CO2-mitigation options for the offshore oil and gas sector - DTU Orbit (13/10/2019)

CO2-mitigation options for the offshore oil and gas sector

The offshore extraction of oil and gas is an energy-intensive process leading to the production of CO2 and methane, discharged into the atmosphere, and of chemicals, rejected into the sea. The taxation of these emissions, in Norway, has encouraged the development of more energy-efficient and environmentally-friendly solutions, of which three are assessed in this paper: (i) the implementation of waste heat recovery, (ii) the installation of a CO2-capture unit and (iii) the platform electrification. A North Sea platform is taken as case study, and these three options are modelled, analysed and compared, using thermodynamic, economic and environmental indicators. The results indicate the benefits of all these options, as the total CO2-emissions can be reduced by more than 15% in all cases, while the avoidance costs vary widely and are highly sensitive to the natural gas price and CO2-tax.

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