



SOCIETY OF PETROLEUM ENGINEERS

# SPE NEWS

COPENHAGEN SECTION

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## FITTING INTO THE GLOBAL ENERGY MIX

The latest number of the Journal of Petroleum Technology under the title 'The Value and Future of Petroleum Engineering' pays tribute to petroleum engineers, including their technical achievements and provides some insights on some of the key challenges that our industry is facing. Some worth highlighting are how we, as an industry, can bend the public perception of hydrocarbons and what's the hydrocarbons fit in the global energy mix. Finally, how big data is starting to disrupt the oil and gas business to provide solutions to our day to day oil and gas problems.

Turning to the SPE Copenhagen section, the end February and March events covered two different technological challenges of our industry: TOTAL shared the story of how a complex project such a Yamal LNG project can be delivered successfully even on a difficult environment; and Welltec shared how an existing technology such as fishing has evolved by thinking outside the technological box.

The last SPE event of the season will be hosted by Shell where David Hone (Chief Climate Change Adviser for Shell) will talk about the Energy Transition. In addition, during the event the Annual General Meeting will take place and the winner of this year's SPE student scholarship will also be announced.

I am very pleased to announce that the traditional SPE summer party will be taking place on the 21<sup>st</sup> June. Finally, if you are curious about learning a bit more about the existing board, you will find in this newsletter some information about the members that proudly volunteer for the SPE Copenhagen section board.

I along with the SPE Copenhagen Board hope to see you in the final event of the season and in the summer party to celebrate the 2018-2019 season before we break for summer.

Thanks

Jaime Casaus-Bribian  
SPE Copenhagen  
Section Chairman



## FUTURE MEETINGS

FOR MORE INFORMATION REGARDING THE PROGRAMME SEE PAGE 6

# SPE

COPENHAGEN SECTION  
THE BOARD • 2018-2019 SEASON

## SECTION CHAIRMAN

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# NET CARBON FOOTPRINT - WORKING TO MEET THE

The goal of the Paris Agreement is to keep the increase in the global average temperature to well-below 2° Celsius compared to pre-industrial levels. Achieving this will require a dramatic reduction in greenhouse gas emissions, reaching a point of net zero global emissions within the second half of this century.

There are three ways to reduce global greenhouse gas emissions:

1. Improve energy productivity by more efficient use of energy by end-users combined with the use of technology to manage energy demand.
2. Change the mix of energy products used by society. This will involve replacing high carbon-intensity products with lower or zero carbon products. An example would be substituting coal with natural gas. Another example would be substituting gasoline/petrol in internal combustion engine cars with renewable electricity sourced from a wind farm in battery-powered vehicles.
3. Store emissions in carbon sinks by using carbon capture and storage and nature-based solutions such as reforestation. A sink is a mechanism to remove and store carbon dioxide from the system, either at the point of emission or by natural or technological removal from the atmosphere.

Only in combination will these deliver the full reduction in energy system emissions required by the Paris Agreement.

## SHELL'S NET CARBON FOOTPRINT AMBITION

In December 2017, Shell announced its Net Carbon Footprint (NCF) ambition – an emissions reduction initiative explicitly designed to be consistent with the reductions needed to meet the Paris Agreement.

The NCF describes the total emissions which are generated for each unit of an energy product delivered to, and used by, a consumer. This is measured in grams of carbon dioxide equivalent per megajoule, or gCO<sub>2e</sub>/MJ. Shell plans to reduce its NCF by around 20% by 2035 as an interim measure and by around 50% by 2050.

Specific NCF targets will be set each year for the following three- or five-year period. Beginning in 2019, Shell has set an unconditional three-year target to reduce its NCF by 2% to 3% compared to 2016.

This target setting will then be done annually, with each year's target covering either a three or five-year period. Shell's executives' pay is now linked, in part, to this target.

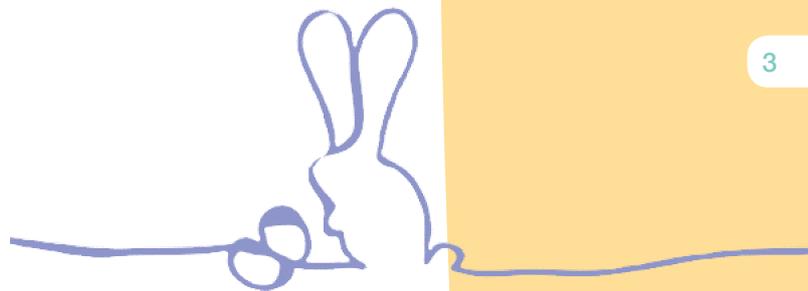
## SCOPE OF THE NCF?

The NCF includes carbon dioxide, methane and other greenhouse gas emissions. The scope of the NCF ambition includes:

- emissions from Shell's own operations associated with the production and processing of energy products

# FOOTPRINT

## PARIS AGREEMENT



- the emissions of third parties who supply energy or products to Shell
- Shell customers' emissions when using the energy products sold by Shell. The emissions generated from the processes that bring an energy product to the customer represent around 15% of overall emissions. The use of a product generates around 85% of overall emissions. Shell was the first oil and gas company to include emissions associated with the use of the energy products that we sell in plans related to climate change
- emissions mitigation by Shell using carbon sinks, such as reforestation or carbon capture and storage

### HOW WILL SHELL REDUCE ITS NCF?

Natural gas emits between 45% and 55% fewer greenhouse gas emissions than coal when used to generate electricity, according to data from the International Energy Agency (IEA). This means that the greatest contribution Shell can make right now is to continue to grow the role of natural gas to fuel transport, heat and light homes, and power industries.

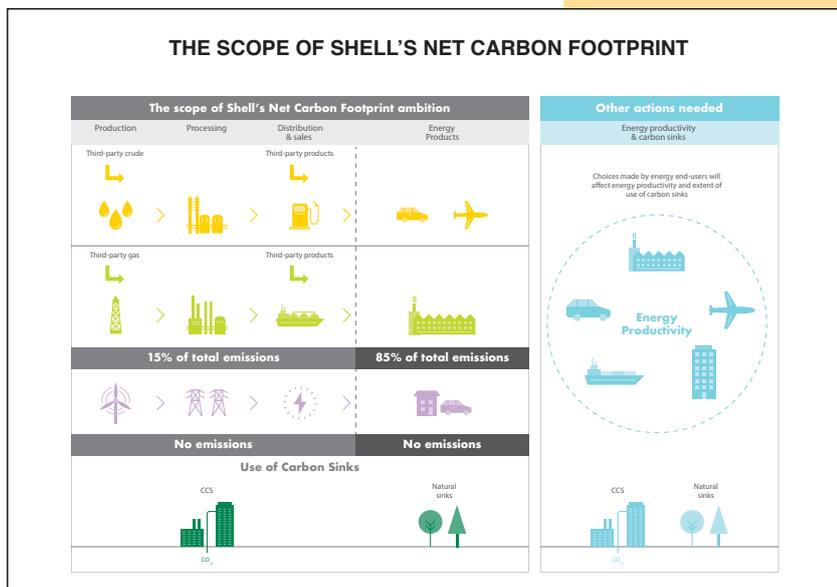
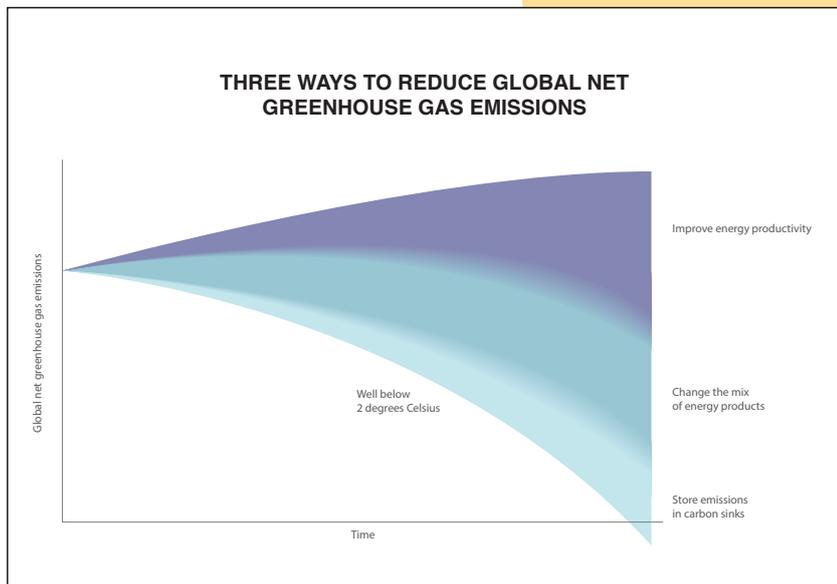
Beyond natural gas, Shell is investing in low-carbon technologies and businesses that will be necessary to enable the transition. These include low-carbon biofuels, carbon capture and storage, hydrogen, solar power, wind power and nature-based solutions such as reforestation.

### SHELL NEW ENERGIES

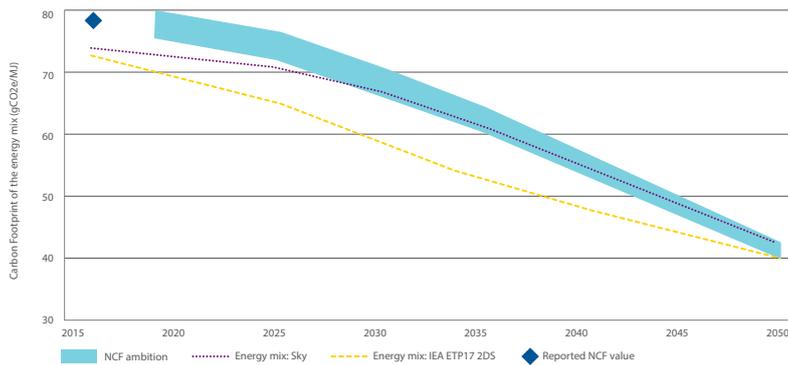
In 2016, Shell set up a New Energies business to better focus these efforts and explore commercial opportunities in new and fast-growing segments of the energy industry.

In 2017 Shell acquired NewMotion, one of Europe's largest providers of battery electric vehicle charging points. NewMotion operates more than 30,000 private electric charge points located in homes and offices in the Netherlands, Germany, France and the UK. It also provides 100,000 registered charge card users access to over 50,000 public charge points across 25 countries in Europe. Shell has also developed a smart-charging technology that allows consumers to take power from the grid to charge their vehicles at times of low demand.

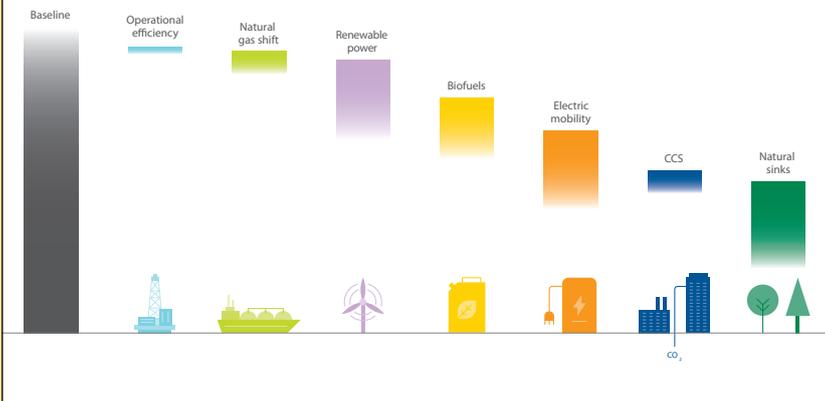
Shell is the biggest shareholder in Silicon Ranch Corporation, a leading US developer, owner and operator of solar energy plants. Shell has also agreed to acquire 100% of sonnen, a leader in smart energy storage systems and innovative energy services for households.



### THE TRAJECTORIES OF THE IEA AND SKY SCENARIOS AND THE NET CARBON FOOTPRINT



### REDUCING THE NET CARBON FOOTPRINT OF THE ENERGY PRODUCTS WE SELL



### NATURE-BASED SOLUTIONS

Natural ecosystems such as forests and wetlands play a critical role in capturing and storing carbon and can make a vital contribution to limiting global warming. One of the ways that Shell will reduce the NCF of the energy products we sell is by investing in such nature-based solutions.

An example is in the Netherlands, where Shell offers companies the opportunity to compensate for the emissions associated with the use of their vehicles. This initiative supports third-party projects, including the Kasigau Corridor project in Kenya, which protects 500,000 acres of a threatened area of forest, while preserving biodiversity and wildlife habitat.

Since 2017, Shell’s executive scorecard for the annual bonus has included a target for reducing our greenhouse gas emissions from our operational assets.

From 2019 onwards, Shell will report progress towards the NCF ambition and present the NCF calculations for annual assurance to Lloyds Register Quality Assurance, our environmental auditors, for quality assurance. ◀

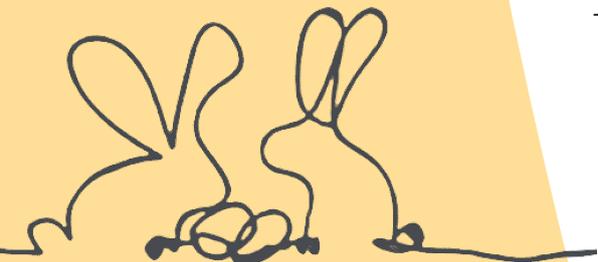
# ABSTRACT .....

## Shell’s Sky Scenario: Meeting the Goals of The Paris Agreement

In 2018 the Shell Scenarios Team published the Sky scenario – a possible pathway for decarbonising the global economy with the societal aim of achieving net-zero emissions from energy use by 2070. Sky recognises that a simple extension of current efforts, whether efficiency mandates, modest carbon taxes, or renewable energy supports, is insufficient for the scale of change required.

The relevant transformations in the energy and natural systems require concurrent climate policy action and the deployment of disruptive new technologies at mass scale within government policy environments that strongly incentivise investment and innovation.

No single factor will suffice to achieve the transition. Instead, Sky relies on a complex combination of mutually reinforcing drivers being rapidly accelerated by so-



ciety, markets, and governments. Because climate challenges arise from the total accumulation of greenhouse gases in the atmosphere, there are an infinite number of possible pathways for the annual reduction of emissions over the coming decades that can result in an outcome consistent with the Paris ambition. Of course, some of these pathways are much more plausible than others – you wouldn't expect that the global economy can be completely re-wired overnight.

Sky begins with the current structure of economic sectors and government policies and the capacity for change that exists now. It then assumes very aggressive, but plausible, capacity-building and ratcheting of policy commitments through the first two five-year review cycles embodied in the Paris agreement. Beyond that time-frame, there are naturally rather greater uncertainties about how policies and technology may be developed and implemented globally.

So, the scenario progressively becomes driven simply by the ambitious goal to achieve net-zero emissions by 2070, taking full account of the characteristics of scale, technological substitution, and investment in the various sectors of different national economies. Such a goal-driven scenario is sometimes referred to as "normative."

By adopting an approach grounded in the current reality of the energy system but then combined with a specific long-term goal, Shell intends Sky to be both an ambitious scenario and a realistic tool for practical considerations today.

The Paris Agreement has sent a signal around the world; climate change is a serious issue that governments are determined to address. By 2070, there is the potential for a very different energy system to emerge. It can be a system that brings modern energy to all in the world without delivering a climate legacy that society cannot readily adapt to. That is the essence of the Sky scenario. ◀

# ●● BIOGRAPHY ●●●●●



**David Hone**  
Shell International Ltd.  
Chief Climate Change Adviser

David Hone works for Shell International Ltd. and is the Chief Climate Change Adviser in the Shell Scenarios Team. He joined Shell in 1980 after graduating as a Chemical Engineer from the University of Adelaide in Australia. He has worked in refinery technology, oil trading and shipping areas for Shell.

David is a board member of the International Emissions Trading Association (IETA), was Chairman of IETA from 2011-2013 and is a board member of C2ES in Washington and GCCSI in Melbourne.

David is a regular climate blogger and is the author of a current book on climate change, 'Putting the Genie Back: Solving the Climate and Energy Dilemma'. ◀

C O P E N H A G E N  
M E E T I N G  
M O N D A Y 1 3 M A Y

MAY

### PROGRAMME

17:00 - 18:00  
DRINKS

18:00 - 19:00  
PRESENTATION

19:00 - 21:00  
DINNER

### LOCATION

CHARLOTTEHAVEN

### SPEAKER

David Hone  
Shell International Ltd.

### TOPIC

Meeting the goals of the Paris agreement

### ENTRANCE FEE

None

### REGISTRATION

Advanced registration is required due to access restrictions at the venue. Please sign up by Monday 6. May at [www.spe-cph.dk](http://www.spe-cph.dk).

### SPONSOR



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[www.spe-cph.dk](http://www.spe-cph.dk)  
[www.spe.org](http://www.spe.org)

<b>September 25</b>	<b>MAIN SPEAKER</b>	<b>AFTER DINNER</b>
TOPIC	<b>Tracer Technologies in Reservoir Management</b>	
SPEAKER	Troels Nielsen (DTI)	
LOCATION	DTU	
SPONSOR	SPE	
<b>October 29</b>	<b>MAIN SPEAKER</b>	<b>AFTER DINNER</b>
TOPIC	<b>4D Seismic History Matching</b>	
SPEAKER	Paul Mitchell (SPE DL, Taqa)	
LOCATION	GEUS	
SPONSOR	GEUS	
<b>November 27</b>	<b>MAIN SPEAKER</b>	<b>AFTER DINNER</b>
TOPIC	<b>Natural Surfactants in Oil Production Smart Waterflooding: How it Works?</b>	Things No One Tells About Fossil Fuels Hans Horikx (DHRTC) - DTU
SPEAKER	Simon Ivar Andersen (DHRTC) - DTU Alexander Shapiro, CERE - DTU	
LOCATION	DTU	
SPONSOR	DTU	
<b>February 5</b>	<b>MAIN SPEAKER</b>	<b>AFTER DINNER</b>
TOPIC	<b>Drilling Automation and Downhole Monitoring with Physics-Based Models Maersk Drilling's Journey of Innovation, the Lessons Learnt and the Road to Becoming a Self-Standing Entity</b>	
SPEAKER	John Hedengren, SPE Distinguished Lecturer Jacob Odgaard, Maersk Drilling	
LOCATION	Maersk Drilling	
SPONSOR	Maersk Drilling	
<b>February 27</b>	<b>MAIN SPEAKER</b>	<b>AFTER DINNER</b>
TOPIC	<b>Yamal LNG: The Success story and what it means for Total's strategy in Russia</b>	
SPEAKER	Michael Borrell, Senior Vice President, North Sea and Russia, Denmark Country Chair (Total)	
LOCATION	Total	
SPONSOR	Total	
<b>March 20</b>	<b>MAIN SPEAKER</b>	<b>AFTER DINNER</b>
TOPIC	<b>WELLTEC® - E-Line Intelligent fishing solutions – in- novative robotic technology</b>	
SPEAKER	Ralph Macaulay	
LOCATION	Welltec	
SPONSOR	Welltec	
<b>April 9</b>	<b>MAIN SPEAKER</b>	<b>AFTER DINNER</b>
TOPIC	<b>Managing Non-Technical Risks Made Practical and Value-driven</b>	
SPEAKER	Christiaan Luca (SPE DL)	
LOCATION	Moltkes Palæ	
SPONSOR	HESS	
<b>May 13</b>	<b>MAIN SPEAKER</b>	<b>AFTER DINNER</b>
TOPIC	<b>Meeting the goals of the Paris agreement</b>	
SPEAKER	David Hone, Shell International Ltd.	
LOCATION	Charlottehaven	
SPONSOR	Shell	
<b>June 21</b>	<b>MAIN SPEAKER</b>	<b>AFTER DINNER</b>
TOPIC	<b>Summer Party</b>	
LOCATION	Mastek	



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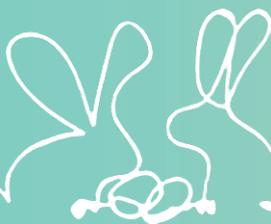
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# PRESENTATION OF THE BO



**JAIME CASARUS-BRIBIAN,  
SPE SECTION CHAIRMAN, HESS  
DENMARK**

I have been linked to the SPE since my younger days through the SPE Young Professionals Board. I joined the existing SPE Copenhagen Board to expand my professional network and gain understanding about other disciplines and companies. By volunteering for the SPE board my aim is to address as industry rather than as individual some important issues that affect our industry.

**JONATHAN HASTINGS, SPE SECRETARY, TOTAL UP-  
STREAM DENMARK A/S**

I have been involved with the SPE since my student chapter and have been so in every place I have been - being active in the SPE is the best way of making a network and learning about the Industry in a new place. I joined the board in Copenhagen almost as soon as I arrived (7 years ago), primarily to motivate myself to attend meetings and get involved - my son had just turned 2 and it was the way of getting back into the habit and not just saying 'next time' or 'next year'. I was programme chair for 6 years, which is a great role, you get to meet all the Distinguished Lecturers and make sure they have a good visit to Copenhagen.



**MIRIAM LYKKE, SPE NEWSLET-  
TER CHAIRMAN, SHELL OLIE OG  
GASUDVINDING B.V.**

My work on the board strengthens my personal network and helps me stay in contact with old and new colleagues. Further, it facilitates knowledge sharing and keeps me up to date on the technical aspects of the industry.

**ADEBOWALE SOLARIN,  
SPE MEMBERSHIP CHAIRMAN,  
MAERSK DRILLING**

Adebowale has been with Maersk Drilling since 2012 as a Drilling Performance Superintendent and in his current role as Drilling Support Superintendent. My motivation for being on the SPE CPH Board is to enhance the profile of the industry and to inspire the next generation.



**SONAT KAYA, SPETREASURER,  
SCHLUMBERGER**

For me it has been the first time being a Board member of an industry wide organization and I have found it very rewarding! Now that I am on the board, I feel more connected with my peers, clients and colleagues and have an even better grasp on the latest trends within the industry. I believe that the treasurer's role is challenging and key to a successful non-profit organization, not least because of the complexities and easy to miss legal obligations you face. Furthermore, the industry downturn and due to some mergers and acquisitions within Denmark we had tough times, but we managed to maintain all our inspiring activities which we as SPE CPH are very proud of.

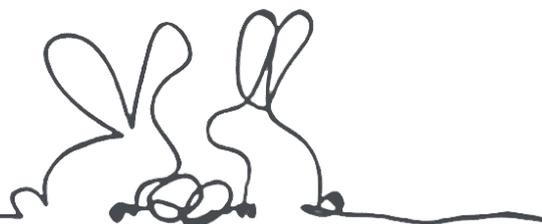
**HADISE BAGHOOEE, SPE STUDENT  
REP, DTU - CENTRE FOR OIL AND GAS**

Joining the SPE board has played a significant role in my professional development. I have benefited immensely from my work with SPE in improving my soft skills, enhancing my network and better understanding the dynamics of human relationships as part of a professional team. As the chairman of SPE Student Chapter at DTU, I work on providing opportunities for students to enhance their technical and professional competences. Apart from creating opportunities for students to network with like-minded industry professionals, I work on organizing activities that reflect the demands of the industry.



**SOLVEJG KOLBYE JENSEN, SPE  
BOARD MEMBER, RAMBØLL DEN-  
MARK AS**

Involved in all things seismic - from oil & gas to windfarms and cable routes. In the rapidly changing world of energy, networking, collaboration and knowledge sharing is crucial and the work on the board provides an excellent platform for promoting this.





**METTE JUNCKER HANSEN, SPE PROFESSIONALS REP., SCHLUMBERGER**

Being part of the SPE Board has given me the opportunity to be part of a professional community, where the newest technologies and processes are shared among members. I have found that there has always been a gap between the professional workforce and the universities, but the SPE community has helped build bridges between the two as well as creating a bond between the Young Professionals.

Here networking and informal dinner talks can lead to interesting talks or new potential work opportunities. The SPE community also promote synergy between various companies, where innovative work is shared among peers.

**PERNILLE SILBERG, SPE WEBMASTER, INEOS OIL & GAS (SCANDINAVIA)**

Member of SPE in +15 years, and 5 years ago I decided to give a little back to the organization by joining the board. I enjoy the amazing co-operation we have, where all opinions are heard and discussions are open and honest.



**HANS HORIKX, SPE BOARD MEMBER, DTU - CENTRE OF OIL AND GAS**

Hans Horikx is an advisor at DHRTC, the Centre for Oil and Gas at DTU, to help bridge the gap between research and industry implementation. He has 31 years of industry experience with Maersk Oil and Shell, having worked in 8 countries and on 5 different continents. The SPE meetings are a fantastic place to meet new people as well as those I've known and worked with for a long time, it's great to be part of that network.

**METTE LIND FÜRSTNOW, SPE BOARD MEMBER, WELLTEC**

Mette Lind Fürstnow, SPE Board Member, Reservoir Engineering Business Development Manager at Welltec. Involved in providing well completion solutions to operators globally integrating reservoir uncertainties and long-term reservoir management requirements. The work on the SPE board allows me to stay in contact with my personal network across companies and support a multi-disciplinary approach to field development.

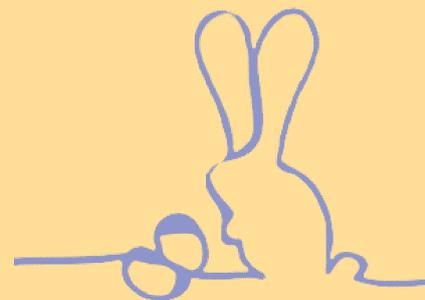


**JACOB ODGAARD, SPE BOARD MEMBER, MAERSK DILLING**

**CARSTEN MØLLER NIELSEN, SPE BOARD MEMBER, GEUS**

**ALEXANDER SHAPIRO, SPE BOARD MEMBER, DTU CERE**

**JOSÉ ANTONIO PEREZ ACERO, SPE SECTION PROGRAM CHAIRMAN, DTI OIL & GAS, TEKNOLOGISK INSTITUT ◀**



# SPE STUDENT NEWS

On April 2nd, a detailed discussion was held on a very interesting topic “Things No One Tells about Fossil Fuel”. Hans Horikx presented wide and inspiring views on the role of fossil fuels in this world. He answered interesting questions about the origin of the oil, why humans cannot digest it, how oil makes us fly, and who determines what the fuel of the future is. After the presentation, the students enjoyed themselves with drinks and pizzas.

Hans Horikx is presently adviser at the Danish Hydrocarbon Research and Technology Center, before that he has been working in the industry at Maersk Oil and Shell in 9 countries on 5 different continents and during many years serving as a Chairman for the SPE Copenhagen Board. ◀



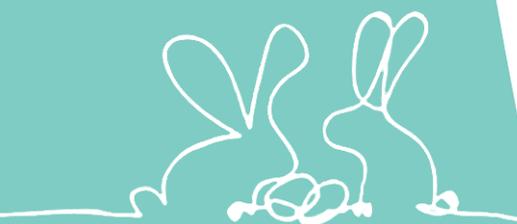
## ANNUAL GENERAL MEETING 2018-2019 SEASON

Prior to the Shell SPE presentation 13 May 2019 we will hold the AGM.

We are always looking for new energy, ideas and input and if you think we could do anything better then we would welcome your presence on the board. If you would like to join the board of the SPE Copenhagen Section then please contact Jaime Casarus-Bribian before the AGM.

### Agenda:

1. 2018-2019 Season Look Back
2. Financial Statement Approval
3. 2019-2020 Copenhagen Board Proposal
4. 2019-2020 Copenhagen Board Approval
5. AOB





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## *Save the Date!*

Dear SPE Member,

You and your partner are invited to the 2019 SPE Summer party on the 21<sup>st</sup> of June at Mastek, Amerika Kaj at 6 PM

Please register at: <https://spe-cph.nemtilmeld.dk> and transfer 350 DKK per person to the SPE account at Nordea: 2274 - 5360 613 323

Please mark payment SPE-"your name"

For further information please contact: [Mhansen4@slb.com](mailto:Mhansen4@slb.com)

