

# Cargo Volume Analysis – Case A

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**Advanced, Efficient and Green Intermodal Systems**

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## Executive Summary

AEGIS is a next generation short sea shipping logistics concept that is currently under development. The objective is to solve some of the challenges faced by today's short sea shipping industry. This document, D8.1 Cargo Volume Analysis, is part of the AEGIS project work package 8, "Case A – Short sea and rural terminals in Norway". Considering the transportation of containerised goods from the Norwegian west-coast to the continent, as well as for the northern direction, the concept consists of two different vessel types. In our case we have considered a mother vessel sailing the continental route, and daughter vessels sailing the regional distances. The mother vessels will primarily be used to transport containers between main ports along the Norwegian west-coast down to Rotterdam, while daughter vessels will be used inside fjords in the Trondheimsfjord region and in areas where there is a cluster of smaller ports/terminals or loading points with a rather short distance between the ports. The idea is that daughter vessels will feed containers to/from the mother vessel(s), either directly or through a transit terminal.

The results from our initial cargo volume analysis indicate a potential for implementation of the AEGIS concepts. We have identified trends that will be important to follow, such as it seems like volume of 45-foot containers are increasing compared to 40 feet's, which again will pose requirements to the vessel design and cargo handling equipment. This report is pointing to some of those trends.

Based on the results from the logistics studies the concept has estimated available cargo from the Trondheimsfjord region. Our calculations in the report are based on volumes from existing transport routes from the west-coast of Norway to the Netherlands, with data from statistics, previous projects, from port statistics, and as direct input from transporters and cargo owners. This is further described in chapter 2 and 3.

The container transport to international regions outside Europe, 60 - 70 % of NCL's international cargo, is mostly carried out by shipping to the big ports in Europe, such as Rotterdam, where it is transhipped to deep-sea vessels. Hence, the NCL sailings are vulnerable to delays in the deep-sea sailing schedules. In average eight vessels are sailing out of Rotterdam to the west coast of Norway on a weekly basis. Average capacity for the fleet is estimated to be about 750 TEUs per vessel, hence a total weekly capacity of about 6 000 TEUs. The cargo volume for bigger terminals is quite stable, but it varies a lot for the smaller ports. One vessel can serve the Trøndelag region in Norway on a weekly basis and including Rørvik and the inner ports of the fjords if introducing feeder lines, such as daughter vessels.

The islands Hitra and Frøya have a salmon production potential of 300 000 tons<sup>1</sup> (in 2020) and the Rørvik area foresees a production of 175 000 tons in 2021 [14], according to factory concessions in the areas. This number equals about 500 TEUs per week, which is transported mostly by road today. Circular economy is a key topic when discussing the daughter vessel concept in the Trondheimsfjord. Waste from the aquaculture industry, fish ensilage, is transported to BioKraft in Skogn where it is used for liquefied biogas (LBG) production (16 500 tons yearly), which in turn can be returned to the fish factories and used as energy source in the production. LBG could also be used as fuel for vessels and buses in the region. The main types of goods exported from Trondheim Havn IKS in 2019 were bulk, only 10 % was containerised. Limestone, newsprint and cellulose comprised 86.3 % of the exported goods and were loaded in Levanger, Verdal or Verran, in the inner part of the Trondheimsfjord.

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<sup>1</sup> <https://www.xn--hitranrduvil-ycb.no/wp-content/uploads/2020/08/SalMar-1.pdf>



This report has identified three potential scenarios within the Trondheimsfjord region: 1. Serving the inner part of the Trondheimsfjord with Orkanger as hub; 2. Serving the outer fjord with focus on fish and circular economy with sailings to Skogn; and 3. Serving Rørvik and Hitra Kysthavn with focus on fish products and cargo between Hitra and Rørvik. Both scenario 2 and 3 have Hitra Kysthavn as hub.

NCL data shows that between 35 and 40 % of the transported containers are empty, with a potential to be filled with return cargo. Most of NCL's containers are dry storage (DC) and high cube (HC), and weigh 20 - 30 tons. There is a weekly shipment of 100 containers from Orkanger in Trondheimsfjorden, where the content is mostly micro silica. 81 % of the containers are exported out of Norway and as much as 93 % of the incoming containers are imported.

There is currently a lot of momentum in EU and Norway on moving freight to water by 2030, and incentives will be available through the Norwegian National Transport Plan (NTP). Therefore, it is of utmost importance to realise the AEGIS concept during this period. The fleet of small to medium-sized container ships is aging and a lot of vessels will have to be replaced with newbuilds in the coming years. The forecasted growth in freight transport is 11 000 000 tons by 2030 and 27 500 000 by 2050 and road transport will take most of it if measures are not taken now, which means additional 3 750 trucks every day.