All supporting systems would be available on the walk to work vessel and taken away when the shift ends.
- For the NUI's material handling requirements, the W2W vessel's crane is used or a temporary crane to substitute a permanent crane on the NUI. This reduces the power demand on the NUI, reduces maintenance requirements and diesel storage requirements. The W2W vessel crane is powered by the vessel itself and could be shared amongst multiple assets and maintained back onshore at a reduced cost.
- An all-electric solution for valve actuation eliminates the requirements for a hydraulic power package or hydraulic fluid supplied by umbilical.

The design philosophy set a bottom up approach for a 'no-frills' design and only equipment that was necessary to meet the functional requirements would be allowed for. From the other direction, io analysed an existing NUI asset and proceeded to strip the NUI of any equipment or systems which did not meet the functional specification of a wellhead platform. The result of taking many systems off the NUI and bringing them with the crew when required via a W2W vessel, resulted in a step change in weight and power (Figures 2 & 3 on the next page), which cascaded through to CAPEX, OPEX and ultimately emissions.

The dramatic change in design philosophy ultimately led to a NUI of zero emissions design. The electrical power demand was reduced to a minimum which in turn enabled a renewables solution on the NUI. This comprised a hybrid package of solar panels, wind turbine and a battery pack to smooth out fluctuations



## The new aspiration... continued

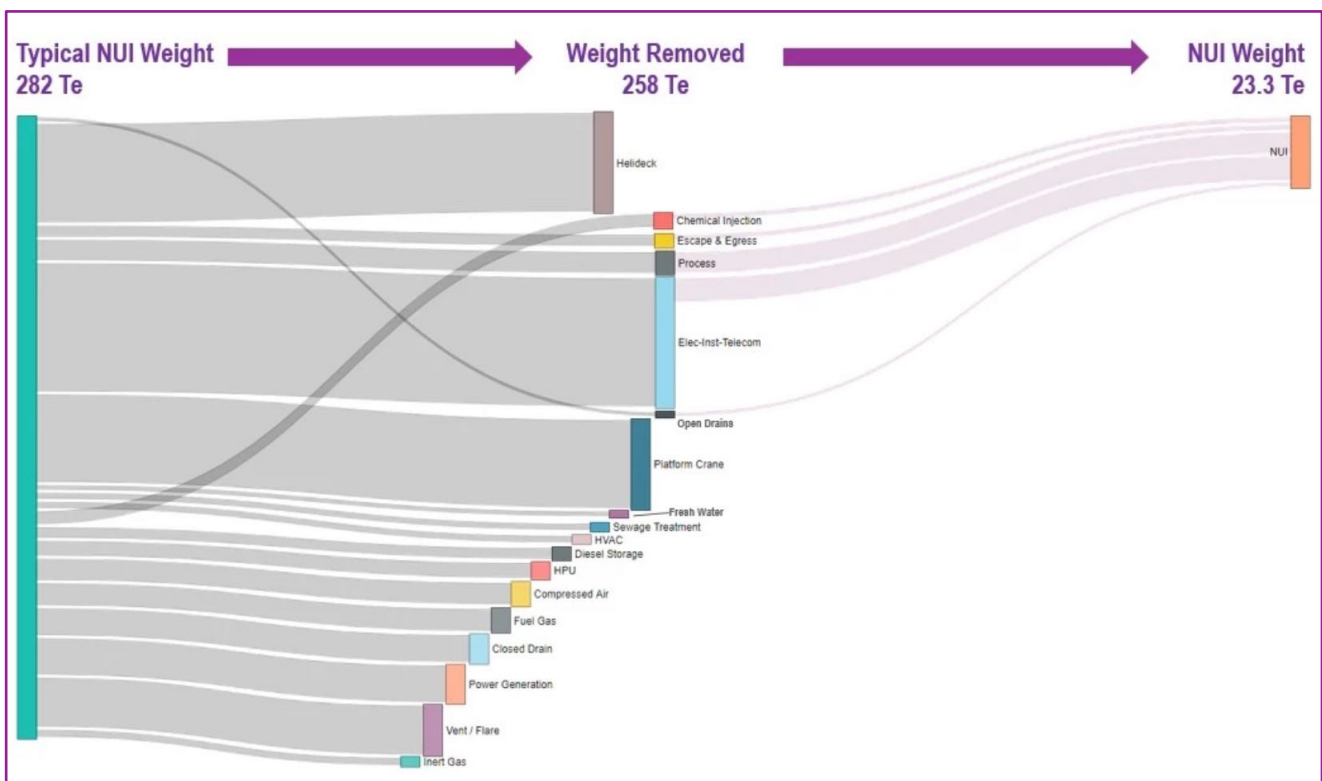


Figure 2: Sankey to show the reduction in equipment weight

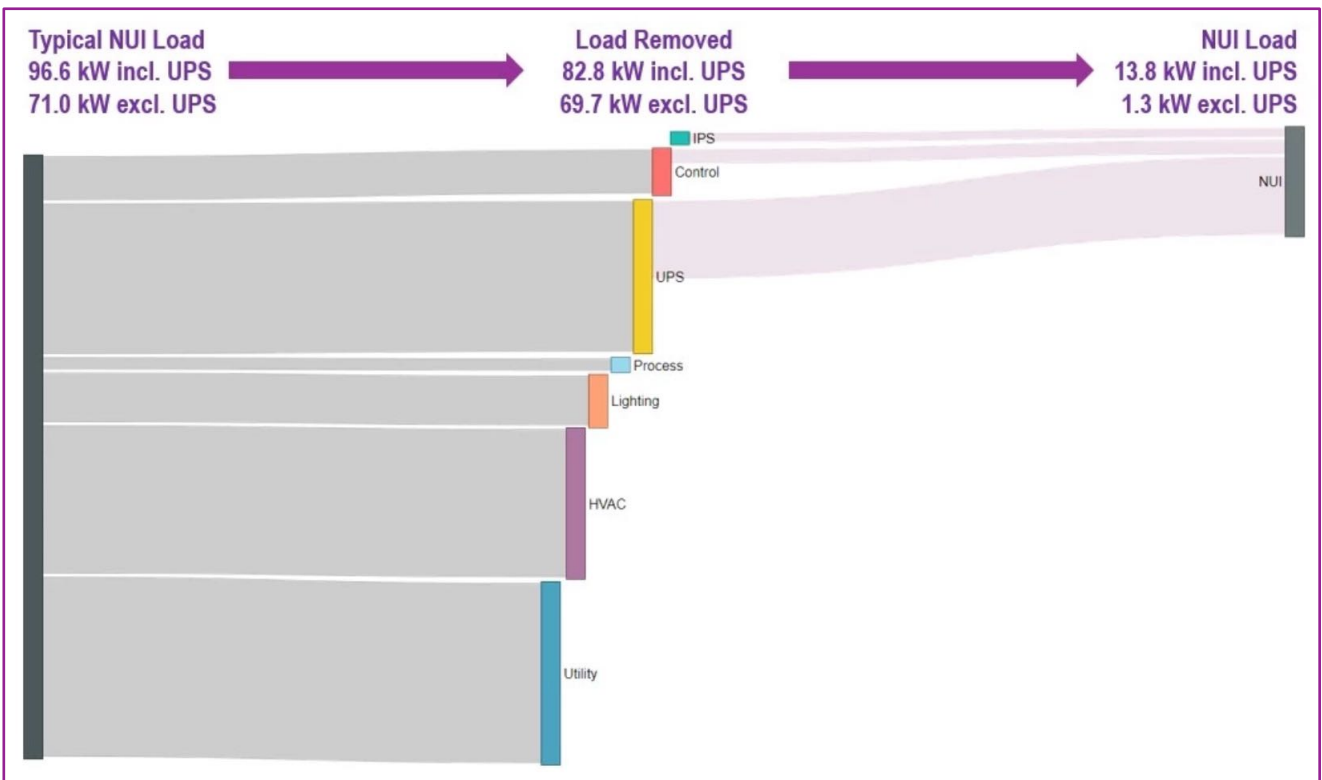


Figure 3: Sankey to show the reduction in equipment power demand

## The new aspiration... continued

in demand and supply and to disconnect the immediate requirement for power from the ability to generate it i.e. the instantaneous power requirement may exceed what is currently being generated in which case power is drawn from the batteries. In other periods where the generated power exceeds the facility demand, the battery bank is recharged with excess electricity. While wind and solar PV individually suffer from a degree of variability, both paired together deliver a much more reliable energy stream than each would on its own.

As demonstrated in this article, renewables have been applied to offshore oil and gas platforms in the past, with many facilities already operating in the North Sea and elsewhere for over a decade. To ensure a minimum number of personnel visits, it was prudent to specify a larger renewables package for the NUI to ensure that power is always supplied. A renewables package is low cost compared to having a traditional umbilical solution providing power from a host platform with, for example, gas turbine power generation. Adding a second wind turbine and second battery cabinet was considered a low-cost mitigation measure. Significantly reducing the number of visits to the asset and by sharing the W2W vessel amongst other assets also had a beneficial effect in terms of reducing emissions as well as operational efficiency and OPEX.

From an environmental impact perspective, there were additional advantages to this concept: a reduction in noise; low utilisation of materials of construction; smaller footprint of the platform; no footprint from laying a power cable/umbilical nor emissions from the cable installation activities.

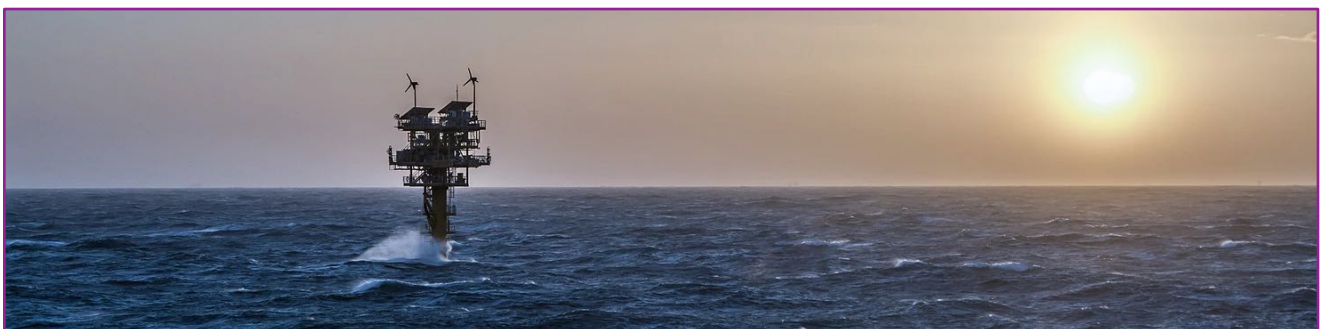
### Conclusion: Thinking with the 'end in mind'

With initiatives such as the Zero Routine Flaring by 2030 and the movement in Energy Transition as a whole, it is expected that there will be an upward trend of near zero or zero emissions platforms. It is io's belief that these issues must be evaluated in the early FEL stages to unlock true project value. io has project experience in this domain bringing innovative solutions and capitalising upon its technical, commercial and strategic expertise.

### References

- [1] insights article: associated gas – now it's your turn to stand up and be counted!
- [2] [https://www.rigzone.com/news/oil\\_gas/a/31391/shell\\_exxonmobil\\_boost\\_uk\\_energy\\_supply/](https://www.rigzone.com/news/oil_gas/a/31391/shell_exxonmobil_boost_uk_energy_supply/)
- [3] <https://www.offshore-mag.com/home/article/16762969/shell-duplicates-minimal-platforms-to-cut-cost-of-ukdutch-projects>

**io consulting** is a project architect in the energy and hydrocarbons sectors. Formed as a JV between Baker Hughes and McDermott with the mission to work in the early front end of projects, bringing our specific techno-economic expertise integrated with the access to technology and execution know-how of our parents and partner organisations. io is distinctive with its integrated strategic-techno-commercial capabilities ensuring a balanced approach between competing priorities capitalising on multi-discipline capabilities. Our approach is designed to provide clients with the confidence to invest and certainty that the selected concept and subsequent project can be delivered. Best considered as a systems integrator, io has deep domain expertise in the very early stages of major projects, specialised in identifying the key project drivers and bringing transparency to Tier 1 development decisions. For thought leadership, visit [www.ioconsulting.com](http://www.ioconsulting.com) and follow us on LinkedIn.





## SPE London Young Professionals: Innovative, interactive and skillful events in 2021

SPE Young Professionals (YPs) London committee had some fantastic events in March, related to geothermal and data science, which are trending subjects, and in which the speakers demonstrated an overall understanding and explained the importance of these subjects in the energy industry.

**Meet the Leaders and Young Professionals Series: Introduction to Geothermal Energy Development and Transferrable skills from the Oil and Gas Industry by Tito Perdana, Geothermal Geology Domain Champion for Asia and Australia for GeothermEx (SLB Company).**

The flyer features the SPE logo and text: 'SPE YPs London "Meet the Leaders and Young Professionals Series": Introduction to Geothermal Energy development, and transferrable skills from the oil and gas Industry'. It includes a graphic of a lightbulb with a plug. Below, it states: 'SPE YP London is pleased to announce another fantastic event on Geothermal Energy Development and transferrable skills. Tito Perdana from GeothermEx, will be discussing about the development of Geothermal Industry worldwide and sharing his experience in the energy industry and provide some key insights on transferable skills for petroleum geoscience and engineering backgrounds.' A blue box contains the event details: '04<sup>th</sup> March 2021 (Thursday) 17:00 – 18:30 UK Online (ZOOM) \*This event is only for SPE Members\*'. A speech bubble points to the event details box.

Tito discussed the development of the geothermal industry, gave an overview of various technical, economical and managerial element of the geothermal industry worldwide, the potential, and the technologies that could be brought from the oil and gas industry. He also shared his career journey and experience, provided insightful tips on the transferrable skills for those with petroleum, geoscience and engineering background, who wished to consider a career in the geothermal industry.

This event was one of the most innovative and sustainable events hosted by SPE London YP.

**SPE Young Professionals London and Primera Resources' Virtual Technical Event on Open Sources and Python Introduction (Data Science Event) by Alejandro Primera, Managing Director and Technical Consultant from Primera Resources.**

The image shows a screenshot of a virtual meeting grid with participants' names: SPE London, Laith Jaghman, Jakob Marek Co., David P., Omar Khoulouf, Irina Kostyleva, Artem Kotanov, Atul K., Max, Ian D., Orlando Mendez, Brett, and Mounia diana. Below the grid is a data science visualization showing a network diagram on the left and a 3D geological model on the right.

Alejandro presented and explained the role of open source and how to get started with Python, demonstrating case studies of DCA and petrophysics, workflow models, different open source libraries useful in the energy industry. The event included a practical exercise using Google colab, where the basic libraries and functions were demonstrated by Alejandro. Over the course of the two events, Alejandro discussed the role of python and open source in the energy Industry, and provided an interactive exercise together with a demonstration of different workflow models and applications.

This was one of the most interactive and skillful events, organised by SPE YP London with the support of Primera Resources.



## SPE London YPs... continued

The events in February and March were among some of the most discussed and trending topics in the energy industry today. Students and young professionals were eager to forge their paths in different areas of the industry with the principles of Petroleum, Geoscience and Engineering backgrounds.

The upcoming events are also useful and beneficial for students, professionals of all ages, and industrial experts to gain knowledge in the following topics.

**6 May: SPE YP London x IHS Markit Rate Transient Analysis Technical Session by Layla Mahmood, Technical Sales Engineer at IHS Markit, London.**



**Rate Transient Analysis Annual Technical Event**  
with  
**Layla Mahmood**

**Agenda**

- Introduction to RTA - What is RTA and why should we use it?
- Typecurves
- Flowing Material Balance (FMB) and Multiphase FMB
- Numerical Modeling, inc. Multiwell and Multi-layer modeling

6th May 2021  
17:00 - 18:30 UK BST  
Zoom  
\*This event is for SPE members only

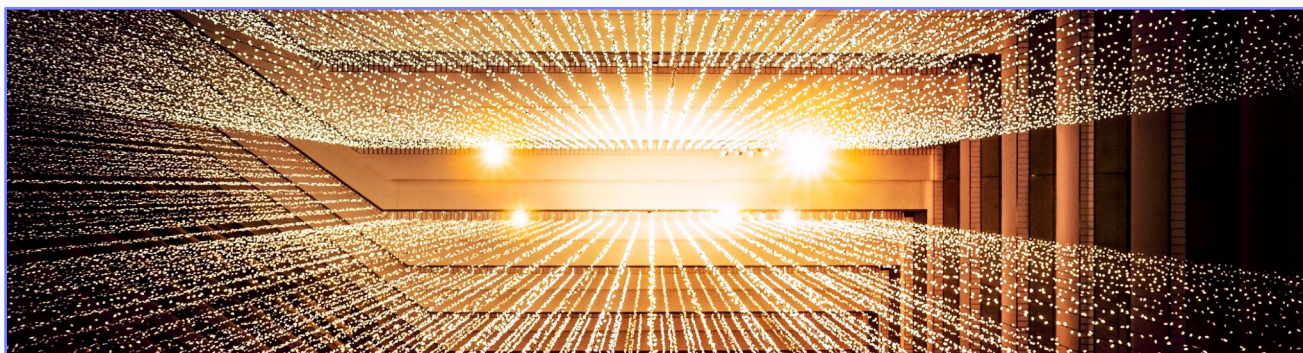
The session presents an exciting opportunity to become familiar with the fundamentals of modern techniques in Rate Transient Analysis (RTA) for assessment of reserves and reservoir characterization through the analysis of flowing rates and pressures; and gain further insights into the application of RTA through workflow examples using the IHS Markit Harmony Enterprise software.. Rate Transient Analysis Introduction and Workflows:

1. Introduction to RTA - What is RTA and why should we use it?
2. Typecurves
3. Flowing Material Balance (FMB) and Multiphase FMB
4. Numerical Modelling, inc. Multiwell and Multi-layer modelling.

**28 May: Alternative Careers – The role of a Petroleum Engineer in the Pipeline and Process Services area by Filipe Duarte, Petroleum Engineer for Halliburton in Brazil.**

Filip works as a Pipeline and Process Engineer and has experience in development projects, currently in Pre-Salt working with pre-commissioning and expansion of subsea net in the Santos and Campos basins. He has interaction with the UK as he is leading the application of a new technology from the UK to Brazil

He will discuss the role of a petroleum engineer in the Pipeline and Process Services area and the importance of exploration and production to get a job in this area, key success factors, and lessons learnt and suggestions to fresh graduates and students.



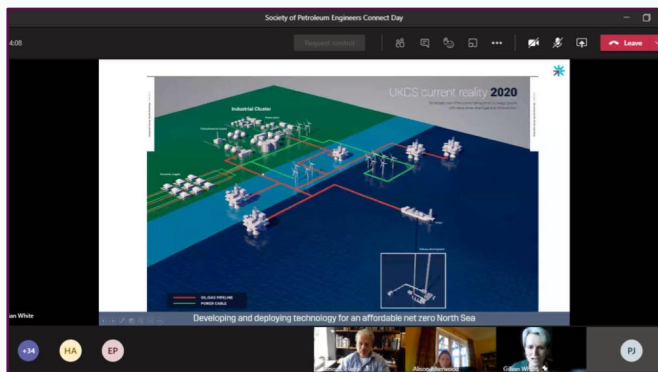
# Identifying, inspiring, and nurturing future leaders in the engineering sector

On the 19<sup>th</sup> of February 2021, the Society of Petroleum Engineers (SPE) London section ran a workshop for A-level students with the Arkwright Engineering Scholarship programme on energy transition and careers in the energy industry. The Arkwright Engineering Scholarship, part of the Smallpeice Trust programme and a registered charity, is the most prestigious scholarship scheme of its type in the UK. It exists to identify, inspire and nurture future leaders in engineering.

*This report on the Arkwright Connect Day is provided by Harry Simons and Happiness Ativie.*

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Arkwright scholarships are awarded to high-potential students who apply during year 11 (England and Wales), S4 (Scotland), and year 12 (Northern Ireland) and if successful are supported through their A Levels / Scottish Advanced Highers (or equivalent exams). Students are encouraged to pursue engineering in the university or through a higher-level apprenticeship and take up engineering careers. More details can be found [here](#).



The SPE London section was very keen to hold this event, as it provides an opportunity not only to support potential future engineers, but educate students on the vital role of the oil and gas industry in the energy transition, Net Zero, and meeting future global energy needs. Holding a balanced, fact-based, two-way conversation on the future of the energy industry is important especially because of the polarisation often seen in the media that clearly shows a lack of objective conversations when it comes to the oil and gas industry.

The session was held virtually through Microsoft Teams with 32 students in attendance. Seven SPE members effectively conducted this session for three hours. Gillian White from the Oil and Gas Technology Center (OGTC) kicked the session off with an excellent presentation on the overview of the UK energy industry and a look to the future including the role of innovation. An early careers panel discussion followed afterward with three engineers; Elizaveta Poliakova, Raghd Gardbough and Adam Zalewski talking about their experience in the industry and energy transition and answering students' questions.

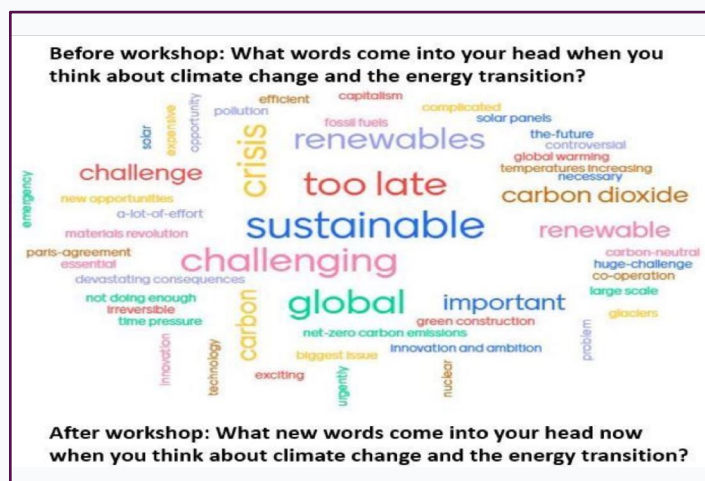
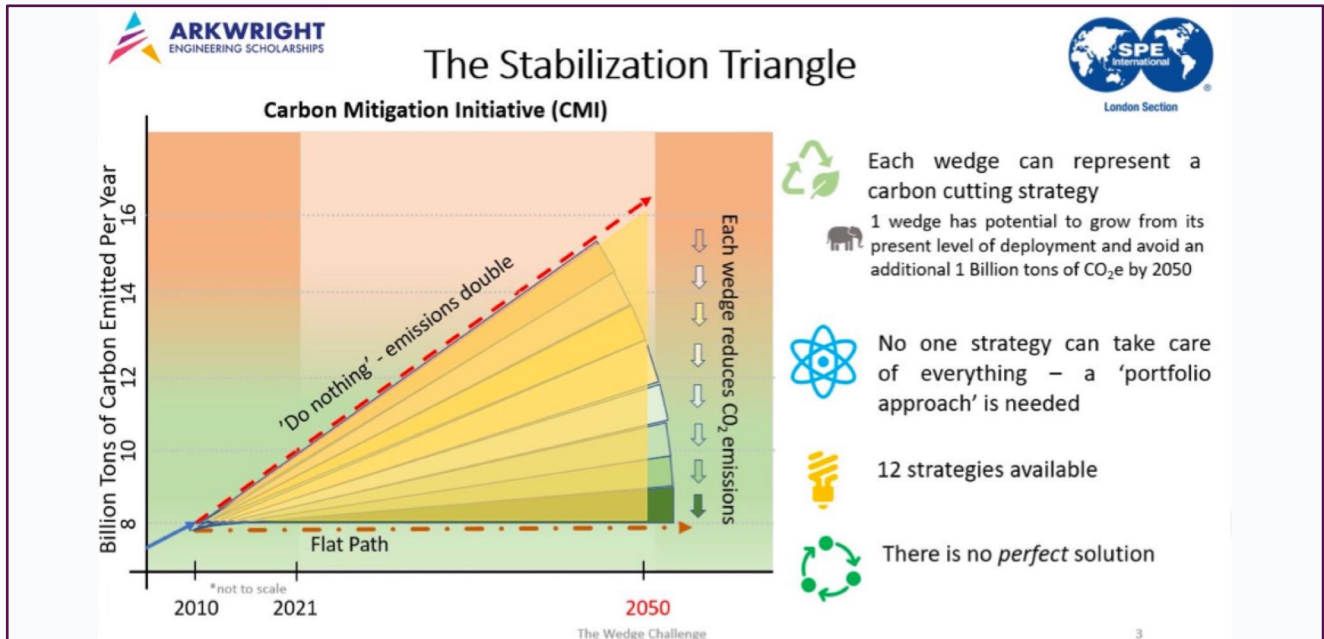
The bulk of this event focused on an interesting energy-focused activity called 'The Wedge Challenge'. It was developed by the Princeton Environmental Institute and adapted by the SPE London Net-Zero Committee. The game was introduced by Happiness Ativie and myself, Harry Simons who described the challenges associated with continued unconstrained Greenhouse Gas Emissions (CO<sub>2</sub>, CH<sub>4</sub>, etc.) and the portfolio of different technologies available to mitigate these emissions or reduce future emissions. At a high level, the relationship to the Paris Agreement, COP 26, and basic challenges of the UK's 2050 net-zero goals were presented.

The students were split into teams and challenged to come up with their own energy portfolio strategy to get to Net-Zero. They were asked to debate and choose, out of a list of energy strategies presented to them, four strategies that can potentially eliminate 1 billion tons of carbon each by 2050. They were encouraged not to seek a perfect solution to a dynamic situation but to make judgments based on the pros and cons of different strategies and then consider the likely response of different stakeholders such as environmentalists, consumers and the government. Each team then worked together to develop and give a 3-minute presentation on their energy portfolio.





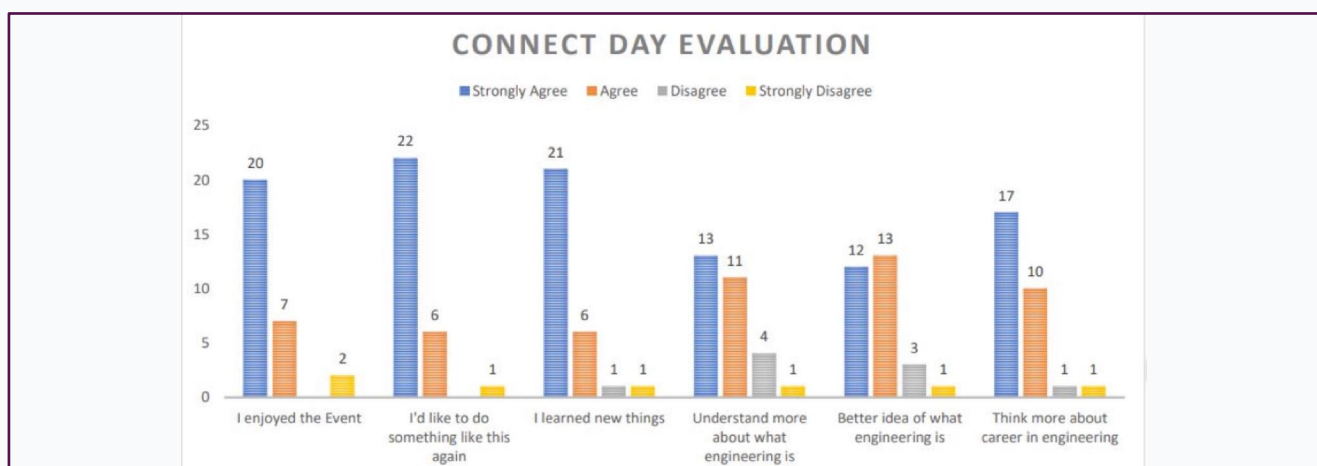
## Identifying, inspiring, and nurturing... continued



The SPE members involved were very impressed with the level of debate within each team and the polished presentations they managed to pull together in such a short period of time!

Mentimeter was used to collect the student's thoughts on climate change and the energy transition before and after the event. The image (left) showing the results demonstrates the importance of having these types of interactions with future engineers, moving their focus from problems to solutions, and opening their minds to joining the energy industry as one of the best ways to help shape a sustainable future.

Arkwright provided feedback from the students on the event which was very positive (see below). Based on this, the Net Zero committee is keen to expand this schools engagement programme to other students. If you would like to get involved, or get the committee to run an event at a school you are involved with, please do get in touch!



# Environmental, Social and Governance (ESG) for a UK independent oil and gas company

The SPE evening talk in March 2021 shared the experience of Serica Energy and its journey into Environmental, Social and Governance (ESG) reporting.

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Serica is a UK independent oil and gas company listed on the AIM market of the London Stock Exchange and with a market cap of around £300 million. We produce around 5% of the UK's domestic gas production from our Bruce platform that exports oil and gas from the Serica-operated Bruce Keith and Rhum (BKR) fields. We have around 160 staff, and offices in Aberdeen and London. We are relatively small compared to the major oil and gas companies, but large enough to hold responsibility for our company's ESG impact. This was not the case previously where, prior to November 2018, we had no operated production.

In 2020, we published our first ESG report<sup>1</sup> that looked back on our first year of operation of BKR. We chose to use the UN Sustainable Development Goals (UNSDGs)<sup>2</sup> as our guide. These goals demonstrate the problems the world faces and what needs to be fixed in order to sustain the planet.

We looked at the positive and negative impacts that Serica has on these goals and targeted ways to leverage the positives and mitigate the negatives. We also wanted to be transparent and make it easy for observers to compare us to other companies and judge our performance. We first selected the GRI (Global Reporting Index) standards to report against as they were the oldest and had an oil and gas specific section. We then signed up to the UN Global Compact to formalise our commitments to the UNSDGs and reported against SASB (Sustainable Accounting Standards Board) – to demonstrate our financial response to ESG.

Looking back over 2019 we realised that we had made a lot of positive contributions to the UNSDGs. We were involved in education with local universities and schools, had an active charity programme, had signed up to a gender diversity network, promoted Health and Safety and good working conditions and benefits for our employees. However, we recognise that as part of the oil and gas production and export process, we emit CO<sub>2</sub> through power generation, compression and flare. Therefore we recognised that Climate Action was a key goal that needed our focus.

After completing our first ESG report, we decided to formalise our activities and set up four committees – these were in education, emissions reduction, charities and Diversity and Inclusion (D&I). This meant that staff could get involved, take ownership and track the company's progress. Staff were encouraged to include an ESG goal on their annual objectives and Key Performance Indicators were included in annual bonus scheme, on emissions intensity, flaring, waste, male to female staff ratios and number of ESG initiatives advanced. The committees welcomed staff from London, Aberdeen and offshore, but in order to focus on offshore-specific initiatives, we also set up an ESG Champions group on the Bruce platform.



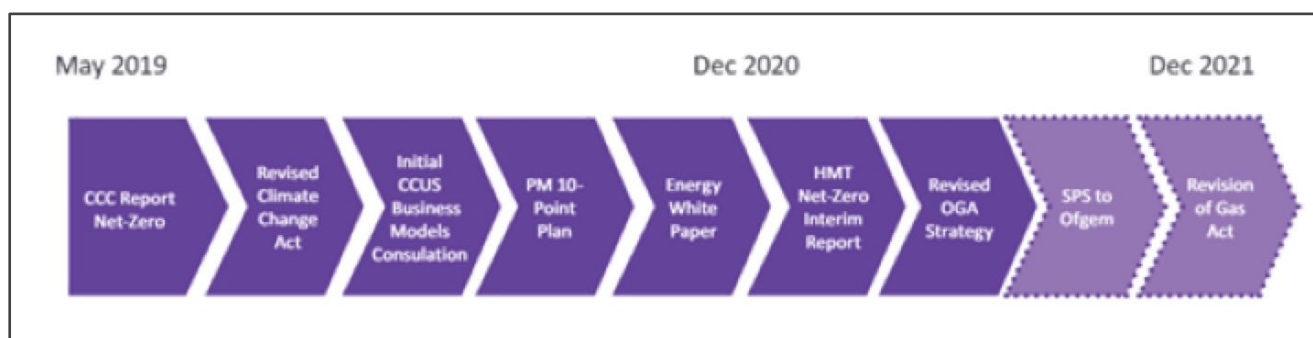
## ESG for an independent oil and gas company... continued

The committees have been very active over 2020 and have harnessed creativity and enthusiasm to push forward a number of innovative programmes. These include 'Zero Waste to Landfill' – working with our partners to ensure all waste is either recycled or turned into waste. This has led to other schemes to reduce overall waste, providing packaging pods to cut down on packaging and reducing the use of single use plastic, i.e. water bottles offshore. Our supply chain team has started transporting equipment using the Aberdeen to Lerwick ferry to cut emissions and support the community on Shetland. The charity committee has reacted to the changing situation caused by the COVID pandemic, giving more to food banks, donating laptops to schools, supporting vulnerable people in the local community, whilst still running staff fundraisers for our local cancer charity. We have used the fundraisers to promote health and wellbeing, by organising step challenges to promote exercise as well as doing quizzes and bingo to keep up staff morale.

Emissions reduction is our biggest challenge and the Emissions Reduction Group managed a huge accomplishment in dramatically reducing our flaring in 2020. This was achieved by identifying an opportunity to reduce our Category 2 flaring, which happens when there is an operational change to the plant, i.e. during start up. The group worked with offshore staff to change the plant start-up procedure to avoid flare, fix equipment to ensure a smoother process and adjust chemical usage to optimise the process. This resulted in a 65% reduction in flaring. The daily flare target was also reduced to give greater visibility of daily routine flaring to ensure it didn't creep up and there were questions in the daily production meetings whenever it was higher than normal. These were small changes that made a big difference and demonstrated the shift in focus of the Company.

The Emissions Reduction Group is engaging with partner companies to investigate the options for more significant changes to our offshore emissions and, looking to the future, investigating the technology available and its potential impact on our emissions. Serica is now a member of the Oil and Gas Technology Centre which is dedicated to finding Net Zero solutions. The Company has sponsored a digital twin project that has already cut emissions on Bruce by reducing the number of visits required for surveying equipment. We carried out an energy assessment offshore on Bruce to investigate changes to our processes that could reduce emissions and have followed up with more detailed studies.

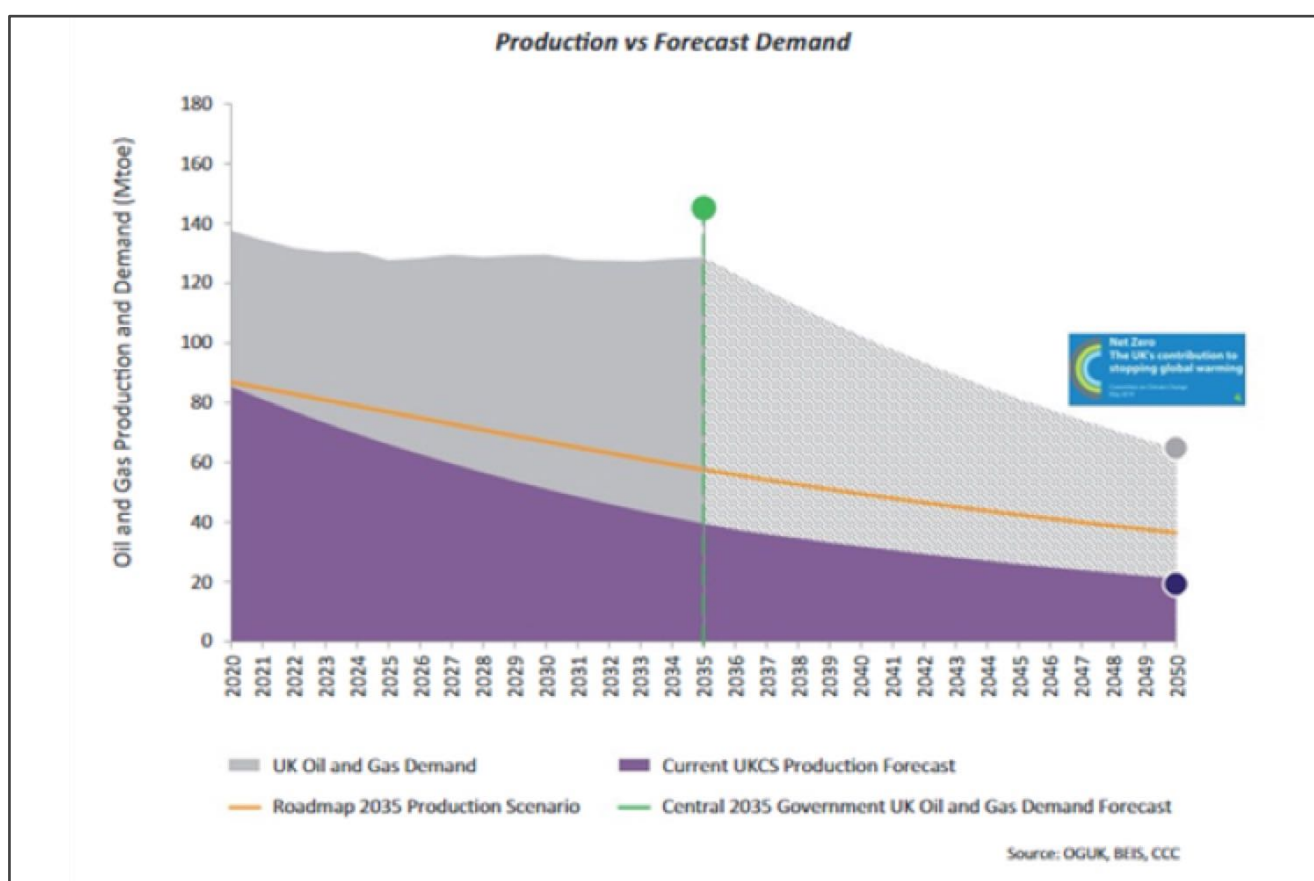
It is not just production that falls under emissions reduction opportunities. Exploration and field development also have a role to play. New developments need to be able to demonstrate they are designed in line with the UK government's Net Zero commitments, described in the Energy White Paper<sup>3</sup>. The OGA (Oil and Gas Authority) has issued guidelines for oil and gas companies operating in the UKCS under its revised OGA strategy<sup>4</sup> and Stewardship Expectation 11<sup>5</sup>. This clearly states that greenhouse gas emission reduction is a key target and new technology should be incorporated to make emissions as 'low as reasonable under the circumstances'. Companies are therefore challenged to look for less traditional ways to develop their untapped reserves and look at new developments holistically, including their impact on the environment as



## ESG for an independent oil and gas company... continued

well as their financial return. Subsea developments that extend the life of existing infrastructure and reduce the overall carbon intensity of existing production streams should be assessed with this in mind.

The OGA has also clearly marked out the need for collaboration between the oil and gas sector and hydrogen projects and CCUS (carbon capture, utilisation and storage), where CO<sub>2</sub> can be transported and stored underground in either depleted reservoirs or suitable aquifers. Although oil and gas companies are not necessarily expected to invest and operate these schemes, they are expected to accommodate and consider access to infrastructure before decommissioning their assets. The government has committed to allocating some funding to a number of industrial clusters around Teeside, Humber, Aberdeenshire, North West England



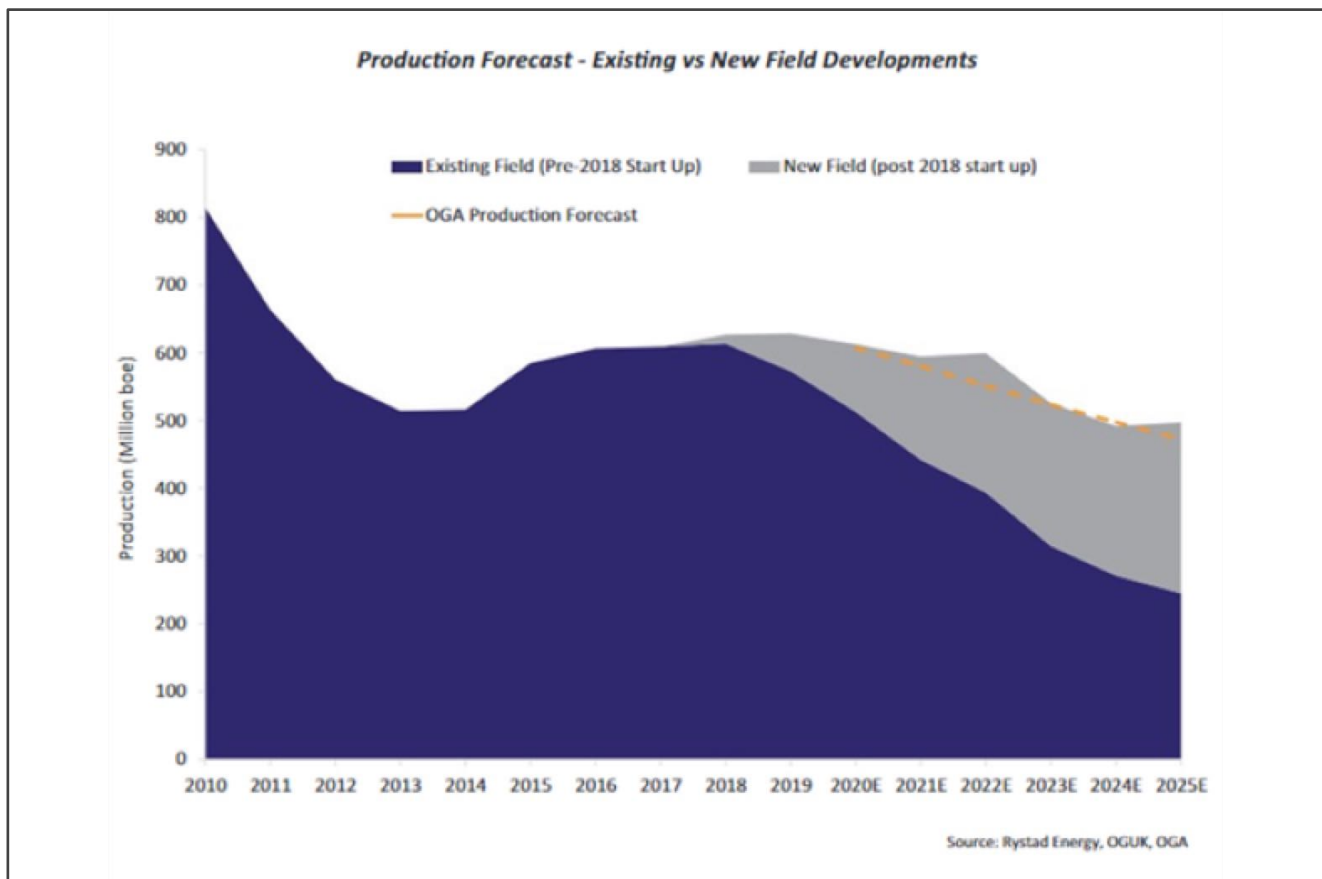
and North Wales and South Wales. These will provide pilot schemes to remove CO<sub>2</sub> and potentially inject it into nearby reservoirs, i.e. the Endurance reservoir offshore Humber, the East Irish Sea and the Acorn Project in Aberdeen. Several oil and gas companies are involved in these projects.

The outlook for demand in the UK is that oil and gas will still be part of the energy mix out to 2050. Production from the UKCS is declining and is already only around 45% of total demand<sup>6</sup>. If the UK industry declines too rapidly and demand does not fall, the UK will be dependent on imports that may be less environmentally friendly than domestic gas and oil. This is why UK companies should continue to be transparent and strive to highest environmental standards, to be in tune with the government's commitment and be competitive with imports, both financially and environmentally.

The OGA has issued some guidance on ESG reporting following a process of consultation with industry<sup>7</sup>, it lists the metrics that should be reported on and recommends alignment to TCFD (Taskforce on Climate-Related



## ESG for an independent oil and gas company... continued



Financial Disclosures) in the future.

The UK has now left the European emissions trading scheme (EUETS) and is setting up its own (UKETS) that will run in a similar way, with carbon allowances, a carbon cap and trading available.

Therefore, companies will have to pay for the carbon they emit and will need to forecast the future cost of carbon into their cashflow projections and new acquisition evaluations. There will also be large fines for companies that do not comply with their obligations.

**In summary, all oil and gas companies should raise their awareness of ESG to understand their strengths and weaknesses, ensure they are a sustainable business with a social licence to operate and make good business decisions. Building ESG awareness and activity amongst staff has the added bonus of improving morale, enhancing retention of staff and attracting a higher calibre of applicants.**

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## Social-oriented business purpose: Profitability 301



Welcome to the London Sections' Net Zero Committee section of the SPE Review London where we will present and discuss a range of topics associated with Energy Transition and Net Zero. We hope these articles will be informative and help readers understand some of the significant changes in the oil and gas industry.

This is the fourth in a series of articles for the SPE Review covering Sustainability, brought to you by Adrian Gregory who is a subsurface and wells engineering consultant. Adrian is excited to be part of and contributing to the new London SPE Net Zero Committee and will be writing future briefing articles broadly focusing on sustainability strategy, frameworks, principles, delivery and performance.

This article will be covering the societal purpose of commerce, enterprise and industry, more than just a business-as-usual approach that focused primarily on 'outputs' with no boundaries or limits. 'Outputs Outcomes Outtakes', 'Why-What-How' and 'Values of Value(s)' will be covered with Sustainability core themes and focus areas helping to allocate resources to better achieve 'progression' – through momentum and then scale. Purpose for societal commerce, delivering prosperity, is all about the 'Principles of Sustainability' delivered through the four core practices of Sustainability to help guide commercial 'Performance' and 'Priorities' that social-oriented business cast: Profitability 301.

For those wanting a 22-second outtake: *"If the enterprise or industrial sector in which you have invested your wealth, competencies and skills, energy or time is operating within a Political Governance dictated by a Social License to Operate, they will need a social-oriented business purpose to stay relevant. How can you identify this? Just look for a culture of ingenuity, culture of safety and wellbeing for their human capital, and manufactured capital focused on 'inputs', 'outputs outcomes outtakes' and 'materiality'."*

This article builds from the last, focusing on **Business Sustainability** – organisational 'making' of relevant products and delivering resources into the future with due regard to governance and respecting societal scrutiny, rather than simply 'taking' the future without fully informed decision making and without account of governess 'stock' valuations. The 'Principles of Sustainability' is about 'valuing everything', not just the price (worth) of everything – 'valuing everything' will be covered in the next article. It is not about 'just business' investment and operational activities – that time has passed, business now performs, is productive and creates value under increasingly obvious environmental limits, rather than simply noted 'happenings'.

The 'value of enterprise, **Enterprise Value** is the measure of in 'use value' of the associated economical contributions performed in 'The Market' – valued as the current (enterprise) market value as part of the enterprise's **Intrinsic Value**. Other enterprise associated 'stock' which is not in 'The Market' will have a 'non-use' value with associated Existence Value and Future Value – for use to contribute tomorrow or even over the next or future generations. Very rarely is this Governess Value, such as Existence Value – assets, natural resources which already are discovered, valued or even fully represented or referenced in the public domain in firms' and companies' strategic reports or corporate annual reporting.

The next article on 'Valuing Everything' will be more on the 'value of sustainability' additional to Enterprise Value; **Sustainability Value** benefiting through enduring Intrinsic Value, now and in the future, built around Governess Value (current non-use 'stock' value) and Governance Value (current and future in use 'flow' value). Both Enterprise Value and Sustainability Value contribute to **Total Value** – the 'Total Intrinsic Value' seen only in the eye of the beholder, owner or limited stakeholders (i.e. sum of Governance Value and Governess Value). Sustainability Value, exercised through Business Sustainability, is why Sustainability as a business practice is more relevant to **Prosperity** than Sustainable Development as discussed in the last article. IOR proved this in the mid-90's with massive contribution to Planet Oil, built from Existence Value – nearly thirty years' ago.



## Social-oriented business purpose: Profitability 301... continued

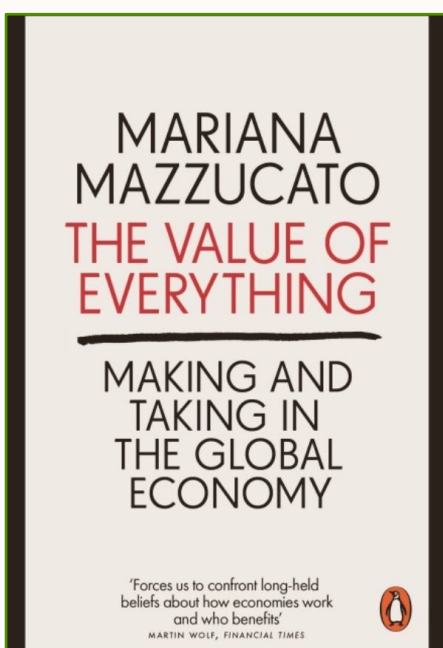
The value of good Corporate Governance is the ability through their Purpose, Strategy, People Performance and Governance, enacted primarily through scrutinised Decision Making, Internal Controls and Risk Management frameworks, enhance the Enterprise Value more towards the full market value. To do this, the corporation needs to stay relevant and thereby endure with a robust business strategy. Enterprises also need a clear 'Why' (i.e. Purpose 'Offering') which society can have empathy with or at least endure, enabling also reputation and resilience to flourish from 'What' and 'How' competence of activity delivery – reported through transparent Financial Accounting and Financial Sustainability performance measures and accounts. We know what the "Standards of Financial Accounting" are; COP26 will hopefully deliver the "Standards of Financial Sustainability" – clear, binding, procedures on past, current and forward Sustainability data, assessment, response (through action plans) and disclosure. Reputation today is also built with additionality through corporate communications – corporate 'outtakes' in a digital world 24/7 around events or happenings which are now 'front of class' in society's eyes and ears.

Sustainable Business (process) Models, built around the 'offering', focused on 'inputs', 'outputs outcomes outtakes' and 'materiality' are now fully integrated into corporate annual reporting. On the 'inputs' side, we identify different concerns (or issues) that business chooses to consider material and address. On the 'process' side, we focus on various organisational perspectives that business takes. And finally, on the 'outputs outcomes outtakes' side we find different values that business creates, nurtures or chooses to preserve for later, steward. **Good Stewardship** is the first **Core Practice of Sustainability** – nurturing and managing manufactured and societal product resource, and organisational, natural and environmental assets particularly from subsurface resource in the **Hidden Commons**. Renew and Regenerate being a major focus in Good Stewardship. A focus on 'inputs' can define Business Sustainability according to the relevant concerns considered by business ('What', 'Where'). A focus on 'process' defines Business Sustainability according to the organisational perspectives taken by business ('How'). A focus on the 'outputs outcomes outtakes' defines Business Sustainability according to the values created by business ('What for' Society: Boundaries, Frontiers and Environmental Limits).

The term business(1) refers in this article to any organisation that is engaged in making a product, providing a service or exploiting natural resources through wells or extracting through mines, for a commercial profit. The term stakeholder(1) refers to all those that affect, or are affected by, the activities and actions of the commercial enterprise; the small and medium firm, or large company. Stakeholders to do this have to have a 'stake' in the enterprise. The nature of their interests, power, and alliances with one another need to be therefore understood in context with the firm's type of business. Building positive and mutually beneficial

relationships across organisational boundaries can help enhance reputation and address critical social (and ethical) challenges. An enterprise will be considered a good 'citizen of society' if it operates socially and ethically; with due regard to safety and wellbeing, community and environmental stewardship. Good Citizenship is the second Core Practice of Sustainability.

Society(1), in its broadest sense, refers to humanity and to the social structures they collectively create and co-create with commerce; Prosperity & People. In a more specific sense, society refers to segments of humanity such as members of a particular community, nation, or interest group. As a set of organisations created by humanity, business is clearly a part of society – hence Good Citizenship needs to be continually practiced and adapted as society's behaviours and preferences change. At the same time, it is also a distinct entity, separated from the rest of society by clear boundaries as should be the Animal World and our Urban World. Business is engaged in ongoing exchanges, activities and effects with its external environment sometimes across these clear boundaries. Some business activities or



## Social-oriented business purpose: Profitability 301... continued

ideals are 'protected' through residual legal legacy or ownership, primacy.

Business and Society are dependent in business models, systems and processes. When businesses in sectors of the economy act at a planetary scale these exchanges and activities become highly dependent and interdependent with even more complex natural systems and processes – which are already delivering the planet's natural ecosystem services. Triple Bottom Line (TBL) integrated thinking was crafted to help manage these complex dependencies. Senior managers need an understanding of their company's key relationships and how the social, environmental and economic systems and processes and core practices of Sustainability, of which they are a part, affects, effects and is affected and effected by their collective decisions and their company's activities, actions and non-actions in the enterprise pursuit of creating value and long-term wealth – without harm nor at the expense of others through adverse impact either operating above environmental limits or across those planetary boundaries.

"Systems theory helps us understand how business and society, taken together, form an interactive social system. Each needs the other, and each influences the other. They are entwined so completely that any action taken by one will surely affect the other. They are both separate and connected. Business is part of society, and society penetrates far and often into business decisions. In a world where global communication is rapidly expanding, the connections are closer than ever before."(1)

**Profit** is very much in the now, equal to current Revenues minus current Costs; **Profitability 101**. This is actually a good 'period' based Performance measure. **Profitability 201**, a more 2D approach adds in the additional dimension of Productivity – a relative measure to be benchmarked against difference businesses and even across sectors of the economy. **Profitability 301**, a more 3D approach adds the additional dimension of Purpose, i.e. 'Why' the business exists and its unique selling point(s) – 'offering' being in particular more important for service provision based enterprises.

Dyllick and Muff (2) in 2016 presented Profitability in terms of Business Sustainability: 101, 201, 301, moving from 'Business-as-Usual' to True Sustainability (Table 1). They presented three key shifts in business thinking: (1) business organisational perspective refocusing from inside-out to outside-in; (2) value consideration moving from shareholder value to TBL to creating value for the common good; and (3) business concerns moving from economic concerns to the three dimensional concerns (TBL) to 'starting with Sustainability challenges'. Their research showed tangible benefits from addressing Sustainability in the form of reduced costs and risks of doing business, as well as through intangible benefits in the form of increased brand reputation, increased attractiveness to talent, and increased competitiveness. This good news, however, was not reflected in studies monitoring the state of our Planet, the third 'P' in Prosperity People Planet.

Three key shifts in business thinking		
Business sustainability	MORE	Dyllick and Muff (2016)
Profitability 101	Profit – Performance	Shareholder value
Profitability 201	Productivity	Triple bottom line
Profitability 301	Purpose – Social oriented	True sustainability

Table 1

The role of business in society is an ancient matter. Up until now there has been no agreement which settles this matter; this situation has not been conclusively determined and may never be if humanity continues to 'take' the future. Business communities and today's Capitalist Society are still at odds. How should the reasonable belief that Corporate Governance is acting in the best interests of the corporation be marked by society? Corporations can always be marked based on **doing things right** (being efficient) and **doing the right things** (being effective), but, how can they be marked for now doing right (being Good Stewards, Good Citizens, Good Custodians, Good Guardians)? Happenings are leading to perspective change. As well as 'doing right', **others doing** has become more than just 'Friday's Work-Task'. 'Why-What-How' and an Ingenuity Culture is forging a corporate thirst for new 'What-How' others doing. This has led to numerous themes





## Social-oriented business purpose: Profitability 301... continued

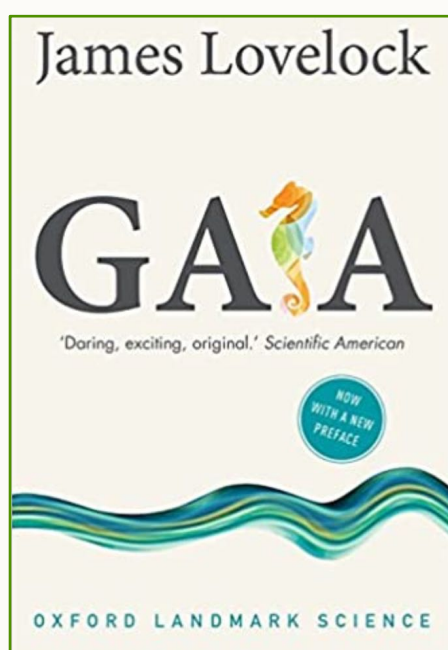
within Business Sustainability discourse - segmented through **Sustainability Materiality** into core focus areas and themes, based on value, impacts and effects. These Sustainability activities then make connections through common interests leading to co-organisation and collective behaviours; adding to more **Manufactured Capital, Human Capital** and **Social Capital**.

The main Sustainability core theme, **Responsible Business** or Corporate Social Responsibility (Good Citizenship) was well researched by Porter & Kramer in their highly recommended articles(3). **Corporate Responsibility** is about corporations having responsibilities and taking actions beyond their legal obligations and commercial/ economic/business aims & objectives. These wider responsibilities cover a range of areas but frequently summed up as Social and Environmental. Thus 'summing up' to the Triple Bottom Line dimensions and when applied to evaluate the enterprise performance in this broader perspective, creates greater Enterprise Value. The World Economic Forum(4) has identified the concerns for 'Responsible Business' as follows:

"...to do business in a manner that obeys the law, produces safe and cost-effective products and services, creates jobs and wealth, supports training and technology cooperation and reflects international standards and values in areas such as the environment, ethics, labour and human rights. To make every effort to enhance the positive multipliers of our activities and to minimize any negative impacts on people and the environment, everywhere we invest and operate. A key element of this is recognizing that the frameworks we adopt for being a responsible business must move beyond philanthropy and be integrated into core business strategy and practice."

Others core Business Sustainability focus areas and themes are being built around 'culture': a 'culture of ingenuity' – an innovative culture delivering appropriate solutions minimising consequential outcomes, and 'culture of safety and wellbeing'. Others are linked to the Industrial, Agriculture and Energy Transitions, and Climate and Biodiversity Change. Others are linked to Societies and Mega-Cities. Even with similar enterprise corporate scale, these core focus areas and themes are being used effectively not only to drive perspective change towards Sustainability as a business opportunity, but, as a corporate differentiator and for outtakes, plus leading to new partnerships built on moral attitudes, rather than self-interests or self-ownership.

**So how have we arrived at enterprise needing a 'social oriented business purpose'? What is a 'social oriented business purpose'?**



It is obviously more than enterprises carrying out 'just business' – business as usual for the benefit flows to directors, owners or shareholder benefits and profit, **Profitability 101**. **Profit Maximisation** is classed as the 'Principle of Shareholder Primacy' in a few legacy legal jurisdictions linked to just business. Maximising 'Shareholder' Profit is very much a remnant of by-gone classical capitalist markets built by institutions for 'just business' – sold today often by transnational corporations as a refined primacy of 'Shareholder Value' management (1) notion-ality. As enterprises are actually Human Capital driven, embracing opportunities and managing risk will always have elements of economic, environmental and social TBL dimensions when endeavouring to maximize profit, with light governance.

**Profitability 201** was about making 'just business' decisions with the supply chain and stakeholders to improve performance and to enhance productivity to ensure resource efficiency was achieved – often part of **eco-efficiency**, both vertically and horizontally in the value chain. Eco-efficiency creates economic value while continuously reducing ecological impact and the use of resources, improving resource productivity – ways



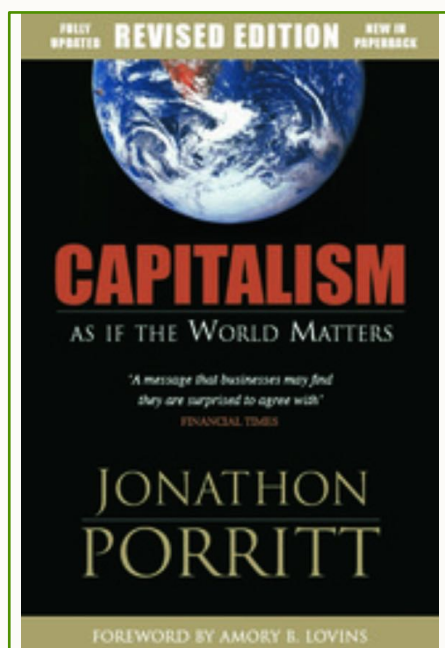
## Social-oriented business purpose: Profitability 301... continued

of doing 'more-for-less' with environmental responsibility. The TBL dimensions have helped to drive design and thereby incorporation of eco-efficiency into selected value chains – thereby enhancing them further. Enhance productivity enables cost reduction priorities to be delivered, maximising medium or near term business profitability but creating a lot more new value from investor sourced **Financial Capital** – a significant improvement over Profitability 101.

Kaizen 'just-in-time' delivery, **Continuous Improvement** and Total Quality Management (TQM) all flourished under Profitability 201, becoming synonymous with Continual Improvement as a whole. An enterprise having 'Comparative Advantage', even **Competitive Advantage** became a rich, new business philosophy, even doctrine, linked to the firm's collective distinctive capabilities ('Core Competency') and advantaged business asset portfolio – **Manufactured Capital**. Continual improvement thinking was then focused more towards all the 'core' activities delivering even more value from commercial endeavours. This led to more outsourcing of non-core commerce activities. **Core Competencies**, representing the 'capability set', differentiate an organisation from its competitors – creating Competitive Advantage; whereas Core Competency is more its strategic strength, some defining this as synonymous with purpose – 'offering'.

Thus under Profitability 201, the new primacy of the firm became **Value Creation**, built on 'business dynamism'. Business portfolio acquisition and divestment ('churn and earn') embedded as a core part of these Core Competencies – built around a few core enterprise legacy assets or 'brand' assets. Ideas and innovation often became more important than productivity of existing systems, processes or practices – leading to Human Capital drifting off into entrepreneurialism, creating new enterprise organisations. This is very much a part of today's 'business dynamism', just with more urgency as existing business models fail to deliver as much value due to condensing and maturing life cycle economic market price erosion – hence why Continual Improvement has proved invaluable over the last thirty years.

However, as beneficial as this new business primacy of Profitability 201 was, simple 'cost cutting' short-termism (sold as 'cost saving') also became imbedded – equivalent to the 'Natural Resource Curse', a sort of 'Natural Business Curse'. Simple cost cutting erodes business organisational structures and activities for short term gains, eroding Human Capital and Social Capital too. Employees trust in management waned along with willingness to be 'custodians' of their employer organisation; even participation of associated technical or financial institutions. Organisational management campaigns constructed around building the enterprise's 'mission' in the pursuit of additional Value Creation, led to 'purpose' entering the 'corporate stage' front and center – **Profitability 301** (Purpose, Performance, Productivity for Value Creation).



Post 2008 global banking crisis has ensured enterprise governance and management practices are now strongly embedded in business commerce – aimed at being responsive; particularly in response to increasing **Investment Governance**, Environmental Social Governance ('ESG'). More importantly, an overall 'business sense' of impinging societal and environmental issues, not just ongoing business market concerns on day-to-day operations, but, needing to make better informed decisions – Sustainability becomes more than just a discussion. This means Corporate Governance has to be responsive to Sustainability – more than just TBL considerations. **Good Custodianship**, the third **Core Practice of Sustainability** – caring and responsible, introducing 'no harm' and 'no trace' work practices linked more to environmental or societal footprints, rather than environmental stewardship of enterprise 'individual' footprint under Profitability 201. At scale, environmental and societal footprints require companies to collaborate and build new partnerships to insure collective action, delivering caring and responsible co-benefits.

## Social-oriented business purpose: Profitability 301... continued

Around this lack in trust in management by employees, particularly ex-employees, built societal concerns over commerce's 'License to Operate'. Increasing individual, community and societal concerns has led to society evolving to become more and more a 'Capitalist Society' through succession; not helped by 'Capitalist Markets' failing in 2008 with the global banking crisis – implicating institutions, commerce and Political Governance. Over time having a Social License to Operate has meant stakeholder engagement has increased in importance under Corporate Governance work scope and priorities. Enterprises producing at 'environmental limits' and across planetary boundaries has only strengthen the Capitalist Society willingness to 'get involved', particularly, with the new generation being fully educated on Poverty, Social Equity, Diversity of Opportunities, Climate Change, Habitat Loss and Loss of Biodiversity. Global Carbon Budget link to global climate temperature rise; physical risk as well as transition risk; and environmental footprints are all part of bedrock next generation education and of 'young leadership' forums and activisms, all pro-actively played out on social media 24/7. This is now reflected in increasing societal concerns over 'Net Pace', now 'Net Zero' dates have been forged into Political Governance. This new generation will have a very different viewpoint on the future relevance of existing legacy resources and products. Industry, Agricultural and Energy Transitions, a core theme of Sustainability as highlighted earlier.

Evolution of Government Policy is now also delivering seemingly daily global additions – all aided through free-to-view seminars and workshops; plus experts and specialists representing Human Capital 'wealth of insight' posting new daily outtakes – 24/7 digital media all absorbed by Capitalist Society. The 'visible hand' of the market place is now acting to correct for 'invisible hands' of economic market externalities. It is clear to all that current market valuations are not valuing individual, community (social, institutional and commerce) or societal values effectively – there is an issue over 'Values of Value(s)'(5).

'License to Operate' historical lessons can be learnt from mining extraction, causing environmental 'harm' over the last 15-20 years. Mining extraction needs to have access to local Social Capital to ensure operations are performed and delivered effectively and efficiently, enhancing productivity. Some have argued that unconventional tight rock oil and gas production is simply resource extraction through 'wells' not mines, but, using 'mining' equivalent technologies to fracture rocks. But as the tight rock, Shale Resource Industry has found – Social License to Operate is best when the local communities have empathy or at least endure such operations, ensuring better choices and environmental limits are taken into account – resulting in at least an informed decision making processes, to get through stakeholder and societal scrutiny; and Political Governance. **Embryonic Social Oriented Business Purpose [SOBP]**. Society-at-large issues can only help to develop the primacy of SOBP further over the next thirty years as demonstrated with the evolutionary primacy of just business 'Value Creation', under Profitability 201.



Business just got more complex – two primacies (Value Creation; SOBP) plus 'DNA' legacy Profit Maximisation (n.b.: DNA legacy because firm's would not be commercial otherwise and under Sustainability it is Prosperity, not Profit, which is 'front of class'). An additional opportunity for Value Creation firms is in building reputation, **Reputational Capital**. For instance, by 'front-end' loading through novel investments on the Industrial, Agricultural and Energy Transitions. This will be enormously rewarding due to the scales needed to reach the new Capitals 'in-use' of Net Zero economies. Laggards, 'back-end' loading will be facing Capitalist Society's preferences head-on. It must be stressed that the cost of resilience is the sum of cost of novel investments; cost of research and development, demonstration, dissemination, design, deployment (R&5Ds), plus cost of failure. Along with opportunities comes associated risk which needs best practice evolution over time if the Total Value is to be captured. Particularly from Sustainability Value. Hence, **Purpose** should be built around core competency and core



## Social-oriented business purpose: Profitability 301... continued

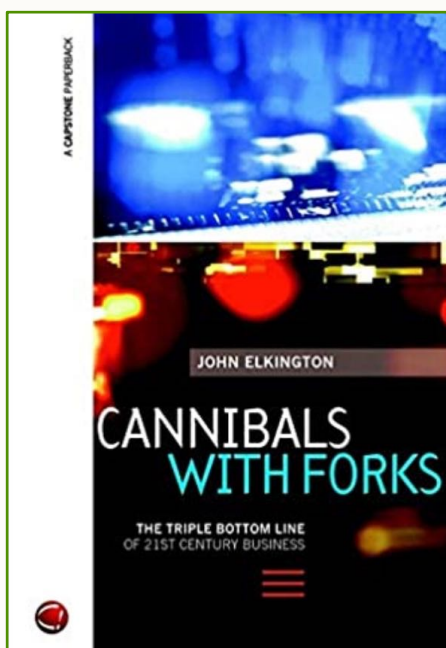
competencies (and skills) with capital wealth built from all value streams, assimilating **Intrinsic Value**.

Collectively, individuals understand the benefits of society and the importance of **Social Capital**, particularly the subset Cultural Capital. Individuals benefiting during life from societal education, their associated health services, local and national infrastructure, public goods such as green (urban) commons, times with and without work. Business 'me-me-me' ('Shareholder-Shareholder-Shareholder') has a strange disconnect with society. Business today is now virtually at an agreement that it is the Shareholders and Stakeholders that matter in the current 'just business' ideology.

But Porritt's(6) Capitals 'stock' model actual seems to have changed the way to think about **Business Capitalism**, at least the integrated thinking and analysis of these Capitals 'stock'. Porritt's **Manufactured Capital** and the collective benefits of working in a company, are deemed separate 'stock' from **Human Capital** – the individual 'workforce'. The collective tangible benefits from the 'workforce' work-done on entering the 'factory area' or 'production boundary' are included as Manufactured Capital. The collective intangible benefits from work-done are included as Reputational 'Brand' Capital, such as the subset **Intellectual Capital**. Thus actually rather than 'me-me-me' thinking, business is actually a key 'stakeholder' in society, so 'we-we-we'. The collective means of community is the glue that keeps society together, and helps it to flourish. 'True Business' should be very much a stakeholder in society and should actually want to see **Social Capital** grow to benefit their children, and their children's children. So when next in the factory area or production boundary, just 'open the business window' and take a view. Business 'purpose' to achieve Sustainability needs to be 'social oriented'.

Opening the 'business window' to the environment is a lot different. Firstly if companies do – they only 'see' the **Urban World**, or maybe **Green Commons** on the horizon. Humanity is the apex predator, so the nearest Natural World's **Living Commons**, wilderness and wildlife, to 'view' may be even on another continent! It is therefore hard to relate to – the Planetary Boundaries between the 'Urban World and our urban Green Commons', and the 'Natural World's Living Commons', plus the **Global Cover** overhead all these landscapes' – the main sink for our urban emissions.

Take the fishing industry and its environmental assets. One fishing boat can fish as much fish as it likes. Even on that boat, when they look out through the 'portholes' they cannot see the 'Life below Water' [SDGs 14] but they can judge how overfished the water is by their catch. If there are 10 boats fishing, all that happens is that the fishing boats spread out. When there are one million fishing boats, everyone has to fish around the world – they have reached the planetary limit. Catch numbers clearly indicate as a whole they are fishing above planetary environmental limits. With three million fishing boats – they have a problem, their natural resource is finite; natural resource fish stock dwindles and today are at record lows; scale of the global fishing fleet has definitely mattered.



The solution at scale here of course is to protect the planetary boundaries and ban commercial fishing in International Waters(7). These waters are not owned by individual nations. Fish stocks would rise with fish migrating across national boundaries benefiting individual nations in time, through local fishing. This might actually be a good mitigation strategy if Climate Change goes as badly as some scientists predict. Humanity might actually need these enlarged fish stocks in 10-30 years' time to actually survive while other climate mitigation measures start to kick-in with further unabated human population growth.

The oil industry has a different natural resource 'stock' issue. If we have one oil well, any emissions will not affect the planet's climate,





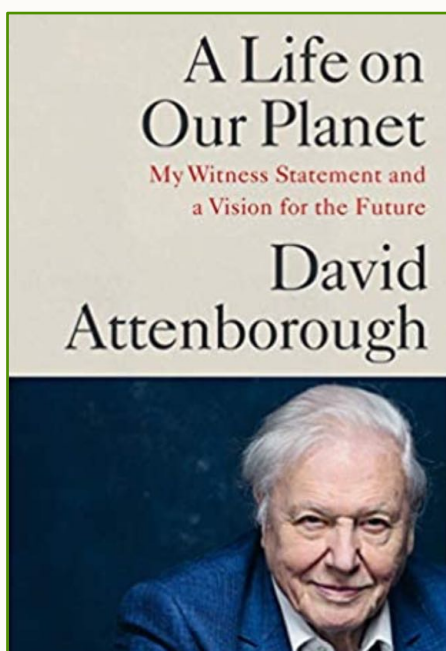
## Social-oriented business purpose: Profitability 301... continued

particularly with environmental regulations enforcing near zero liquid waste to the environment. 10 oil wells will just get spread out from different surface well locations. One million oil wells will simply spread out to cover all the oil provinces; Planet Oil. But three million oil wells just means our industry has more Resources and Reserves.

In fact, if today's society wants 120 million BOPD we can deliver that without even breaking into a sweat – drilling simply more oil wells. In about 2006, the oil industry had reached 'abundant resources', i.e. way more oil resources than could be threatened by current increasing societal demand. We could even produce 120 million BOPD for some 20-30 years before peak supply would start to be a real concern. The same goes for the cattle industry. If society wants more beef, humanity just adds more ranches, simply burning down the Living Commons, creating more Green Commons. But unlike fishing, the oil and cattle industries have a 'Resource (Environmental) Sink' problem. The planetary limits to the **Sink Stock** has been reached and scientific climate models of global greenhouse gases are demonstrating a clear effect on climate stability; 1 Deg.C rise and increasing. Hence the GHG Protocol, 2004 putting Corporate Governance center stage.

These global emissions of primarily CO<sub>2</sub> and methane cannot be seen from the 'business window' as they effect the infrared spectrum, not our white light spectrum which humanity can only 'see'. So the issue has been, somewhere between 10 – 1 million oil wells, Dolan's 'free-rider' effect has become unsustainable with these global GHG emissions now being produced at an expense to the other Capitals 'stock'. The issue is 'cumulative emissions' as CO<sub>2</sub> remains in the atmosphere for a very long time; fueled rise also by global methane emissions. More emissions every day just simply mean the global temperature rise is ever increasing. 'Happenings' are becoming clear trends. Only emission mitigation at scale is meaningful. Momentum is only just nice to have. A bit like having 10-100 Carbon Capture Underground Storage (CCUS) wells when the planet actually needs 10,000+ to stay within its current natural environmental limits.

The Triple Bottom Line dimensions (Article 3, Figure 1): economic social environmental TBL accounting framework, introducing planetary accountability, has complete transparency through these dependent and complex dimensions. When companies produce reserves and products which are at such a scale that they are produced above environmental limits, they are obviously produced at the expense of society; Social Capital. Business reputation and their longer term relevance ultimately, therefore, is at risk when operating and effectively 'taking' the future rather than being seen as part of the solution; to be 'making' the future.



Triple Bottom Line is pretty clear - economic activity is the only dimension that delivers **Prosperity** and there is only one mechanism 'capitalism' which has actually delivered a global 'economy-at-scale'.

Unfortunately, current capitalism only values 'flows', not 'stocks', as 'flows' in 'The Market' ensure the current 'worth' or price of that resource or product is known. This has enabled 'work-day' market worth of public companies, through 'Market Capitalisation' pricing, hence, giving a value to the main company 'assets' too -- benchmarkable against NPV evaluations and assessments. So why is non-use 'stock' valuation so important? Under the Triple Bottom Line, how do you value the loss of stock of coral ecosystems due to global warming and increased acidification of these coral seas? Products and resources which are proven to be linked to the causes of this 'stock' loss will consequentially not be thought as 'relevant' by society as it has been historically with limited demonstrated environmental limits causing only limited societal scrutiny in the past.

Stranded assets in transitions are inevitable. Learning from the



## Social-oriented business purpose: Profitability 301... continued

'Tragedy of the Horizon', we have to learn to value 'stock' not by consequential loss; environmental or biodiversity loss. Thus for those respective products and resources it is very important for companies to understand the additional value of non-use 'stock' to make fully informed decisions for consequential impact and effects on planetary ecosystems. In addition, respecting planetary boundaries between the Urban World and Animal World will only increase as the current generation hands over to the new generation, more akin to being 'Good Guardians'. **Good Guardianship**, the fourth **Core Practice of Sustainability** – protecting planetary Living Commons, Green Commons, Global Cover and Natural Ecosystems.

These simple examples shows how the TBL effects Business Sustainability which is why **Investment Governance** has pushed the ESG agenda since 2005 to be now mainstream for all corporations and companies that need external **Financial Capital** to continue production operations; natural resources & natural ecosystem services through respecting nature (i.e. **Natural Capital**) being front and center to ESG reporting. **Business Governance** focus on building an organisational workplace around common purpose and enterprise cultural collective values based on 'What' and 'How' they do business – get work done through Ingenuity Culture; and Safety and Wellbeing Culture. When company purpose ('Why') and meaning connects with current and potential employees, their engagement gives people the energy, passion and motivation to achieve more (i.e. Why-What-How).

As Elkington(8) pointed out, the Sustainability of a business depends on how enduring the company is to the TBL in the future. Producing at the expense of others is not sustainable hence having a business purpose, being social oriented, is at least prudent if not paramount in resource and even product production and operations. Just business is not sustainable at scale – environmental limits determine how unsustainable. The Industrial, Agricultural and Energy Transitions are simply about moving from one capital stock, system to another which today is driven by Government Policy and ESG Investment Governance determining Net Pace and ultimately the relevance of the next generation new capital stock built over the transition. Without effective Political Governance dictating the right national policies, some public companies or activities will be taken private, losing external societal scrutiny – decreasing market confidence further.

**Social-Oriented Business Purpose** is the best 'Why' there is in Business Sustainability today. Integrated thinking of Sustainability has brought us this new mindset - leading to a new 'culture of ingenuity', which must now deliver more benefits than our mature 'culture of safety' has, which will be quite a challenge! Learning from the 'Tragedy of the Horizon', we have to learn to value all 'stock' not by loss. If not, loss of resource such as stranded resources will lead to more financial loss from stranded reserves, then stranded infrastructure, then stranded provinces. The new mindset must ensure the long term destination of Sustainability is reflected



in near term investment decisions by at least using coherent energy price forecasts along with full costing; deliver operational excellence within the current environmental limits; and learn to value 'non-use' stocks – delivering **Resource Stewardship** and **Product Stewardship**, which is the topic of the next article.

The big disconnect today is how economics is taught and has been thought, focusing on economic profit and growth (Prosperity) without concerns of People (WellBeing) nor Planet (global scale Planetary Boundaries, Complex Systems and Nature).

There is micro-economics and macro-economics but no link to the 'value of nature'; its natural service in use today from ecological system 'flows' which provide clean air, fresh water, fertile soil, food, wood, stable climate or disease control, etc, etc; and its natural 'stock' built over billions of years demonstrated through geo-diversity, mostly in the subsurface **Hidden Commons**.

## Social-oriented business purpose: Profitability 301... continued

Ecological thinking does take into account 'working with nature' at scale rather than its continual neglect and deterioration of natural living commons, biodiversity, and now climate 'happenings' evolving into climate change.

**Article 5 in the next SPE Review will be covering integrated thinking about value – Enterprise Value and Sustainability Value – building on the 'outcomes' from some thirty years of Environmental Stewardship and Ecosystem thinking, Dynamic Materiality – Assimilating Intrinsic Value.**

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SPE is a non-profit professional society with more than 156,000 members in 154 countries, who participate in 203 sections and 383 student chapters. SPE's membership includes 72,000 student members. The SPE London Section, with an average 2,000 members and seven associated student chapters, is an active section with an aim to connect, engage and promote the exchange of knowledge within the London energy community of technical and commercial professionals. The SPE London board is the governing body for the SPE London section. The different committees oversee the chapters various activities including the evening programme, various SPE events, Young Professionals, Women in Energy and associated student chapters.



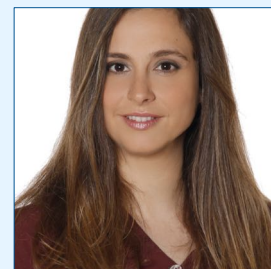
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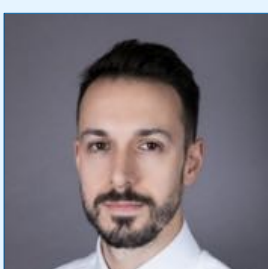
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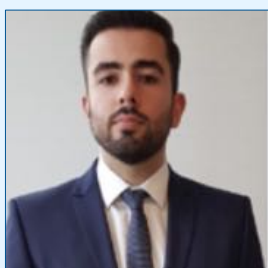
Big Data  
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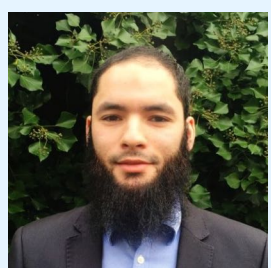
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Adam Zalewski



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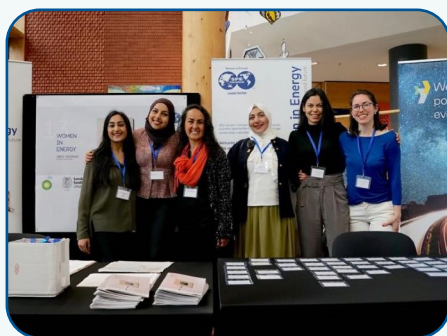
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