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Summary:

Intermodal competition in Norwegian freight

The Norwegian government aims to take freight off the roads and transfer it to rail and ship. The present report analyses the most important aspects of intermodal competition along major domestic and international freight corridors, for different commodities and lengths of haul. The knowledge is then used to analyse what tools will be the most effective to realise the intended modal shift. Being based on available statistics, the study has used the national freight transport model to analyse policy measures to enhance intermodality.

What is competition between modes?

Competition between different modes of freight transport occurs when transport users have alternative transport service offerings in terms of physical accessibility, cost and quality of service. Since not all the modes mentioned can carry goods all the way from consignors to consignees, the full set of freight modes are physically available only on certain, main route segments.

Modal split along core corridors

Between Oslo and other major Norwegian cities, rail is a heavily used mode for transport of general cargo. Oslo-Bergen and Oslo-Trondheim are the two most heavily used railway corridors within Norway. Rail has the highest modal share along these corridors: Oslo-northern Norway and Oslo-Bergen.

Bulk cargo represents the most important commodity group carried by ship along domestic corridors. This is particularly so for sea transport departing from Vestfold or Bergen, primarily for distribution of refined petroleum products. The most heavily used sea transport route is Helgeland-Romsdal, carrying raw minerals (limestone) from Brønnøy port to industries in the county of Møre and Romsdal.

Figure 1 illustrates freight volumes and modal split for Norwegian foreign trade.

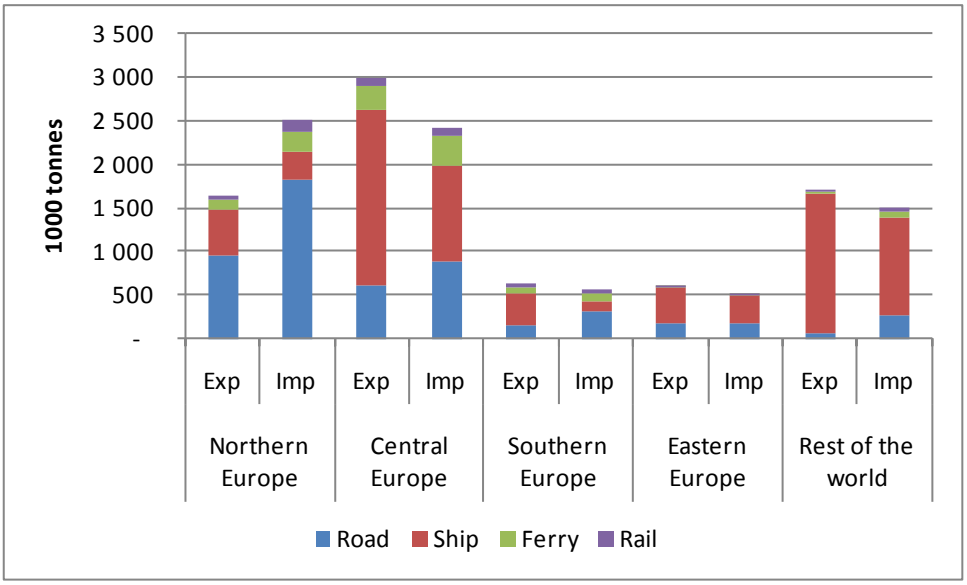

Figure 1. Yearly goods volume in 1000 tonnes and modal split for Norwegian imports and exports. General cargo. 2009.

The volume of general cargo incoming from northern Europe is larger than the flow in the opposite direction. For the other trade relations, the volumes of outbound goods from Norway generally surpass those of inbound freight. Road transport is the dominant mode for freight movement between Norway and northern Europe, while sea transport has highest modal share for commodity flows with the other regions. In contrast, rail carries only a marginal volume of international goods, with its highest volume for the import from northern Europe (mainly Sweden). Ferry is a relevant mode mainly for the transport to/from northern Europe (Denmark and Sweden) and central Europe (Germany).

Bulk cargo has the highest volume along these international corridors, and sea transport is the dominant mode for this type of goods. Road transport is the second most important mode for Norwegian international freight, being used mainly for trade with northern Europe and to a lesser extent central Europe.

Competitiveness

In the study, transport costs between alternative transport chains for different commodities have been compared, so as to shed light on modal competition from a cost perspective. Here, competitiveness in terms of cost efficiency is measured as NOK/ tonne-km, where km refers to the length of the main route segment, while cost is the total transportation cost for the shipment.

There is no single distance threshold above which, for example, rail becomes competitive versus road. However, for typical shipment sizes, there exist minimum distances above which rail transport chains become more cost effective than road. Such distances depend on a number of factors, such as: commodity type, shipment size, consolidation possibilities, distribution distances, and so on.

Our comparisons are based on estimated costs, which do not taken into account lead time and service effects, capital investment and inventory costs of alternative solutions, other time costs for goods, or external costs of transport. The research is

also limited in considering various combinations of these factors. Table 1 thus represents only a primary indication, and the results should not be interpreted beyond this. In fact, in many cases competitiveness must be assessed for each shipment and in a concrete and comprehensive manner.

Table 1: Minimum distances when different transport chains start to be competitive compared to door-to-door road freight.

	Minimum distances of competitive transport chains against direct road transport (km)			
Goods category	**Rail**	**Ship**	**Railway with direct access to consignors or consignees**	**Ship with direct access to consignors or consignees**
Temperature-controlled goods	550	450	-	-
General cargo	250 (Vs. chain car-car-car, about 350 km)	600 (Vs. chain car-car-car, over 1000 km)	-	-
Manufactured goods	550	500	100	100
Dry bulk	-	-	100	100
Timber	550	650	150	-
Wet bulk	-	-	100	100

Potential of and measures to increase intermodality

Based on the above findings, we have estimated the volume of cargo that can be shifted to rail/sea (domestic and international) through measures that promote intermodal solutions. A limited volume of 14.6 million tonnes is estimated to have the potential of being transferred to rail/sea. This amounts to only 5 percent of the freight volume (domestic and international) by road and ferry in 2008. When measured in tonne-kilometres, the potentially transferrable volume increases to 25 per cent of the total goods volume carried by road and ferry in 2008.

As part of the intermodal competition analysis, the effects of various policy instruments to promote intermodal freightt have been examined and compared. Although different measures are not directly comparable, the study does reveal that the modal shift effects of various measures appear to be larger for domestic transport than for international transport.

The measures that have largest modal shift effects from road to rail are (in decreasing order): increased fuel tax, longer trains, lower terminal costs for rail/sea. The measures that lead to the largest modal transfer to sea are: removal of commodity tax at ports, reduced port terminal costs, increased fuel tax, removal of docking fees and call charges and increased maximum draught in some ports. The removal of commodity taxes, docking and call charges and increased maximum draught promote shift from both road and rail, while higher fuel taxes and reduced port/rail terminal costs only contribute to shift freight from the road mode.