Rail transport solutions for North-South and East-West freight flows

INTRODUCTION

Freight transport between Norway and other countries in the Baltic Sea Region is rapidly increasing, and to a considerable extent the raising volumes are transported on trucks. The main reasons for this seem to be infrastructure-related bottlenecks and low reliability and flexibility of the rail transport compared to road. *"The challenge is to ensure structural change to enable rail transport to compete effectively and take significantly greater proportion of medium and long distance freight transport"*, it is stated in the EU White Paper of 2011 – 'Roadmap to a Single European Transport Area – Towards a competitive and resource efficient transport system'.

Picture: Railconsult AS

Several studies during the later years, many within the Interreg programmes, have highlighted possibilities and challenges related with the rail transport. The TransBaltic project featured a task to make an assessment of freight flows – as potential for increased rail transport – between Norway and other countries in the Baltic Sea Region. Based on literature studies and interviews the task tried to identify severe hindrances and bottlenecks for an increased rail transport. Then, it elaborated on some possible solutions and actions to resolve the identified bottlenecks and hindrances.

The task was managed by Eastern Norway County Network (Østlandssamarbeidet). Other participating partners were: Region Skåne, Region Västerbotten, Region Blekinge, Region Sjaelland, Self-Government of the Pomorskie Voivodship, Vest Agder County, Västra Götaland Region, The Institute of Logistics and Warehousing (ILiM), West Pomeranian Business School and Latvian Transport Development and Education Association. The task work was done under the auspices of a transnational working group consisting of representatives from the partners.

BACKGROUND AND CHALLENGES

Norwegian international road and rail freight traffic mainly goes to or through the Baltic Sea Region (BSR). More rail freight transport will reduce environmental pollution, reduce road queues and accidents. Rail freight as an integrated part of intermodal transport has been successful in Norway and some of the potential actions to increase rail share in international transports to and from Norway will probably be relevant for the entire Baltic Sea Region.

The task addresses the problem of a very low share of rail transport in international freight operations between Norway and other countries in the Baltic Sea Region. In Norway's domestic trade, on distances exceeding 600 km, almost half of the freight transport is carried out by rail, while for international freight transport to and from Norway the figure amounts merely to 10%. On the other hand, freight transport by road destined to and from other BSR countries is increasing rapidly: 2400 trucks are daily passing the border between Sweden and Norway – while only 6 freight trains.

Previous studies and contemporary projects indicate several bottlenecks and hindrances, both in the national and international context, among which the following seem to appear most common:

- Infrastructure related bottlenecks and different signalling systems
- Immature market and time consuming processes to create agreements with train operators
- Low reliability
- Low frequency

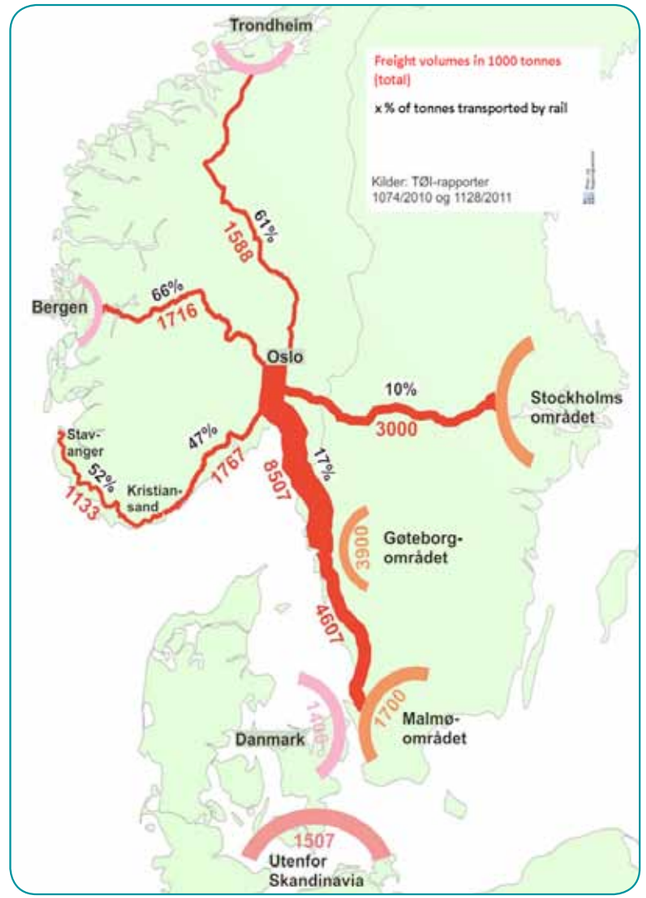

Figure 1: *Rail freight market share compared to road transport, Oslo - domestic and Oslo - Sweden (Source: Gods og logistikk i Osloregionen – analysegrunnlag, August 2011)*

OBJECTIVES

The competitiveness of rail freight transport depends on more factors than infrastructure capacity. There seems to be a lack of trust in the railway's ability to deliver the necessary quality.

It is thus important to find practical and durable solutions to increase the competitiveness of rail freight transport. Through establishing partnerships with freight owners, rail transport companies, forwarders and relevant public authorities, the task was to assess bottlenecks and hindrances for more efficient rail transport. Additionally, the task aimed at identifying resolving needs and proposing efficient transport solutions to ease administrative and infrastructural constraints.

Rail transport solutions

The study looked at the routes connecting the south-eastern Norway with the Gulf of Finland area (along the northern leg of the Nordic Triangle), Poland and the southern part of the Baltic States (through the ports in the Swedish region of Blekinge) and the Baltic part of Germany (via the western leg of the Nordic Triangle).

KEY ACTIVITIES

Assessment of freight flows in the study area

The first main activity in the project was a charting of freight flows between Norway and other countries in the Baltic Sea Region (BSR) – including some neighbouring countries, like Hungary, the Czech Republic and Slovakia – to identify potentials for increased rail transport.

ILiM (The Institute of Logistics and Warehousing) concluded in a separate study of transport flows between Poland and Scandinavia that containers are nowadays completely absent in the trade structure to Norway and Sweden. In Norway, the national wagonload system was shut down in 2001, and only a few customers are connected to the pan-European wagon loading system (X-rail).The study therefore concentrated on intermodal transport solutions.

The market share for rail transport between Norway and different countries in the Baltic Sea Region varies. Between Oslo and Göteborg, the share is 17 % (in total, both directions) and it decreases to approximately 10 % from Göteborg and southbound. Based on knowledge of infrastructure restrictions and ordinary freight train structure in Norway, the project made the assumption that 1 million gross tonnes per year in one direction should make it possible to obtain a 10 % market share for rail transport, which could equal to 5 trains per week.

Based on these assumptions, the assessment showed the following trade relations to be most promising: Russia - Norway (import), Norway – Finland (export), Norway – Poland (export), Norway - the Czech Republic (export) and Norway - Germany (both import and export). Further studies were concentrated on these freight flows.

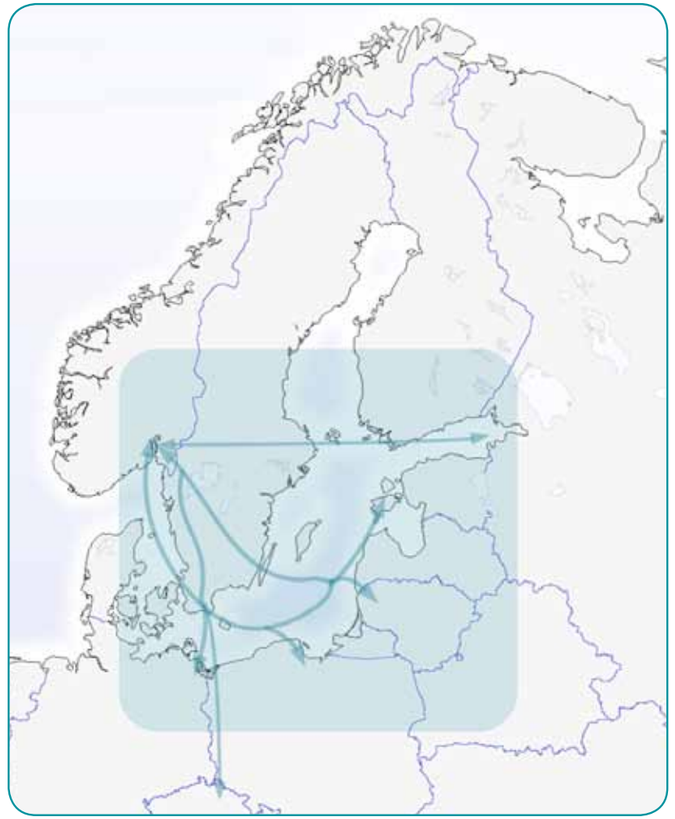

Figure 2: *Main study area*

Hindrances and bottlenecks against rail freight transport

A vital part of charting hindrances and bottlenecks was accomplished by interviews and discussions with representatives of: freight owners, forwarders, rail transport companies and public authorities involved in goods transport in the relevant corridors. Most of the companies were Norwegian, but also some Polish and Swedish companies were approached.

Rail transport solutions

There was a general assumption among the interviewed parties that they would choose rail transport if it could prove to perform faster and cheaper than the road transport. But then they had to be sure of rail transport quality. Now, there is a lack of trust in the railway's ability to deliver the necessary quality. The perceptions of the interviewed parties, which might not be the reality in all cases, could be summed up as:

- Lack of reliability,
- Lack of information about delays, damaged goods etc.,
- Cultural differences,
- Knowledge about rail and intermodal transport among logisticians buying transports.

Assessment of possible solutions and actions

Dwelling on the lack of reliability and ability to deliver the demanded service, some identified solutions and actions to resolve these issues were:

- Terminals along the route to be utilised as backups creating better service flexibility;
- Improving logistics education for rail and intermodal transport;
- Increase the market's understanding about the possibilities and defuse the technical problems with interoperability faced by the international rail freight traffic;
- Integration between facilities for logistics operators and intermodal terminals to improve rail freight efficiency.

Picture: CargoNet

The working group decided to concentrate on two actions: 'Backup terminals' and 'More attractive intermodal transport'. The latter action is a combination of the second and the third bullet point in the listing above.

The project group also discussed the possibility of creating a new train system and concept in the study area. Although the transported volumes between Norway and Germany, Poland, Finland and Russia should make it possible to fund rail transport solutions without unrealistic market shares, it proved difficult to identify the exact origins and destinations, and thus to identify possible partners.

Intermodal transport user workshops

A follow-up action to deal with the findings of hindrances and bottlenecks was to initiate and invite selected users for a specific 'Intermodal transport user workshop'. The workshop was held in cooperation with Norwegian National Rail Administration (Jernbaneverket) and Norwegian Logistics and Freight Association (NHO Logistikk og Transport). A representative group of stakeholders met to identify solutions that were acceptable and feasible for all parties involved in the intermodal transport chain. By gathering these parties, they were also given an opportunity to learn from each other's experiences, demands and needs.

The aim of the workshop was to identify actions for international intermodal transports to be competitive compared to road transports. The discussed issues and solutions were assumed relevant for all international relations to and from Norway, even though the extent and complexity increase with the growing number of parties from several countries.

Picture: Norfilm/Jernbaneverket

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Consequently, a second workshop was held to prioritise actions and find out who would be in best position to implement these actions. Most of the proposed actions were viewed as a possible responsibility of Norwegian National Rail Administration and Norwegian Logistics and Freight Association. After the second workshop, two final follow-up meetings were held with the two organisations to present the result of the workshops and discuss the proposed actions.

Supplementary studies

In order to analyse if an intermodal hinterland transport service could increase the attractiveness and competitiveness of the Gdynia-Karlskrona ferry link, a separate study was made by Region Blekinge. Initially, a focus was placed on fresh fish delivery from northern Norway to Poland. The study concluded that fresh fish is not the cargo commodity suitable for forming the base volume in an intermodal transport system. However, there are complementing cargo commodities that might serve as a base volume, for instance - paper and pulp & aluminium in the southbound direction, and: colonial foods, perishables and recycled paper northwards.

A description of necessary steps for enabling intermodal connections between the main business centres of Poland, Sweden and Norway was produced by Institute of Logistics and Warehousing (IliM). Today, railway transports take longer time than truck haulage. Truck transport is also much cheaper comparing to 40-foot container rail carriage. Based on operational expenses for container block trains with 3 departures per week, the analysis, however, shows that intermodal operators are able to offer competitive freight charges. The launching of regular intermodal connections between Poland and Sweden/Norway seems to be feasible albeit very challenging as it requires the flexible attitude to long-term returns.

A separate study by the Pomorskie Region focused on assessing the current and potential infrastructural and economic requirements to create a competitive range of freight services in the multimodal North–South corridor in Poland. Part of the study dealt with practical pre-requisites for implementing the green corridor concept. The study points out in developing the North–South Green Corridor some intensive and consistent actions shall be taken both by public authorities and companies operating on the transport and logistics market. The study indicated an exceptionally high share of railway transport in a green scenario 2030 compared to the current situation and a base case scenario 2030.

KEY RESULTS

Intermodal terminals as emergency harbours

Intermodal terminals can be used as emergency harbours in case of severe traffic disruption for rail freight transport – based on agreements between the involved public infrastructure manager, the train operator and the operator of the intermodal terminal.

Interviews of key stakeholders showed that customers and forwarders do not rely on the railway's ability to deliver acceptable quality of freight transport on international relations. One of the interviewed stakeholders compared the railway with a 'black box': if you send a container by the railway, there is no possibility of getting access to the content before the train reaches its destination, whatever disruptions or delays might happen on its way.

The objective of emergency terminals is to obtain a solution with clear procedures, which would enable unloading the train before the original destination. An additional problem that has to be addressed is how to get rid of the unloaded train, in order to prevent it from disrupting service for other trains or other loading/unloading processes.

On several routes to and from Norway a freight train passes intermodal terminals. These terminals could be utilised during a disruption or a severe delay. However, due to different terminal operators and regimes, this cannot be applied in today's situation without settling formal agreements between the train operator, infrastructure manager and the terminal operator.

The backup terminal concept can be described as a series of settled agreements between the involved parties to enable the use of a given freight terminal in case of disruption. It might not be the situation that all the units on a train have to be unloaded from the wagons onto lorries, but only the units that are time-critical.

There must be an agreed contract to be able to activate the backup plan. In most aspects, this plan is similar to the existing terminal contracts between the terminal operator and its customers. The main differences are in the responsibilities of the terminal operator regarding the resources to be activated, the pricing of these services and communication procedures. An agreement between the parties to utilise a terminal as a backup solution needs to consist of the following aspects:

- Criteria for implementing the backup plan (what are the circumstances required for the plan to be implemented),
- Commercial aspects, such as handling and access price in addition to regulation of dwell time for load units and wagons,
- Operational responsibilities,

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- Routines on:
  - Implementation of disruption routine (how to order the actions needed to use the terminal),
  - Rerouting of the train from the scheduled route to the terminal,
  - Reporting between terminal and train operator,
  - Order alternative transport from the terminal to the destination.

The agreements shall only apply during special circumstances and should be offered to all train operators on equal terms as a standard procedure. Procedures must be efficient and easy to deploy, while the initiation of the actions should as little as possible interfere with regular operation of the terminal.

The project decided to place a pilot case in Sweden along the west coast route. Originally, the pilot was intended to target the intermodal terminal in Göteborg as most of the rail transports between Norway and other countries in the Baltic Sea Region pass this facility. However, due to some unpredictable circumstances this did not become possible, and the project had to shift the pilot case to another location, which turned up to be the intermodal terminal in Umeå (Nordic Logistic Centre). ISS TraffiCare AB is the current terminal operator, and Green Cargo AB was chosen as an involved train operator.

This seems to be in line with the EU White Paper (2011) where it is said: *Mobility Continuity Plans should ensure the service continuity in case of disruptive events. The plans should address the issue of prioritisation in the use of working facilities, the cooperation of infrastructure managers, operators, national authorities and neighbouring countries, and the temporary adoption or relaxation of specific rules.*

More attractive intermodal transport

An intermodal supply chain is complex and involves several parties (illustrated in the figure 3 below). These parties need to have a common understanding of each other's needs and routines/procedures for communication.

***Figure 1**: Example on the complexity of an intermodal supply chain*

Based on the two workshops for users of intermodal transports, some concrete follow up actions were formulated.

Actions proposed for Norwegian National Rail Administration:

- Formalise and extend the "International intermodal user workshop" to improve coordination in the intermodal supply chain and overall competitiveness.
- Increase the knowledge of the intermodal supply chain by description of possibilities, effects and critical success factors.
- The parties in the intermodal supply chain need to (individually and in cooperation) create robust transport schemes that tolerate a certain degree of interference without affecting the quality of the service. To achieve this, the formal process regarding timetabling may need to be improved, giving terminal operators and other parties in the intermodal supply chain the opportunity to be a part of this process.
- A review of the prioritisation practice needs to be conducted, to ensure an optimal solution for both passenger and freight trains. This to ensure less impact of external conditions for the freight operators.

Actions proposed for Norwegian Logistics and Freight Association:

- Coordinate a common message from all the parties in the intermodal supply chain: A common information strategy that highlights the "brilliancies" of rail freight transport.
- Arrange a seminar regarding intermodal rail transport for relevant stakeholders.
- Norwegian Logistics and Freight Association is in the position to contribute to each member improving their performance in the intermodal supply chain.
- Norwegian Logistics and Freight Association is also in the position to encourage other parties in the intermodal supply chain to (individually and in common) make robust transport schemes that can handle minor disruptions without affecting the quality of the service.

Norwegian Logistics and Freight Association has already started to carry out some of the identified actions. In September 2012 the Association will arrange a seminar on '*How can we make each other even better?*' This seminar is intended for all the parties in an intermodal supply chain.

Also, a meeting with the Head Office of Norwegian Public Roads Administration (Vegdirektoratet) was arranged to discuss a possible interest area of this authority in pursuing the TransBaltic work. The organisation confirmed an interest in participating in actions leading to a transfer of transport from road to rail and sea.

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Picture: Jernbaneverket

BRINGING THE RESULTS FURTHER

Railconsult – a Norwegian consultancy within rail based transport systems, hired for managing this task by the Eastern Norway County Network – will continue to cooperate with the two stakeholders in Umeå (GreenCargo and ISS TraffiCare) in order to conclude the backup terminal agreement. As soon as this is done, a template example for the use of the Nordic Logistic Center as a backup terminal will be published on **www.transbaltic.eu** for further dissemination and benchmarking.

Norwegian National Rail Administration, Norwegian Logistics and Freight Association and Norwegian Public Roads Administration stated that they have a common interest in a transfer of goods from road to rail (and sea). Eastern Norway County Network will assist in achieving this goal based on the proposed actions.