Bottlenecks and obstacles in Case A

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Advanced, Efficient and Green Intermodal Systems

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Executive Summary

This report specifies bottlenecks and other obstacles regarding a transport system specified in use case A. Some of these obstacles are general and could apply to different waterborne transport systems, and others are more genuinely associated with use case A.

The transport system of use case A consists of a mother vessel together with one or more daughter vessels. The mother vessel transports containers from Rotterdam via Hitra Kysthavn and into ports in the Trondheimsfjorden. The rationale for this proposal is to enable a more flexible and cost-efficient waterborne transport solution for fjords and smaller ports.

Hitra Kysthavn, which is located at the main fairway along the Norwegian coast, has been assigned as the hub terminal in the transport system. NCL's existing container vessels sailing between Port of Rotterdam and the Norwegian coast are passing there today on their journey north/south. The three major building blocks of the transport system, mother and daughter vessels and terminals, have been further specified in deliverable D8.2 *Transport system specification* [1].

A transport system consists of several different parts, like relevant vessel requirements, terminal requirements such as cargo equipment and charging infrastructure, route information, sailing frequency, estimated cargo volumes, distances and sailing time, as-is situation, ICT systems and finally, regulatory hindrances with specific focus on transhipment. Each of these elements could be associated with different obstacles. If these obstacles are not dealt with in a proper manner this could make the transport system less efficient, and not a real challenger to the established truck-based transport system of today.

Several reports and projects have identified factors that make users prefer trucks over waterborne. Together with deliverable D8.1 *Cargo volume analysis* [2] these reports have found that there is enough cargo which could be transported by waterborne. The amount of cargo which will be moved between Norway and the rest of Europe is also expected to be increasing. That is, a lack of cargo is not considered an obstacle for use case A.

There is a national goal to have at least 30% of goods which must be moved more than 300 km on waterborne transport systems. In a thorough evaluation, by the Office of the Auditor General of Norway, of the national transport goals its main conclusion is that these national targets are not achieved. The major reason for this is a lack of financing, prioritising and few governmental initiatives to achieve this goal. In contrast to waterborne transport systems, each year there are large investments to improve the infrastructure used by trucks. As a result, this has caused road-based transport to be faster, cheaper, and more flexible compared with waterborne and railroad.

Other obstacles are flexibility and speed for waterborne transport, paperwork, cost of transhipment, time of delivery, outdated ICT-systems, lack of communication standards and cost and lack of flexibility at port. In this report we present and discuss these obstacles to waterborne transport. Some of these are general and will apply to all transport systems while others are more uniquely associated to use case A. Also, some of the obstacles are at a level that cannot be solved or handled by a single project but needs to be addressed by national governments. We still think it is important to stress these obstacles.

We have made six broad categories of obstacles described in chapter 3,

1 Present transport system

2 Bottlenecks associated with vessels and ship route

3 Bottlenecks associated with terminals and equipment

4 Technological bottlenecks

5 Commercial bottlenecks

6 Regulatory bottlenecks

These categories are discussed in this report, and further details are shown.

In chapter 4 we are more looking into the bottlenecks at the different nodes that have been focused in Use Case A.

This report is mainly based on reviews of previously published papers and reports but have also used interviews and statistical data to provide an updated and detailed picture. The work is also based upon the work done in other work packages of AEGIS.

The specified transport system is subject to cost-benefit analysis (CBA) and Logistics Analysis tool will be used to assess the overall logistics system. Further detailing and validation of the transport system will be documented in deliverable *D8.4 Detailing and validation of use case A,* which work will be based on the results of the CBA and simulations from the Logistics Analysis tool.