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A Wood viewpoint

Crossing the bridge

Repurposing the oil and gas industry to
survive energy transition

Energy transition is happening

The energy transition offers a tremendous opportunity to reinvent our industry at every point in the production chain and revolutionise the way we operate.

Climate change and environmental concerns make a tough headwind for oil and gas; energy transition is about moving away from fossil fuels to alternative resources that are less damaging to our environment. However, if we adapt successfully, we can extend the life of our industry well beyond the finite resources we currently rely on.

To position our society for the future we need to ensure we can continue to provide secure, reliable access to energy sources that are sustainable, affordable and safe. The transition is about changing the balance, managing our use of finite resources to extend the life of existing reserves, reducing their impact on the environment and moving to the development of more sustainable sources.

How do we respond?

The competitive landscape is shifting, environmental and sustainability metrics are increasingly weighed against economic and operational performance as deciding factors for investors and consumers. To compete with alternative energies, we must start matching up with these credentials, neutralise our environmental footprint and create sustainable transformation in our industry.

The UKCS has set an ambitious target to achieve a net zero carbon basin. It is a challenge we are more than equal to.

For decades we have fought against the challenging conditions in the North Sea, now we can turn those conditions to our advantage - we might harness wave energy to create hydrogen or use wind farms to drive carbon capture processes, deep field drilling can tap geothermal energy, exhausted fields can be used as pressure reservoirs for stored energy, remote node points can enable offshore energy generation and we have ready-made infrastructures for delivery, in short we are sitting on a suite of proven assets which can either be made carbon neutral or repurposed to provide new solutions.

The new energy mix

Oil and gas has always held a strong position across energy and resource supply. Many of the alternatives have shortfalls, this is why we need a blended approach, drawing on a range of options. This mix is constantly changing as new developments come to light. Our greatest advantages are consistency and infrastructure, supply is reliable, and delivery is well established, the downside is carbon emissions. By neutralising our carbon emissions, we can remove the negative impact of our operations and keep our industry viable in a sub two-degree world.

Our holistic view

Wood has a unique perspective on the energy transition. We support customers on both the supply and demand sides, and we operate in adjacent industries that also have significant impact on global energy use.

Our broad view looks at the established value chain for energy, and how we can move these industries to a more sustainable footing. We're looking at the new energy models of the future and how they too can be optimised to deliver the best energy mix. And we're looking across all the other industries we support in the wider resource value chain to see how we can make their operations and their outputs more efficient and sustainable.

The steps we can take to meet this challenge cut right across the scale from incremental improvements to major changes that will require heavy investment and commitment. The upside is that most changes are win/win, in addition to reducing environmental impact the solutions can improve efficiency and save costs.

We can address this problem from two key angles, cleaning up existing operations and developing future solutions. On the clean-up side preventing discharge to the environment by detecting and closing leaks, offsetting emissions and improving efficiency all provide incremental changes across the current value chain. Future solutions need to look at closing the loop - following circular economic principles to move from a linear process that simply extracts the product and refines it for distribution to a process that recycles materials and energy effectively to maximise use and minimise waste.

A linear supply chain based on a finite resource will never be sustainable, we need to create a new energy economy that uses resources more frugally and allows the raw materials to be recycled and replenished. If we can achieve this, our future is assured.

Triple zero targets

As an industry we have a permanent safety target of zero incidents, to this we now add targets of zero emissions and zero waste. These are challenging ideals, but we believe they can be achieved. Net-zero is a beginning - using carbon offset options and trading carbon credits with other industries is a temporary fix, unsustainable in the long term and not a complete solution. Planting trees is a necessary component with a positive impact, but it only treats the symptoms. If we can develop a cure it has the potential to unlock a new period of growth for our industry.

We're faced with the need to reinvent major sectors in our society from food and drink through energy and resources to cities and infrastructure.

Diversification

Many operators are undergoing their own transition to become energy majors, this diversification into connected industries will refresh the investment case, prevent businesses and assets from being stranded and maintain financial momentum. It is encouraging to see the level of engagement across all operators in the energy transition dialogue, what we need now is concerted action.

Oil and gas industry faces the combined threats of reduction in demand through consumer efficiencies, competition from alternative sources, strict environmental legislation and mounting social pressure.

Energy transition is happening, and very significant steps are being taken to accelerate this shift. We need to align and support these aims to allow the transition to take place while repositioning ourselves to stay relevant in a post transition world.

Rise to the challenge

Many exciting ideas are under development, but they will take time to reach the market, investment to scale up and commitment to transition.

There are activities we can begin or contribute to right now that will make a real difference and facilitate the transition:

Look for opportunities to support cyclical principles

Close the resource loop on hydrocarbon use to remove pollution and reduce waste. We need to pay more attention to what happens to our resources, how we manage waste and whether we can recycle any of it back into the process or extract greater value from it before disposal.

Develop more robust design standards and share across the industry

This has been a regular drive across our industry and we need to collaborate further to create standards we can all meet that will allow us to share design elements, improve flexibility of expertise and exchange lessons for mutual benefit.

Use standardised design elements to reduce CAPEX and enable investment in higher integrity components

By developing modular elements and even replicating entire assets we can substantially cut development time and resource costs. It is important that we invest those savings in the right solutions to support energy transition.

Invest in carbon capture solutions to neutralise environmental effects

We can make our industry more viable and competitive on environmental metrics simply by mitigating and neutralising our impact, carbon capture can significantly alter our output.

Improve integrity of infrastructure and storage to prevent leaks

Discharge to the environment or fugitive gases represent an environmental challenge and a loss of profit, addressing the integrity of our systems will generate improvements on both counts.

Improve monitoring and response time to reduce discharges

By keeping a closer eye on our products we can fix or even prevent problems, improving production performance and reducing our environmental impact.

Identify options for repurposing assets and infrastructure to support alternative developments

Many energy alternatives operate on or make use of very similar principles; infrastructure, development, operating processes are all well aligned to the requirements of these new methods so we are very well placed to repurpose our knowledge and experience.

Many of these options are win/win opportunities, pursuing them should introduce greater efficiencies, cut down on resource use and bring greater value to our operations, freeing up further funds to invest in alternative solutions. These principles will apply equally to any new processes we develop so it is well worth developing the culture and habits to carry into the future.

As a broad-based service contractor we benefit from operating across the whole supply chain and adjacent industries.

We recognise the need to take our own steps to address climate change and support energy transition as well as encouraging our customers and influencing stakeholders to align with the appropriate goals.

Stimulate wise investment

We will continue to build on the strong partnerships we have with our customers, helping them towards sustainable development goals and making sure their operations are efficient and commercially viable. Our innovative operating partnerships are helping to unlock new opportunities in upstream and downstream assets bringing more investment to the industry.

Sustain the asset infrastructure

We want to build real sustainability into existing sources, encourage businesses and consumers to adopt better practices, and ensure new solutions are given the best chance at success. There are opportunities to reuse infrastructure and assets for other purposes, by maintaining the integrity of these assets we can preserve them for these alternatives and capture greater value.

Source enabling technical solutions

Technical solutions will have a major part to play in the transition, from the technologies to generate and deliver new energy sources to the digital innovations that will transform how we use them. Technology promises efficiencies far beyond what we are achieving today, implementation timescales and cost predictions are being shattered as our connected world reacts more rapidly to feasible solutions. We maintain flexible partnerships with key innovators to allow us to quickly develop, test and implement solutions.

Secure a more integrated energy mix

Leveraging our expertise across many industries to ensure the emerging energy resources are connected in a way that provides everyone with a secure, responsive supply. Energy demand continues to grow but the specifics are less predictable, future energy systems need to be more responsive and flexible in order to capitalise on the variable nature of future supply. Across the emerging energy sources there are different benefits and restrictions, some options are better suited to certain locations so regions and countries will need to develop their own blend to secure supply. Oil, gas and coal are not the only resources in decline, we are increasingly competing for land. Energy sources that can be sited offshore will help to relieve this pressure. The experience in our industry provides a strong foundation for leveraging these new requirements.

The pioneering attitude that has seen us establish a successful industry in one of the most challenging offshore climates in the world will lead the way in reinventing the North Sea basin as a viable future source of energy.

Contact us:

If you would like to discuss any of the points raised in this paper in more detail, then please get in touch.



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About Wood:

Supporting the transition to a brighter energy future.

Our market-leading services and technologies provide engineering knowhow to energy projects worldwide.

We are a trusted partner for renewable energy developers, lenders, investors and operators worldwide. Energy transition is a positive direction for all stakeholders and we are keen to apply our expertise in meeting the challenge. Our dedication and experience, combined with innovative product developments, have positioned us as one of the leading organisations within the renewables industry today.

Our capabilities include:

- Asset management and operations
- Due diligence
- Feasibility
- Measurement and analysis
- Optimisation services
- Project development, engineering and construction

Wood is a global leader providing engineering, technical and project services for energy, industry, and the built environment. We provide performance-driven solutions throughout the asset life cycle, from concept to decommissioning.

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