

Summary:

Freight hubs and nodes – structure and effectiveness

Every four years, the Norwegian transport authorities develop a National Transport Plan. In this context, the project group for efficient freight hubs and nodes has proposed a set of case studies to assess the opportunities for shifting of freight from road to sea or rail. The analysis is based on the national freight transport model. Moreover, case examples under several scenarios have been analysed as a complement to the model runs.

Trends in the logistics industry

In this report, general trends in the logistics industry have been examined which have an impact on the structural developments of freight hubs. The identified trends in logistics are the following:

- Increased specialisation and centralisation of warehouses and distribution centres
- Increased economic activity in Asia
- Increased concentration and acquisitions in the transportation sector
- Increased use of ICT based tools
- Increased environmental focus and use of new technology for environmentally friendly transport, increased use of load carrying units
- New logistical concepts, increased differentiation in logistics systems and requirements to freight centres

The effects of the above trends on freight hubs and terminal are summarised as:

- More concentrated cargo flows over fewer freight centres
- Increased specialisation of terminals
- More logistical functions are consolidated in the freight centres
- Increased demand for IT based integration
- Increased focus on cost efficiency and speed in terminals, suggesting fewer and larger terminals
- Continued growth in intercontinental container transport
- Increased use of semitrailers in European and national transport

Terminal structure

The report discusses the term of “freight villages”, used for large terminal clusters covering many additional services. Various forms of cluster formation and integration are discussed, ranging from pure transport terminals, integrated terminals to freight villages. The limited freight volume in Norway does not justify the development of freight villages, unless established infrastructure are already in place. Moreover, increased integration might also give environmental and market benefits.

One of the case studies assesses the consequences of integrating the terminals in Risavika and Ganddal near Stavanger. Although this is a pure theoretical exercise, it does shed light on the possible effects of establishing inter-modal terminals in other areas in Norway. Our analysis shows that the cost savings arising from the integration of terminals would justify an additional investment of NOK 300-400 mill. In this case, the distance between the two terminals is 20 km, and shorter distances would reduce the cost saving potentials given the same freight volume. More market benefits relate to the "one-stop shop" terminals, providing access to all transport modes and bringing environmental benefits.

Alternative freight solutions to western Norway

One case study included in the report analyses the consequence of delivering imported cargo directly to Southern/Western Norway, instead of via distribution centres around Oslo. The estimated effects mainly lie in a transfer of imported goods from road to sea and, to a lesser degree, to rail. The change of distribution pattern will lead to a reduction in the total transport volume (in tonne-kilometres) of relevant imported goods at around 3.5 percent. Substantial reduction in transport costs and to a lesser degree the total logistics costs are expected. The analysis also shows that the import volumes may justify a new short sea line, given that consolidation in ports on the European continent is possible.

Potentials for increased cross-border rail transport

Possible new train services from the ports of Gothenburg and Rotterdam to Oslo have been evaluated with a view to reducing the road freight volume. The conclusion is that there is sufficient potential volume to establish such rail services, particular for imported goods. Our micro level analysis also reveals that the cost level of the services will be comparable to road transport.

The Oslo region is currently the national freight centre for both imports and exports. Several alternatives to the existing solutions for freight distribution have been analysed. The alternatives are:

- 1) Reference scenario (as is)
- 2) All container traffic (Lo-lo and Ro-Ro) in the Oslo fjord region is routed via Oslo
- 3) Container traffic is routed through Larvik and Borg (i.e., Fredrikstad-Sarpsborg), with rail connections in the ports. Oslo will be purely a bulk port without container traffic. Ro-Ro traffic is routed via Brevik.

- 4) Container traffic (Lo-Lo) is routed via Drammen and Borg, with rail connections. Ro-Ro traffic is routed through Brevik and Drammen. Oslo becomes purely a bulk port.
- 5) All traffic is centralised in individual ports, i.e.: Ro-Ro via Brevik, container and bulk via Borg, general cargo via Oslo.

Costs for the different scenarios have been compared as illustrated in table 1.

Table 1: Cost estimation for alternative solutions (in millions of Norwegian kroner)

Alternatives:	Domestic	Import	Export	Total
Reference scenario	66 914	27 078	27 892	121 885
Alternative 2	67 059	27 312	28 128	122 499
Alternative 3	67 067	27 303	28 122	122 492
Alternative 4	67 065	27 294	28 041	122 400
Alternative 5	67 254	27 237	28 197	122 688

The current solution, where the Oslo fjord region functions as national freight centre, has the lowest cost. The other alternatives cost around 0.6 – 0.8 billion NOK more than the reference scenario per year. The present freight distribution structure is therefore optimal among the alternatives assessed.