Ageing offshore wind turbines could stunt the growth of renewable energy sector

February 16 2021

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The University of Kent has led a study highlighting the urgent need for the UK's Government and renewable energy industries to give vital attention to decommissioning offshore wind turbines approaching their end of life expectancy by 2025. The research reveals that the UK must decommission approximately 300 and 1600 early-model offshore wind turbines by 2025 and 2030, respectively.

Urgent focus is needed now to proactively use the remaining years until turbines installed in the 1990s and early 2000s are no longer safely functional in 2025, to prevent safety lapses, potentially huge costs and the irretrievable loss of the skillset required for safe decommission.

The research shows that these original turbines have an approximate lifetime of 20 to 25 years, but this expectation is vulnerable to factors that occur whilst in use. Within each early-model turbine, there exist thousands of components and parts that have worn down, become replaced and fixed without estimates on their installation time frame, and are nearing the end of their life expectancy.

There is no existing breakdown of the potential costs of the activities that would surround decommissioning offshore wind turbines, nor is there is an alternative plan to their decommission.

As the turbines exceed their safety remit, the sector is also set to lose the unique skillset of engineers that originally installed and maintained these early models, as they are now approaching professional retirement. To combat this loss of skills, researchers advise the imperative creation of a database of era-specific skills and operation-techniques to offset such a loss.

The study also finds that profitable operations can be established to counter the cost of decommission. Recycling of existing parts into new wind turbine operations has the potential to be hugely cost-effective for the sector, as well as ensuring that renewable means of production are at the forefront of future operations.

Dr. Mahmoud Shafiee, Reader in Mechanical Engineering at Kent's School of Engineering and Digital Arts said: 'Without a dedicated effort from the UK Government and renewable energy sector into planning the safe and efficient decommissioning these offshore wind turbines, there

is a risk enormous and potentially unsalvageable cost to the renewable energy sector. The cost of maintaining outdated turbines is multiple times that of new installations, so for the benefit of our future hopes of renewable energy, we call on the Government and sector leaders to act now.'

More information: Tosin Adedipe et al, An economic assessment framework for decommissioning of offshore wind farms using a cost breakdown structure, *The International Journal of Life Cycle Assessment* (2021). DOI: 10.1007/s11367-020-01793-x

Provided by University of Kent