

Abstract to Trafikdage at Aalborg University, Denmark

Title:

Economic and environmental consequences of requirements for zero emission vessels in ferry operations in Norway.

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Background to the Study

Across the globe, it is approximated that, more than two billion passengers, 252 million cars, 677,000 buses and 32 million trailers were transported around eight million trips in 2009 through ferry services (Wergeland, 2012). Norway like many other countries is characterized with extensive coastline and high mountains, fjords and islands being connected to the road network using car and passenger ferries. This makes ferry services in Norway very important, especially for many inhabitant islands. Every ferry link is considered as indispensable part of the Norwegian road network which is not different from every public transport operations, in the sense that, they operate a schedule transport system, essentially, transportation of passengers, passenger vehicles, and heavy goods vehicles from one road end to the other or across fjords (Odeck and Bråthen, 2009, Odeck and Høyem, 2020, in Press) In 2014, the ferries transported over 21 million vehicles, 34.5 passenger car equivalent (PCE) and approximately 42.5 million passengers (including drivers) (Jørgensen and Solvoll, 2018). Again, inhabitants and enterprises around islands and coastal areas depend on ferry services for community connection for purposes of business operations, access to work and various social needs (Laird, 2012, Jørgensen and Solvoll, 2018)

The global world is concerned about the environmental ramifications of the transport means on the climate change. It is equally important to examine the economic consequences of every measure to achieve the goal. Norway is committed to the Paris agreement and other international bodies for reduction of greenhouse gas. One critical area is its role in green shift when it comes to ferry services. The country is on the massive transition from diesel fuel ferries to natural gas ferries. With the designing and building of M/F Glutra, the first modern liquefied natural gas (LNG) ferry reducing approximately 90% of NO_x (Corbetta and Farrellb, 2002). Still, there is the burning desire for zero emission ferries (battery and hydrogen powered

powered). With the support schemes and procurement requirement, close to 70 low and zero-emission ferries are in operation in Norway (Norwegian Ministry of Transport(NMT), 2021).

The purpose of the article is to study how the authorities, through the tendering process for purchase of domestic ferry services in Norway, have proceeded to reduce greenhouse gas emissions from the sector. Most of these contracts undergo competitive tendering. The two research questions the paper will seek to answer are, first, how has the general environmental criteria in the tendering document have been expressed for ferry operations in Norway? Second, to what extent has the environmental conditions in the tendering process impacts operational cost of zero emission ferries

The article will deploy the use of content analysis of public documents, viewpoints of expert and industry players. To the best of our knowledge no studies have been conducted in its strictest sense of environmental conditions or criteria in competitive tendering for transition to zero emission ferries relative to economic and environmental consequences. Therefore, this articles aims at filling this gap in literature. This papers by way of contribution is in two folds. First, the study will present new insights about how authorities have designed the tendering process for plummeting greenhouse gas emission in the sector. Second, we will present how the overall environmental criterial expressed in the tendering process impact on operational cost of ferry services with its policy implications when it comes to allocation of state resources. It is expected that, the findings/results will contribute to knowledge for those similar countries and players who are poised to follow this transition for a better human livelihood emergent from the sector.

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