Operational measures to mitigate and reverse the potential modal shifts due to environmental legislation - DTU Orbit (14/05/2019)

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On 1 January 2015, the sulphur upper limit for marine fuels used within sulphur emission control areas was lowered from 1% to 0.1%, with which vessels can comply only through using pricier ultra-low-sulphur fuel, or investing in abatement technologies. A potential increase of fuel prices could lead to closures of services due to the combined effects of loss of market due to higher freight rates, and increased operational costs. This paper builds on previous work allowing the modelling of modal shifts between sea and land-based options, and assesses the potential of operational measures that ship-owners can deploy to cope with the threat of the low-sulphur requirements. The measures include speed reduction, change of service frequency, use of alternative fuels such as liquefied natural gas, investments in scrubber systems, and improved fleet assignment. The proposed measures are tested on a set of case studies for services that are part of a short sea shipping network of a leading Ro-Ro operator. The results of this work can be useful to practitioners seeking to design new strategies that improve the resilience of their network, as well as to regulatory bodies designing new regulation that could have negative implications on certain sectors.

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