Creating value with sustainable decommissioning: Learning from best practice in North Sea oil and gas, and offshore wind

Summary of online seminar held 27/10/2020 (event recording and additional resources)

The North Sea oil and gas sector is a mature industry and has made promising progress in developing decommissioning expertise and achieving substantial cost reductions; in contrast, the decommissioning process for offshore wind is only just starting. Decisions made now will shape the fate of these assets, and the associated supply chains, for decades to come.

The webinar was designed to facilitate knowledge exchange between the North Sea oil and gas and offshore wind sectors, and generate recommendations to optimise the value of materials throughout the lifecycle of energy infrastructure.

The briefing was opened by **Roger Esson, OGTC**, who gave a summary of current practice in oil and gas decommissioning in the North Sea. Many practical challenges stem from the scale and age of the assets which were not designed with end of life in mind. However, studies have identified huge potential for a circular economy approach, prioritising component reuse over material recycling. Successful examples implemented to date include the reuse of tubulars in construction, concrete mattresses in agriculture, and anchor chains modified for use in aquaculture.

Key recommendation: The whole energy sector will need to work collaboratively to decarbonise the North Sea and adapt to future energy systems (including integrating hydrogen and CCUS into offshore operations).

A global perspective was given by **Professor Tina Hunter, Macquarie University**, who began to explore how the implementation of best practice in decommissioning varies internationally. Examples of direct reuse from Arctic exploration and production highlighted that this is not always the more desirable outcome. Instead the fate of assets should be planned in, as part of a wider industrial strategy, with steel recycling in Australia cited as an example.

Key recommendation: Decommissioning of assets should be part of an integrated national industrial strategy and coupled with manufacturing for maximum retention of material value.

Dr Colin Mackie, University of Leeds discussed the financial frameworks for decommissioning in the UK. Security held by the UK Government (BEIS) only covers 1.1 - 1.8% of the oil and gas sector's total estimated liabilities of £45 - 77bn, and yet it bears the ultimate responsibility for decommissioning these installations and pipelines under international convention. UK Government also acts as the "decommisioner of last resort" for offshore wind installations, with cost to 2045 currently estimated at £1.3 - 3.6bn.

Key recommendation: Variations in security requirements can create competitive advantages for a jurisdiction, with regulator transparency being an important enabler for cost-effective decommissioning.

Dr Anne Velenturf, University of Leeds discussed the circular economy strategies that can be taken throughout the lifecycle of energy infrastructure, from design through to operations and maintenance and decommissioning. The economic, social, technical, and environmental values of products, components and materials can be best maximised with a proactive approach, which neither oil and gas nor offshore wind have currently adopted. Oil and gas infrastructure should be repurposed for hydrogen, carbon capture and storage and integration with offshore wind as soon as possible, whereas offshore wind should be designed for longevity. Government guidance must be updated to drive "design for decommissioning".

Key recommendation: Designing energy infrastructure with a circular economy and the energy transition in mind can reduce cost and risk to industry and government, contribute to key government strategies, and deliver reputational benefits for a social licence to operate.

The final speaker was **Prof Giorgio Locatelli, University of Leeds**, who highlighted that large-scale infrastructure decommissioning was not limited to offshore installations, citing other sectors such as coal, nuclear energy and hydropower. Done right, this process has the potential to generate revenue and maintain or create jobs.

Key recommendation: There are many learnings and efficiencies to be had from integrating decommissioning across different sectors.

Overarching policy recommendation from the event

Revise decommissioning guidance for both oil and gas and offshore renewables in line with UK Government plans for manufacturing and industry, such as in the Industrial Strategy and Clean Growth Strategy, to take full advantage of the environmental, social, and economic benefits of a circular approach.

Leading by example: circular business showcase

Creating a circular economy in the wind industry by refurbishment of components and reverse logistics

Recovery, refurbishment and recertification of subsea equipment

Additive manufacturing to enable replacement of aging or obsolete components

Reuse and recertification of flexible pipe

Stimulating re-use and collaboration in decommissioning of oil and gas infrastructure in the Netherlands

Preparing the sector for an increase in workload

Ongoing collaborations and future events:

- DecomRegHub partnership of regulatory agencies with shared interest in oil and gas decommissioning
- Future events: EoLIS 2020: Wind Europe End of Life Issues and Strategies, 18-20 Nov 2020; OGUK Offshore Decommissioning Conference 24-25 Nov 2020; WindEnergy Hamburg, 1-4 Dec 2020
- University of Leeds, Offshore Renewable Energy Catapult (OREC) and Department for International Trade workshop on current practices and new business opportunities for circular economy in offshore wind
- Research of offshore wind decommissioning will progress via the Circular Economy for the Wind Sector (CEWS) Joint Industry Partnership, coordinated by OREC

Further reading:

- Leeds University, Circular oil & gas decommissioning and A Sustainable Circular Economy for Offshore Wind
- AGCC / Circular North East, Circular economy resources and funding
- Zero Waste Scotland, Resourcing the clean energy revolution
- NexStep, Reuse and decommissioning report 2020
- UK Government, Policy positions on circular economy

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