ESF 2022

ENERGY & SUSTAINABILITY FORUM

Decarbonising the Downstream Industry

21 - 23 March, Berlin

ADVISORY MEETING REPORT

16 + 21 SEPT 2021 // HOSTED BY EURO PETROLEUM CONSULTANTS

EPC
Euro Petroleum Consultants

ADVISORS

MEETING 1: 16TH SEPTEMBER 2021

- NIELS ANSPACH, VP BIO & LOW CARBON, **BP**
- LEON DE BRUYN, PRESIDENT & CEO, **LUMMUS TECHNOLOGY**
- ERIC DUCHESNE, SVP REFINING & CHEMICALS, MANUFACTURING & PROJECTS, **TOTALENERGIES**
- OLE-TOBIAS FRICH, VICE PRESIDENT MIDSTREAM ASSET DEVELOPMENT AND CLIMATE, MMP ONSHORE PLANTS, **EQUINOR ASA**
- HARDI SHUCK, FEEDSTOCK, CHEMICALS & GLOBAL CHARTERING DIRECTOR, MANAGING DIRECTOR BRASKEM NETHERLANDS BV, **BRASKEM**
- STUART MORSTEAD, VP AND GENERAL MANAGER CONNECTED INDUSTRIAL, **HONEYWELL**
- ADRIANA OREJAS NUÑEZ, INDUSTRIAL TRANSFORMATION AND DEEP TECH DIRECTOR, **REPSOL**
- KLAUS OHLIG, EXECUTIVE DIRECTOR R&D ENGINEERING, LINDE GMBH, **LINDE ENGINEERING**
- KRISZTIÁN PULAY, GROUP DOWNSTREAM DEVELOPMENT SENIOR VICE PRESIDENT, **MOL**
- FRANS STOKMAN, EXECUTIVE DIRECTOR, **PETROCHEMICALS EUROPE / CEFIC**
- SUSAN UTHAYAKUMAR, PRESIDENT SUSTAINABILITY BUSINESS DIVISION, **SCHNEIDER ELECTRIC**
- MARK WILLIAMS, VICE PRESIDENT EUROPE, **SABIC**
- STEFAN DIEZINGER, VICE PRESIDENT SUSTAINABLE ENERGY SYSTEMS, **SIEMENS ENERGY**

MEETING 2: 21ST SEPTEMBER 2021

- JON BARDEN, COO, **ESSAR OIL UK**
- BART BIEBUYCK, EXECUTIVE DIRECTOR, **FUEL CELLS AND HYDROGEN JOINT UNDERTAKING (FCH-JU)**
- PHILIPPE DUCOM, PRESIDENT EUROPE, **EXXONMOBIL**
- SAM FRENCH, BUSINESS DEVELOPMENT DIRECTOR, **JOHNSON MATTHEY**
- JIŘÍ HÁJEK, CEO, CHAIRMAN OF THE BOARD, **ORLEN UNICRE A.S.**
- IGNACIO HERNANDEZ-BONNETT, SHELL, GLOBAL POLICY MANAGER FOR CHEMICALS AND MANUFACTURING, **SHELL**
- CHRISTIAN KÜCHEN, DIRECTOR GENERAL, **MWV**
- KANAN MIRZAYEV, CHIEF STRATEGY OFFICER, **SOCAR TÜRKIYE**
- ROMAIN ROUX, ADVISOR TO THE CTO, **AXENS**
- LUIGI GARGIULO, HEAD GTR&M CIRCULAR ECONOMY AND SUSTAINABLE MOBILITY, **ENI**
- DANIEL CARTER, GLOBAL DIRECTOR DECARBONISATION & NEW ENERGIES, **WOOD**

CHAIRED BY:

- ALAN GELDER, VP REFINING, CHEMICALS & OIL MARKETS, COMMODITIES RESEARCH, **WOOD MACKENZIE**
- STEFAN CHAPMAN, VICE PRESIDENT, **EURO PETROLEUM CONSULTANTS**

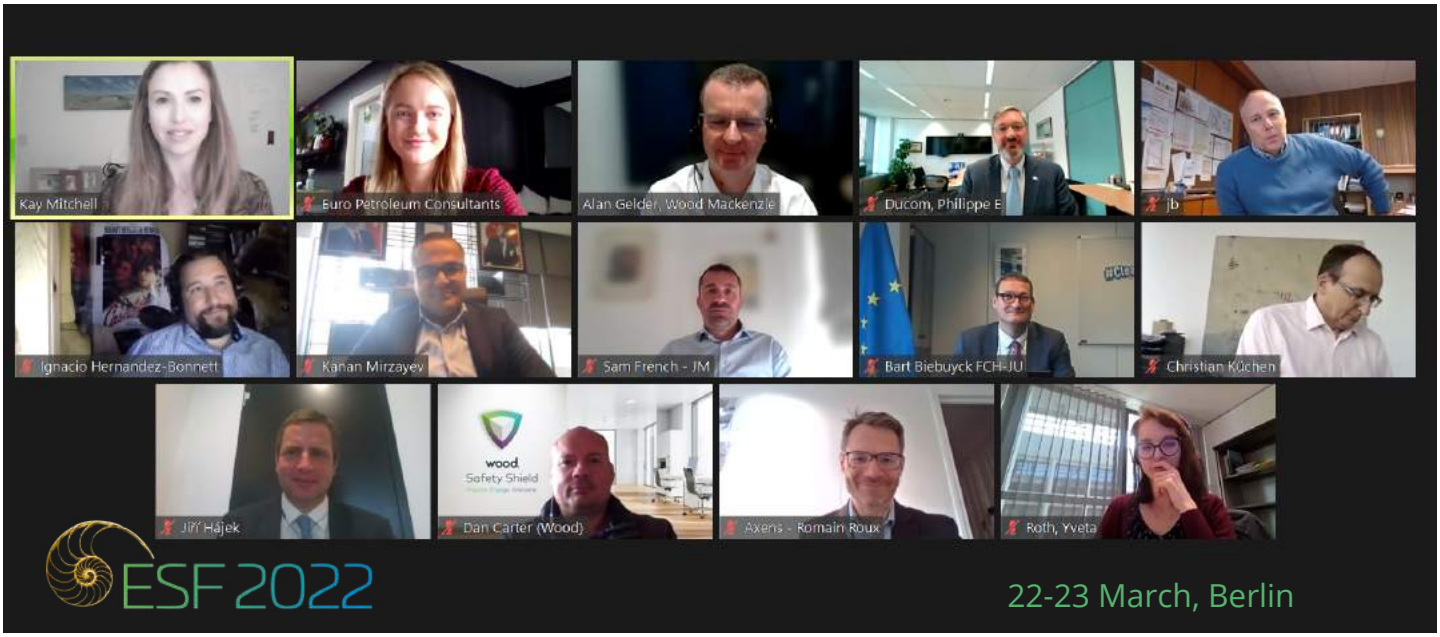
APOLOGIES:

- MIKE WAILES, MANAGER, MIRO JV AND DIRECTOR, EUROPEAN STRATEGY, **PHILLIPS 66**
- MICHELE VIGLIANISI, HEAD OF CIRCULAR ECONOMY & GREEN REFINERY, **ENI**
- CHRISTIAN CABROL, CEO, **TOTALENERGIES DEUTSCHLAND**
- JON CARPENTER, VICE PRESIDENT, NEW ENERGY SERVICES, **PETROFAC**

NET ZERO PATHWAYS AND POLICIES DEFINING AND DRIVING A GLOBAL LEVEL PLAYING FIELD

Our 2022 ESF advisory meetings both kicked off at a macro level discussing the pathways and policies defining and driving the transition to net zero. From a global perspective, first our advisors were keen to get a real understanding of the impacts of the Biden administration. Although the US energy market had already begun its decarbonisation journey, in a total U-turn from what Trump stood for, Biden's transformative goal of achieving net zero in the power sector by 2035 and the broader economy by 2050 has unquestionably accelerated the transition. It was commented that if only 50% of Biden's ambitious goals materialize, it will still mean significant changes to the world. Questions arose including, what does it mean for the price of carbon at the border? Do we have the right market mechanisms? Looking East to the other powerhouse of China, as ever there was a desire for greater insights into what they are doing with questions such as, are they planting trees or acquiring natural sinks elsewhere? How are they going to get rid of their addiction to coal?

Closer to home with the recently announced and much anticipated Fitfor55 legislations, it was agreed that there are a lot of good regulatory approaches in the package, such as changes to taxation, but the quick deployment is key. Looking specifically at the carbon border adjustment mechanism (CBAM) it's important to create a level playing field and avoid leakage between states for both the industrial and transport sectors. Although it brings the EU a step closer to fully pricing carbon, ultimately a global scheme to prevent carbon leakage is needed to fully develop a sustainable mechanism for emission reductions. In the meantime, our advisors were keen to better understand the concept and the drivers, as well as how to effectively apply a CBAM with concerns about the unintended consequence if not implemented in a smart way. Looking at the inclusion of shipping in the EU ETS, with no additional allowances distributed, there were questions about how this will work. What does it mean for the shipping industry? Will countries start to create taxes or a carbon market for the shipping industry? Should we expect an increase in the carbon allowance costs?



When it comes to regulations, the industry has never seen so many, driven by a serious attempt to get things moving. However, with all these policy announcements that are underway, are they aligned, supportive, helpful or in competition? It was unanimous across both meetings that there is a lack of coherency in the regulations that are currently on the table. Looking at the different sector roadmaps and regulations, be it Fitfor55, Fuel Exempt, or the Waste Framework Directive, they are not connected in their objectives. Consequently, one of the most difficult challenges for our advisors today is that the legislation in Europe is not developing consistently and coherently. Adding to that, what we are seeing today is that the development of regulation is faster than the deployment of capital expenditure for projects to enable the industry to satisfy the regulation. The industry needs the time to build the technologies, capabilities, and competitiveness to succeed in these pathways, and there is a danger that the industry is not seen to be moving fast enough. The reality is that the technology is not sufficiently ready to develop the projects. For instance, hydrogen by electrolysis is not competitive now and even if China can produce the electrolysers, Europe still needs the renewables to feed the electrolysers. Exacerbating the problem is the increasing cross industry competition for scarce renewable resources. An example was shared of Google's green data centre in the Netherlands. Can the downstream industry afford to compete with the likes of Google and what they pay for green electrons?

In Europe, we are at the point where there is a clear intention to make sure that every sector progresses and quickly which is why a sectoral approach is being adopted. However, it was agreed that a single economy-wide carbon price would be more efficient than different sectoral requirements. For now, at least, based on where we are it is important that there is consistency in these sectoral approaches to avoid a 'me first' situation whereby its left to sectors to compete for green electrons and bio-feedstocks and where the most able to pay may not be aligned with the most effective reduction in emissions.

Aside from competition from other consumers of electricity or energy carriers, the industry is also competing for product placement (in circulatory issues), resources including talent, technology development, and R&D. It was commented that competition today is no longer within the segment of our industry but on a much more open platform.

To move forward, sectoral, or not, the world needs a hierarchy of decarbonisation "bang for your buck" and an understanding of the lowest cost for the greatest mitigation per tonne of CO2, supported by the right regulation that makes an investable business case. The challenge is how do you get that right? Politicians have an idea about the solution and then build the regulation around it which can be the wrong way around. Our advisors agreed that we need a clear understanding of the objectives and then let the market, innovators and private sector find the best pathways. Prescribing one vs. the other will lead to suboptimal solutions. Industry advocacy is important and requires leadership courage. As much as anything, the market needs winners. In the absence of winners, it is a chaotic and frothy environment, where little will be achieved, and much effort and resources wasted.

It was commented that historically the industry was regulated by politicians and incentivized through subsidies or penalised through penalties. Over the last few years, it's extremely apparent that the industry is far more influenced by public opinion and activist investors. The abundance of information plus the stronger voice of consumers and public opinion rightly or wrongly is driving companies to make investment decisions that are not only driven by subsidies, penalties and by supply/demand. We have seen this especially in the US where companies and management are more susceptible to investor activism than in other parts of the world.

There is an understanding that each country is going to approach the transition differently but what is crucial is an equal level playing field. The industry needs coherence to avoid unnecessary competition, inflation, or a fight for resources, some of which are not even available yet!

A COLOUR ISSUE

Next up for discussion was hydrogen. Europe's politicians are pushing hard for green hydrogen with no interest in fossil based blue hydrogen (using carbon capture and sequestration). It was agreed that this will limit our abilities to reach the target ambitions, at least within the target time horizon. No one has carbon capture as the preferred option, but the reality is that until there is enough renewable power for the electrification of crackers or until the development of a non-energy intensive route to produce olefins, blue hydrogen is an already proven key mechanism to allow the industry to reduce its emissions consistent with the required timelines. Across Europe's 40 crackers the technology at scale is available today to covert 40 million tonnes of CO2. Blue hydrogen is a key pathway that needs acceptance to achieve this transition. As well as the challenge of securing regulatory support and grants/subsidies for projects, making carbon capture socially acceptable is another.

It was suggested that the use of blue hydrogen be limited to certain sectors for example, the cement industry and refining. Clear boundaries and annual allowances for blue hydrogen can be set during this transition period which can be reviewed, reassessed, and displaced by green as/when the capex for electrolysers comes down, more renewable feedstocks are readily available, and the cost of renewable electricity has come down. It was suggested that from a policy perspective, blue hydrogen needs supporting but only green hydrogen as the end goal should be funded.

When it comes to green hydrogen, the fact remains that electrolyser technologies have a long way to evolve before they become cost-competitive and feasible on a large-scale. Whilst the industry drives down the cost of the feedstocks and renewable electricity, the other route to drive down the cost is to increase the scale of production. Projects can happen at scale if subsidy schemes are in place to support deployment.

Both meetings discussed the low carbon hubs developing at industrial clusters in the UK. These industrial areas that are traditionally reliant on fossil fuels are in competition for funding to help create the world's first net-zero carbon industrial cluster by 2040. At Essar's Stanlow refinery, part of the UK's leading industrial decarbonisation cluster, HyNet Northwest, the production of low carbon hydrogen will help decarbonize 40% of the site where CO2 emissions currently stand at around 40 million tonnes per year. The first stage will remove 300,000 tonnes. As the HyNet process develops and the hydrogen production units are built, they will begin to serve customers. CO2 capture is a key part, and the first wave of hydrogen production will see 97% of the CO2 captured. Subsequent units will use natural gas from the grid. HyNet is enabling closer integration between industries in the UK's Northwest with a common focus of reducing collective carbon emissions. HyNet is about using established technologies in a new way, with efficiency at the core.

SECURING ACCESS TO RENEWABLE FEEDSTOCKS

It was already commented that we're seeing rising competition for green electrons and bio-feedstocks. With ever-increasing companies committing to carbon neutrality, there is a growing concern about the accessibility and availability of renewable and bio feedstocks. As one advisor put it, "chemicals must only come from bio, electricity only from green molecules, green gas or bio. On top of that we want to increase biodiversity in Europe, but we don't want first generation biofuels because we don't want the Amazon rainforest to suffer".

It is expected that we will continue to work with fossil fuels for quite some time so more must be done to manage and recycle that carbon before the unnecessary use of virgin materials. Clearly a balance is needed but what remains are concerns and constraints about the availability of appropriate feedstocks, especially if we want to use those same feedstocks to tackle everything!

Whilst there are issues regarding the scalability of technologies it was agreed that the industry will get there but the supply chains still need establishing. Looking back to the history of the integrated business model, rather securing access to the crude stream, today's refiners and petrochemical producers need secure reliable access to alternative feedstocks, which might mean partnering others, such as with municipal waste companies for example.

THERE IS NO SILVER BULLET BUT THERE ARE SOME BULLETS WHICH ARE AVAILABLE, AT SCALE, TODAY

Whilst the Politicians may be looking for a silver bullet, namely green hydrogen, our advisors agreed that the transition is a journey with many steps, not a competition or challenge between technology or colour. Cooperation and collaboration are needed between different sources of energy and the many opportunities available today must be embraced in parallel.

The decarbonisation challenges for the refining industry and those producing fuels can be split into three main categories. First the manufacturing and production of fuels, the refinery, the plant, and the systems around it. Second, the fuels and products themselves that need to be decarbonised and third and perhaps the most crucial, the innovations, infrastructure, and the regulations that will enable the first two to be delivered in a commercially viable manner.

There are still a number of ways to deploy decarbonisation low hanging fruits and incremental steps available to the industry through efficiency improvements. Delivery at scale means large decarbonisation in absolute figures.

To conclude the meetings, it was agreed that to stay relevant there is no option for the industry but to move forward with the transition but crucially the industry should be enabled and supported to move as fast as they can, in the (technology) directions that's best for them and wider society.

Join us at #ESF2022 where we will be covering all of these important topics and more. As the only event dedicated to downstream decarbonisation and sustainability, ESF 2022 is a truly unmissable event. Find out more here: esf.europetro.com

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