

Summary

In hinterland transport of cargo, there are four modes for transportation, which are inland waterway, railway, road and pipeline transport. The four modes all have their own network in the hinterland and these networks can be relatively small, like for pipeline transport, or dense and deep into the hinterland, like for road transport. Due to the small size of the pipeline network, this report does not consider transport by pipelines as a competitive transport mode compared to inland waterway, railway and road transport.

The three modes can be used in an intermodal transport chain to transport cargo. To realize the intermodal chain, actors, like terminal operators and shippers, have to cooperate with each other. This cooperation does not arise spontaneously, so actors have to put in efforts, time and money in this cooperation. Due to the fact that actors can be each other's competitor, actors will not make these efforts, while there are possibilities that other actors have the advances of these efforts, like lower costs or more cargo transshipments. That is the reason why there exist coordination problems between the actors involved in the hinterland transport chains.

Nowadays, the hinterland transport faces delays due to bad communication between actors and mismatched schedules. In this report we have looked at the hinterland connections of the port of Rotterdam, which expects a growth in cargo transshipments between 10 and 75 percent for the year 2030. The already existing delays and the expected growth is a reason to search for solutions for the coordination problems. The cargo can be dry bulk, liquid bulk, break bulk or containers and the expected growth per type of cargo is estimated in four different growth scenarios for the port of Rotterdam, where factors like oil prices, environment, world trade and economic growth play a role in the expectations. The expectation show that container transport can grow with 42 percent in 2030. For that reason, this report focusses on container transport by the mode railway transport. The choice of railway transport is made by the fact that, in comparison with inland waterway and road transport, there are the most different type of actors involved in the intermodal chain. A model has been built of an existing container rail terminal in the port of Rotterdam, which can calculate the handling times of trains in different scenarios, from the current reality to an optimal situation. Also, the model can calculate if the container rail terminal can handle the expected growth in container transport with the current size and layout or not.

Solutions for coordination problems in all the three transport modes are better communication and cooperation between actors in the transport chains. This communication can be done by sharing information by different information techniques and by collecting and distribute real time information of the cargo. Also, actors can cooperate by sharing equipment and match schedules, so waiting times for trains, trucks or barges can be reduced in the future.