



SOCIETY OF PETROLEUM ENGINEERS

SPE NEWS

COPENHAGEN SECTION

Major shifts in the energy landscape

Dear SPE members, hope all of you had a good holiday break and are ready for a 2021 that starts with a mix of optimism and uncertainty. The COVID pandemic continues to have an impact on all of us and no one takes a chance to forecast when it will be over, but one can say that everyone hopes that it will be better than last year.

We ended 2020 with the 'Project Greensand' in CCS (Carbon Capture and Storage) by Jeanne Mia Lønstrup from Maersk Drilling and Johan Byskov Svendsen from INEOS Oil & Gas. CCS is a very relevant topic on the energy transition and a foundation for the Danish climate strategy which targets to reduce greenhouse gas emissions by 70% by 2030.

The year started with Rasmus B. Boesen from Calsep with a topic focused on the challenges when dealing with asphaltenes. In February the second SPE Distinguished Lecturer of the season, Henk Krijnen, will present scenario planning which is of the key tools in the toolkit of the energy industry when confronting decision making. In March, Steve Freeman from Schlumberger will present how digital solutions can and are impacting the drive towards reducing emissions from the oil and gas industry and how they will enable the energy transition.

There is a vast and variable amount of opinions via articles, podcasts, social media, etc. on what is exactly the energy transition, who is going to do what and what will happen as result of it. Quoting the renowned energy expert Daniel Yergin: 'The transition will have an enormous global economic impact, but it will also bring about major changes in the map of global power'. While there is a wide support to the Paris agreement among a lot of countries, not all companies are approaching the challenge the same way. There seems to be a trend where European oil and gas have started to move into the renewables space such as wind and solar, while companies from other regions are lagging, with few notable exceptions. In addition, big momentum is taking place around other key energy transition topics such as blue and grey hydrogen and the whole energy eco-system integration via power to X. Those are complex topics not from a technical angle, but much more from a regulatory and integrated value chain point of view.

It is interesting to observe that in recent wind farm bids, including one upcoming in Denmark, traditional oil and gas companies have partnered with traditional renewables companies to potentially submit a combined bid. While currently limited, the outcome of this trend could mean that oil & gas companies will become a major part of the solution, by transforming themselves into integrated energy companies, by investing significantly and rapidly into renewable alternatives. This, in addition to CCS and the blue/grey hydrogen, opens a whole new world of opportunities for oil and gas professionals who can transfer a lot of the advanced skills acquired in our industry.

Looking at market dynamics, seems like supply is tightening supported by lack of significant investment on a depletion business and supported by Saudi Arabia decision to cut production while a number of other OPEC+ members will raise production. This single decision lifted oil prices early in January but it is unclear where it will go from here. On the demand side, while there are visible improvements it is still very early to see when it will recover to pre-COVID levels. Finally, a lot of discussion on the recent USA election and how it will affect our industry and the energy eco-system overall. Stay tuned because there will be some impact for sure.

We continue to encourage all SPE members to actively participate in the virtual events which is the new norm. Suggestions about how to improve them are very welcome, just reach out to one of the board members.

Looking forward to virtually seeing you in the upcoming events in the second half of the 2020-2021 season.

Sincerely Yours,
Jaime Casaus-Bribian
SPE Copenhagen
Section Chairman

Please remember to pay your SPE dues. If you are in work transit, please check the link <https://www.spe.org/en/members/transition/>



Please follow us on LinkedIn to be up to date on SPE Cph events and other great stories:

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DIGITAL SOLUTIONS ENABLING THE ENERGY TRANSITION

The world is going through the biggest change in energy infrastructure for many decades driven by the need to mitigate climate change and climate risk. Across all parts of the energy industry we need to understand how we can accelerate the ability to reduce emissions from existing operations as well as accelerate the deployment of low and even negative carbon energy systems. The energy industry needs to be able to dramatically cut its own and its consumers emissions while at the same time supporting both the dramatic growth in energy demand and major swings in the energy mix. All of this needs to be performed while enabling economic development to ensure that there is financial incentive to drive an ever faster transition.

Digital will be at the heart of how we can better design, execute and operate these systems. It will enable intelligent optimisation of initial designs, accelerate the construction phase and ensure real time optimisation of these more diverse and intermittent energy supply sources.

In this presentation we will review how digital solutions can and are impacting the drive towards reducing emissions from the oil

and gas industry. We will also look at how they are enabling the growth of carbon capture and sequestration. How they are enabling the acceleration of low carbon technology designs across multiple energy sources and finally how they can enable better and more integrated multi-sector energy systems. All of which should enable the acceleration of the energy transition.



Steve Freeman is the Head of Energy Transition for the digital side of Schlumberger and the Global Technology Advisor for the business. Prior to that he was the Head of AI and innovation. Steve gained his PhD in Structural Geology from Leeds University in the UK and has since worked in the Energy and Minerals business around the globe over the last 25 years.



Virtual meeting MARCH 17

[Register HERE](#)

PROGRAMME

17:00 – 18:00
PRESENTATION AND SPE NEWS

TOPIC

Digital solutions enabling the energy transition

SPEAKER

Steve Freeman, Head of Energy Transition, Schlumberger

REGISTRATION

Registration will be through SPE-I; sign-up e-mails with details will

be distributed to Copenhagen & Esbjerg section members in advance of the meeting.

SPONSOR



October 29	MAIN SPEAKER	AFTER DINNER
TOPIC	Carbon Capture and Storage Research at DTU CERE and Control Room Assistant	
SPEAKER	E.H. Stenby (DTU), P.L. Fosbøl (DTU) and C.M. Myllerup (Kairos)	
LOCATION	VIRTUAL MEETING	
SPONSOR	DTU	
November 11	MAIN SPEAKER	AFTER DINNER
TOPIC	Big Data and Machine Learning in Reservoir Analysis	
SPEAKER	Roland N. Horne, DL Stanford U.	
LOCATION	VIRTUAL MEETING	
SPONSOR	SPE	
December 15	MAIN SPEAKER	AFTER DINNER
TOPIC	Project Greensand	
SPEAKER	Jeanne Mia Lønstrup, Maersk Drilling and Johan Byskov Svendsen, INEOS Oil & Gas, Denmark	
LOCATION	VIRTUAL MEETING	
SPONSOR	SPE	
January 26	MAIN SPEAKER	AFTER DINNER
TOPIC	Asphaltenes – Fascination and Frustration	
SPEAKER	Rasmus R. Boesen, Calsep A/S	
LOCATION	VIRTUAL MEETING	
SPONSOR	SPE	
February 11	MAIN SPEAKER	AFTER DINNER
TOPIC	Using Scenario Planning for Decision making in the Energy Industry	
SPEAKER	Henk Krijnen, SPE DL	
LOCATION	VIRTUAL MEETING	
SPONSOR		
March 17	MAIN SPEAKER	AFTER DINNER
TOPIC	Digital Solutions Enabling the Energy Transition	
SPEAKER	Steve Freeman, Head of Energy Transition, Schlumberger	
LOCATION	VIRTUAL MEETING	
SPONSOR		
April 14	MAIN SPEAKER	AFTER DINNER
TOPIC	From Piper Alpha to Macondo and 737 Max: The Danger of a Pure Compliance Culture	
SPEAKER	Thomas Hinterseer, SPE DL	
LOCATION	VIRTUAL MEETING	
SPONSOR		
May 20	MAIN SPEAKER	AFTER DINNER
TOPIC	Tyra Redevelopment	Agm
SPEAKER	M.H. Pedersen, Total	
LOCATION	VIRTUAL MEETING	
SPONSOR		
June	MAIN SPEAKER	AFTER DINNER
TOPIC	Summer Party	
SPEAKER		
LOCATION		
SPONSOR		

From Piper Alpha to Macondo and 737 Max: The Danger of a Pure Compliance Culture

Abstract:

The Oil and Gas Industry has gone through dramatic and industry shaping events, such as Piper Alpha and Macondo. These events have significantly impacted the way the industry is now thinking, acting and behaving. The culture of the industry changed and we now operate in a safer goal setting era, yet at times - it seems a more regulated and prescriptive environment. Adherence to rules and procedures and enforcing strict compliance alone is not sufficient to get us to Zero. The recognition of the importance of human factors and taking into account that the individual has a major role to play in the proper understanding, interpretation and use of the rules is a key ingredient to getting to Zero. As we are seeing also with the recent events at Boeing, leaders create the context and employees act within this given context. Based on a review of the lessons learned from these events, this talk will discuss some of the essential elements to getting to zero and how to create the context where the individuals and teams are sufficiently aware, engaged and enabled to make the right decision at the right time for the given circumstance.



Biography:

Thomas. H. Hinterseer has 25 year experience in the Oil and Gas Business working in various functional roles (Legal, Marketing, HR, Merger and Acquisitions) and Line Management Roles (Managing Director for the Middle East and Managing Director for West Africa) for Schlumberger and Transocean. He lived the Macondo accident from within as a VP of Human Resources. He currently serves as Managing Director of CEDEP, an International Executive Education Club, working with a number of top International Companies to prepare their senior leaders for success in an increasingly complex world. He also teaches at INSEAD, one of the leading International Business Schools.

Virtual meeting APRIL 14

Don't miss this **SPE Distinguished Lecturer!**

From Piper Alpha to Macondo and 737 Max: The Danger of a Pure Compliance Culture



[Register HERE](#)

PROGRAMME

18:00 – 19:00
PRESENTATION AND SPE NEWS

TOPIC

From Piper Alpha to Macondo and 737 Max: The Danger of a Pure Compliance Culture

SPEAKER

Thomas Hinterseer, SPE DL

REGISTRATION

Registration will be through SPE-I; sign-up e-mails with details will

& Esbjerg section members in advance of the meeting.

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An Extra 45 Minutes Can Provide a World of Knowledge

The SPE Student Chapter is changing the President



After many years of faithful service, President Hadise Baghooee has decided to resign from the position and concentrate on the last year of her Ph.D. study. Her work has inspired many young petroleum engineers, and has been a big help to connect students with their future workplaces. She has passed the torch to Isaac who is now the current president of the SPE Student Chapter Copenhagen.

Isaac Appelquist has a scientific background in nanotechnology from Aalborg University. Here he studied the interaction between molecules and surfaces with the aim to tailor the surface molecule interaction to create a framework for future molecular electronics. Currently, he is doing a Ph.D. in the department of Chem-

ical Engineering at DTU, in collaboration with the Centre for Oil and Gas, DTU. His subject is precipitation of scale on the surfaces of wells and pipelines. On the photo, Isaac investigates the rate at which minerals grow on surfaces, and how this is related to both surface and fluid properties. By increasing the overall knowledge in this field, prediction models on scaling can be improved and a more sustainable production can be obtained.

As a new Chairman, Isaac sees his mission as spreading awareness towards the interlinkage between the SPE and the sustainable transition of the society. Isaac admits that, coming from a background of communicating sustainability to youth, he had initially a very skeptical position towards the role of oil and gas in the society. However, his point of view was challenged, while doing his Ph.D. related to subsurface well integrity. Therefore, through his current presidency, Isaac is determined to communicate the role of SPE in a future society to a broader young audience.



New SPE Student President Isaac Appelquist has a scientific background in nanotechnology from Aalborg University.

“WHAT MAKES YOU STAY IN THIS BUSINESS?”

By Darya Shingaiter, Schlumberger, member of SPE Copenhagen Section board

– this question I have asked myself several times since year 2015, while surviving endless redundancy rounds pushing more and more colleagues out of the shaking oil and gas boat through the storming years of extended crisis (see Figure 1 - Statistics of Global oil and gas industry workforce cuts due to oil crises 2014-2020, Published by N. Sønnichsen, Apr 9, 2020)

At that time my answer was firm - someone from the younger professionals should definitely stay to retain the knowledge, capture invaluable experience of previous generations, keep up with the latest emerging technologies. And this someone should be me, because I have invested a lot of time and efforts into my education and gaining experience. At the same time, I was enjoying my everyday work, my smart colleagues' company, interesting projects and engineering challenges.

To date, all the previous considerations are still very valid. Furthermore, this is a turning point in the industry, when the latest IT technologies, introduction of artificial intelligence, machine learning algorithms are changing the way we were doing things before.

We no longer need to study tens of drilling reports to collect data from the offset wells in order to improve well design – it can all be processed automatically from the data lake. The tedious work of picking up faults from seismic interpretation now can be done by machine learning algorithms. The millions of calculations performed during reservoir simulations can be speeded up significantly thanks to jobs parallelization on multicore computing clusters.

This is a pretty exciting moment to be in the industry, isn't it? This is the time, when you need to keep learning every day in order to be up to speed with the encroachment of digital world, so not the time to pull back, on contrary - the opportunity to advance yourself and help transform our conservative industry.

“Re-train, re-skill, retain” – should be the initiative for Oil and Gas industry to take, according to Airswift, to secure talented workforce for the years to come.

Today it is not good enough to have a solid theoretical engineering/geoscience background... ▶▶

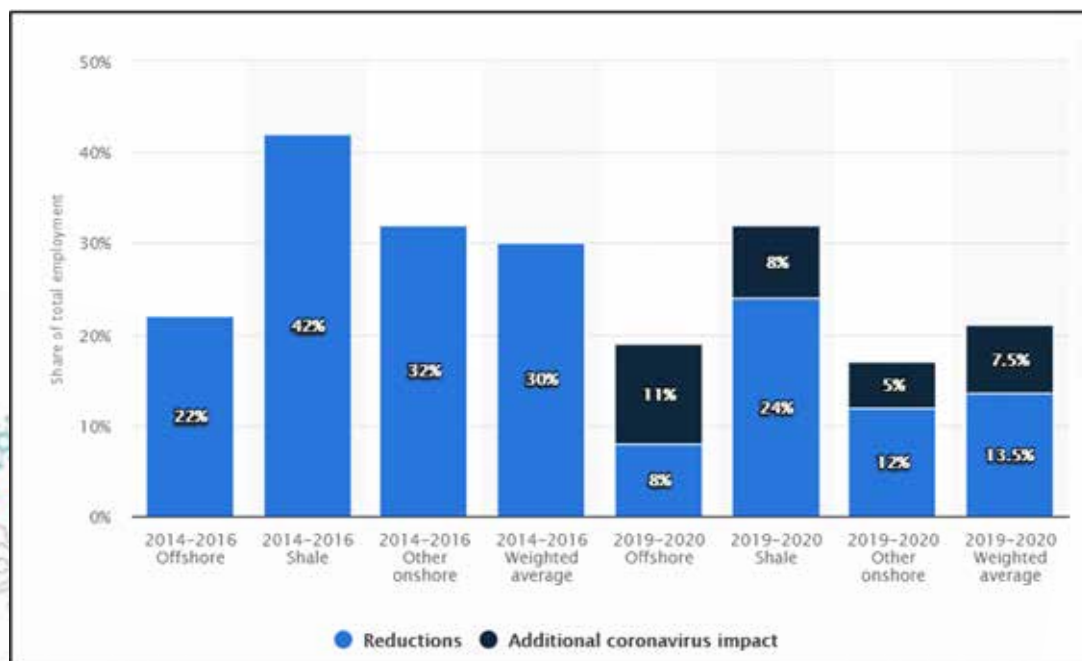


Figure 1 - Global oil and gas industry workforce cuts due to oil crises 2014-2020, Published by N. Sønnichsen, Apr 9, 2020

» "WHAT MAKES YOU STAY IN THIS BUSINESS?"

– today's employee is expected to be a capable user of multiple relevant to the job software applications and be able to adopt the latest technological and digitalization trends.

For many individuals and companies, it is a significant transformation to undertake, which opens up for new learning and career opportunities and should be a great motivation for a person to find unique paths for development and professional growth.

Despite all the insecurity brought into the industry by COVID-19 pandemic and subsequent downturn, according to the recent Airswift report, "the majority (56%) of oil and gas professionals said they would still pursue a career in the sector if they were entering the industry today and 64% of survey respondents are still optimistic and expecting growth over the next three years".

This means that at least more than half of professionals would prefer to remain in the oil and gas business. And why is that? There can be a number of reasons. I would name few practical ones, besides the honor of being a part of the great mission - delivering energy to the world.

- Following all recent headcount cuts, one would realize, that the market value of remaining specialists will be increasing over the coming years – in short-term, demand would rebound and require workforce to keep the industry up and running.
- The competitive salaries – for many countries the wages in petroleum sector are still significantly higher than for competitive industries (take renewable energy sector for example) - hence

making it difficult for an individual to go down in income and hence lower lifestyle standards.

- Professional interests and challenges, exciting projects and complexity of the tasks.
- Getting out of the comfort zone and domain knowledge area – any change is a stress, positive or negative, but still a stress. Starting your career from scratch, losing your expertise and professional confidence is not an easy journey to embark on. Although, in my humble opinion, our industry has accumulated a lot of bright professionals, who would have no problem to change qualification and become a great asset for any company.
- Finally, the tendency to stay in the industry must be significantly correlated to the country of origin. Denmark is a special place with a hard stop put to oil and gas production in year 2050. But there are plenty of places in the world with significant hydrocarbon reserves, which are far behind in the transformation to the clean energy and hence have few more decades to provide employment to the oil and gas professionals.

What about young generation? How to retain them? How to attract new bright talents?

This would be the topic for my next article, which would include the results of a questionnaire to be run among our young professionals in Denmark.



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Reflections on the energy transition

By Jaime Casaus-Bribian, HESS Denmark, SPE Copenhagen section chairman

What does it mean, the term 'energy transition'? There are many definitions but the one I find very simple and clear is the following:

'Energy transition refers to the global energy sector's shift from fossil-based systems of energy production and consumption – including oil, natural gas and coal – to renewable energy sources like wind and solar' (ref. 2).

What makes this topic extremely interesting and challenging is the nature of the transition, the journey to go from today's energy mix to tomorrow's energy mix.

Several factors will influence the speed of the transition and to some extent shape it. Some of those are policy, society and technology (and to some extent investors). In addition, it will also change the geopolitical map and energy dependency of several countries. However, one thing is clear, the energy mix of tomorrow must be one that is more sustainable and has a much lower carbon footprint and contributes to the Paris climate agreement; Our industry will be pivotal in achieving that.

CO₂ emissions

The Paris agreement targets an early peak in emissions to tackle the 'long-term temperature goal to hold global average temperature increase to well below 2°C above preindustrial levels and pursuing efforts to limit the temperature increase to 1.5°C above pre-industrial levels.' To achieve that, a significant number of subjects must be looked into; carbon pricing, energy efficiency, electrification, infrastructure, new energy systems (such as wind and solar), carbon capture and storage. All need to be supported by a change of mindset by politicians and society, which are starting to happen and has been accelerated by the COVID pandemic. Now is a matter of turning ambitious political initiatives into specific actions. In the World Energy Outlook 2020, the IEA (International Energy Agency) published CO₂ emission scenarios where 2 out of 4 have increasing CO₂ levels while the 3rd is neutral and the only one that has significant CO₂ reduction (see figure 1). In addition to policies, other key contributors to the CO₂ emissions reductions are mainly efficiencies, larger share of renewables, CCS and fuel switching from carbon intensive to e-fuels. ▶▶

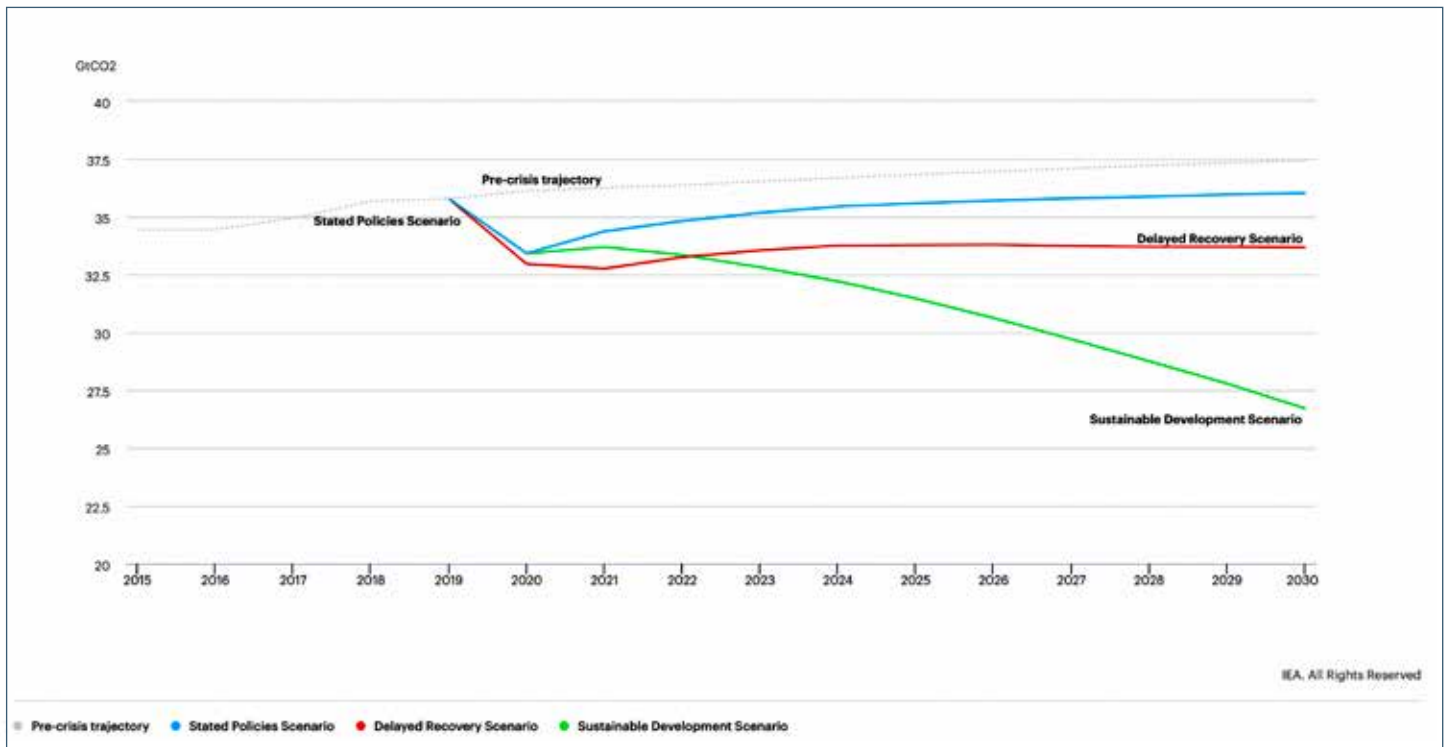


Figure 1: IEA Energy sector and industrial process CO₂ emissions by recovery trajectory, World Energy Outlook 2020

REFLECTIONS ON THE ENERGY TRANSITION

Energy outlook

There are many forecasts with underlying technical, political and economic assumptions to go from today's energy mix to the future one. One of them is what is shown in figure 2 from IEA on their World Energy Outlook 2020. The primary energy demand composition is anticipated to change and renewables will gain a

significant share of the anticipated energy growth. Energy growth is traditionally linked to economic growth and that is expected to continue. However, there are some voices that challenge and state, that the energy demand will decelerate and decouple from GDP growth in the next 10-15 years (ref. 1).

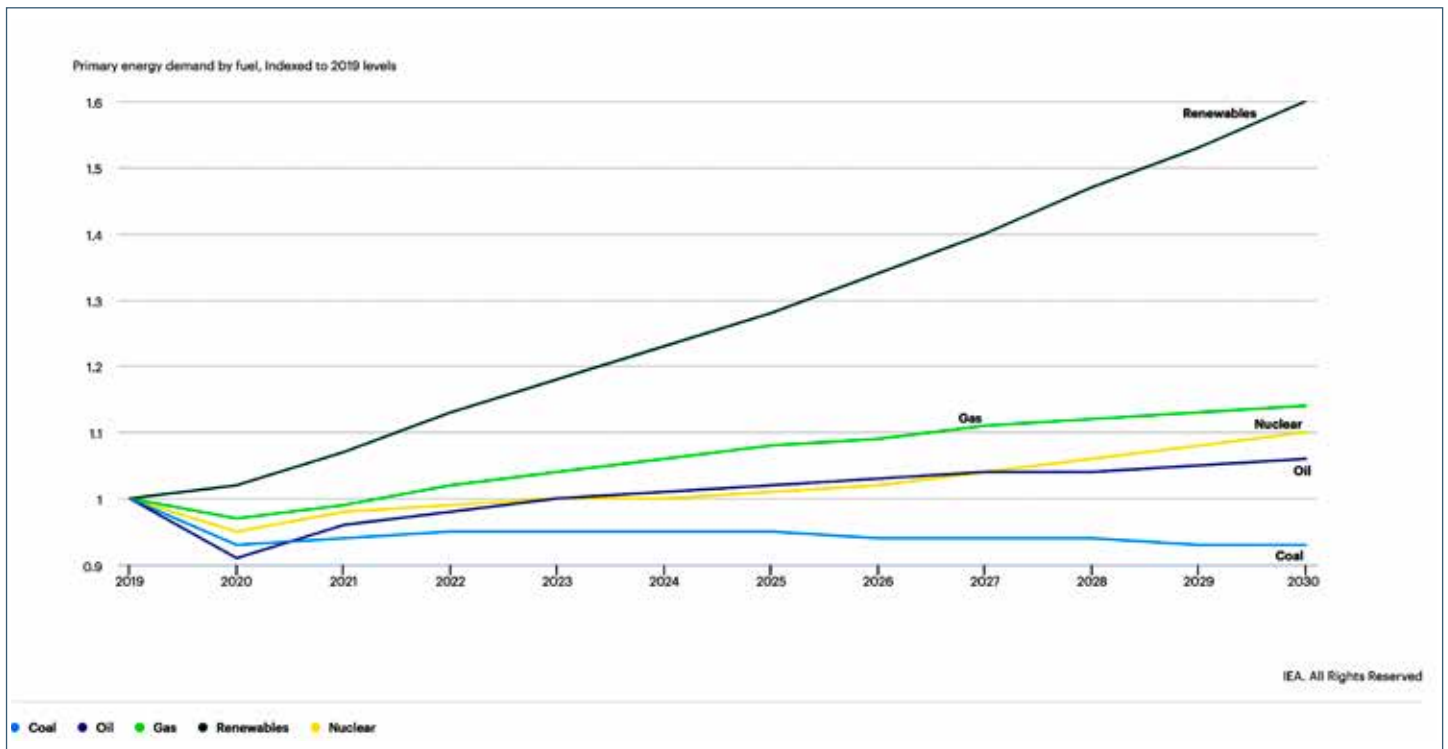


Figure 2: IEA, Key fuel trends in the Stated Policies Scenario, 2019-2030, IEA, Paris

In addition, the composition of electricity sources will also change with time. We will probably see a displacement of coal and nuclear energy, to be replaced by gas and renewables such as wind, solar and geothermal, as shown in Figure 3 and 4. All this could translate into a peak oil demand by late 2020s and peak gas demand by 2030s (ref. 1), which has been a topic for many years with some people saying it will be end of this decade and next one, respectively. Finally, no matter the scenario oil and gas will remain a key energy source and it is imperative that the industry becomes more sustainable.

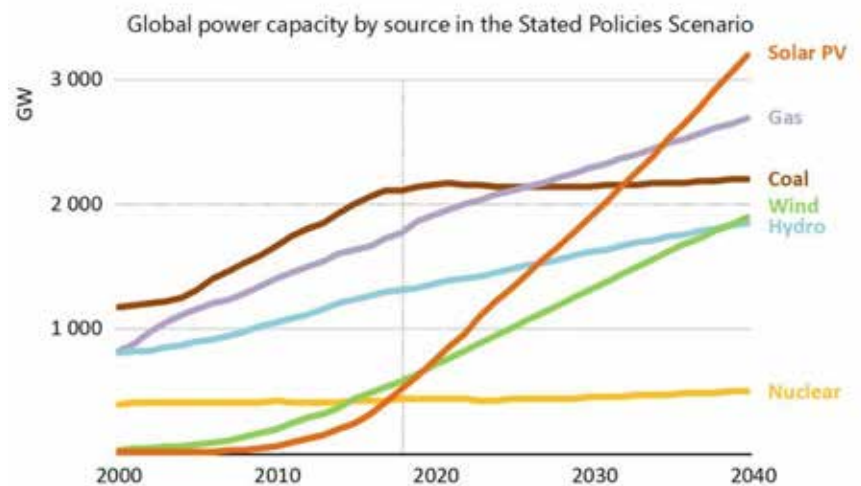


Figure 3: IEA, Global power capacity by source in the Stated Policies Scenario, 2000-2030, IEA, Paris

► REFLECTIONS ON THE ENERGY TRANSITION

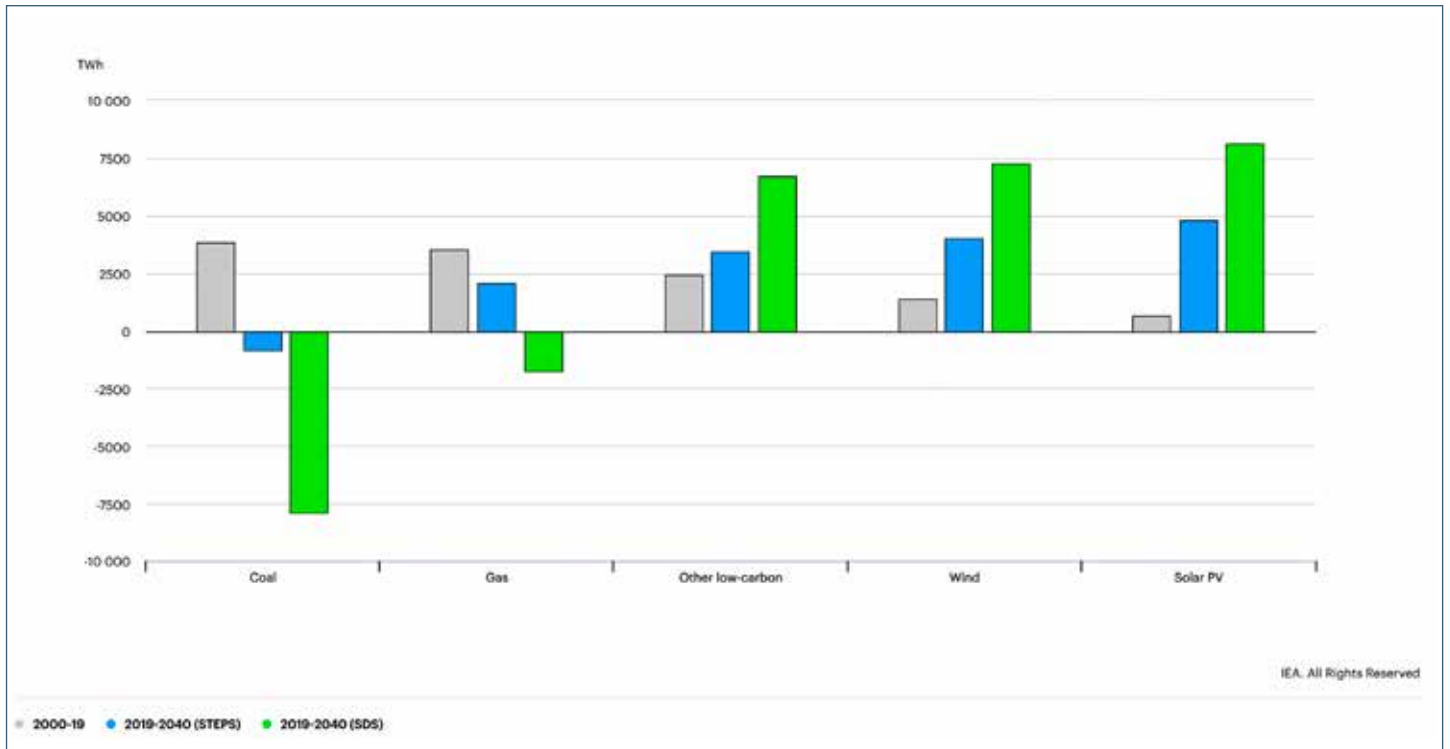


Figure 4: IEA, Change in global electricity generation by source and scenario, Stated Policies Scenario (STEPS), 2000-2040, IEA

E&P companies and Skills for oil & gas professionals

Mainly European E&P companies are diversifying into low carbon sources of energy such as wind and solar. The strategies are different, some more aggressive than others, but it is evident that there has been a switch in strategies related to how to contribute to the energy transition. In addition, there seems to be a trend, where traditional E&P companies are partnering with traditional renewable companies to enter offshore wind farms bids in partnerships. It is evident, that oil & gas has extensive expertise in the complex offshore environment and its value chain after decades operating in such environments. Offshore wind farms are a relatively young business and therefore partnerships make a lot of sense at this stage.

Oil & gas professionals have an important role to play in the energy transition: either in the oil and gas industry, CCS or geothermal. In addition, other renewables industries such as wind and potentially solar can benefit from a lot of the skills that are acquired in our industry. This specific subject will be expanded in upcoming newsletters.

References:

- 1) McKinsey, 2021. Peak energy, peak oil, and the rise of renewables
- 2) S&P Global: What is energy transition
- 3) IEA (International Energy Agency): World Energy Outlook 2019, 2020

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