Dry Ports

Intermodal terminals of the future

With its motto: "Towards an integrated transport system in the Baltic Sea region", the TransBaltic project is seeking to strengthen regional initiatives aiming at integration of transport patterns and networks in the BSR, as stipulated by the EU's strategy for the region.

The general approach provides for using joint transport development measures and jointly implemented business concepts. Building on the outcomes of transnational transport projects and pan-Baltic initiatives, TransBaltic is structuring these into one framework and upgrading them by selected pilot business actions.

Along with the work packages focusing on strategies, policies and planning issues, the project includes a group of tasks designed to test practical solutions, to demonstrate their feasibility in a specific business environment and to evaluate their potential for becoming BSR transport blueprints. Among these, Task 5.1 "Dry Port Development" is based on a concept which appears to carry an outstanding potential as an intermodal solution of the future. Implemented under the leadership of LAKES (Lahti Regional Development Company Ltd.), the task responds also to the interest voiced by two other TransBaltic partners: Hamburg Port Authority and Poland's Warmińsko-Mazurskie Voivodeship self-government.

The dry port concept is still evolving and not given its final shape yet. For the purpose of the TransBaltic Project application, it has been defined as "a part of a seaport moved some 30-200 km into the hinterland in order to satisfy customers' demands and at the same time to ease operational constraints (e.g. traffic bottlenecks in the main port

Emergence and significance of dry ports

Photo: Violeta Roso

Environmental problems have received increasing attention during the last decade and with them also the role which logistics concepts can play in reducing those problems.

One of the concepts that, among other advantages, has a role in decreasing environmental impacts is the concept of a dry port. The first mention of dry ports as 'ports secs' by P. Hanappe dates back to 1986. However, the concept was neglected for many years and only recently resurfaced due to increased interest in environmental issues relating to growing containerized maritime transport. Progress alone in the maritime part of the transport chain (building bigger ships) and in seaports (acquiring bigger cranes), without improvements in seaport inland access, is not sufficient for the entire transportation chain to function. The study of dry ports emphasizes the importance of efficient seaport inland access which might be obtained by means of dry ports; the importance is not only for the seaports but for other actors in the transport system and society as well.

The concept

A dry port is an inland intermodal terminal directly connected to seaport(s) by rail where customers can leave/pick up their units as if directly at a seaport. "As if directly at the seaport" is a very crucial part of the definition because it implies a certain level of integration with seaports as well as availability of services that may be found at a seaport, such as storage, maintenance of containers, customs clearance, etc. Therefore, dry ports are used much more consciously than conventional inland terminals, with the aim of improving the situation resulting from increased container flows, and a focus on security and control by the use of information and communication systems. Scheduled and reliable high-capacity transportation to and from the seaport is essential and determines the dry port's performance and its environmental role. Based on their function and their location, dry ports may be categorized as distant, midrange and close. The figure next page shows the basic idea behind the concept.

Close, distant and midrange dry ports

Implementation of a close dry port in a seaport's immediate hinterland increases a seaport's terminal capacity which might result in increased productivity since bigger container ships will be able to call at the seaport. This type of a close dry port may serve as a depot, empty container storage. With dry port implementation a seaport's congestion from numerous trucks is avoided since one train can substitute some 35-40 trucks. Sydney's Port Botany has a

Tab. Potential dry port benefits

	Seaports
Potential benefits from dry ports	– Less congestion – Increased capacity – Expanded hinterland

area)". Task 5.1 Leader proposes the Project Partners to accept the definition worded by Dr Violeta Roso: "The dry port concept is based on a seaport directly connected by rail to inland intermodal terminals, where shippers can leave and/or collect their goods in intermodal loading units as if directly at a seaport."

Dry ports seem to be particularly attractive in the Baltic context, with its extremely intensive traffic within much limited space, with all the problems this fact is bringing about: constrained road access, long queuing times, and a low share of rail transport mode in cargo supply. Moving some of the traditional port-related services from the seaport to the hinterland solves various problems – not only those of a strictly operational or logistic nature. Reduction of concentrated greenhouse gas emissions, stimulation of the hinterland's business competitiveness and generating new employment opportunities are just those most important to be mentioned.

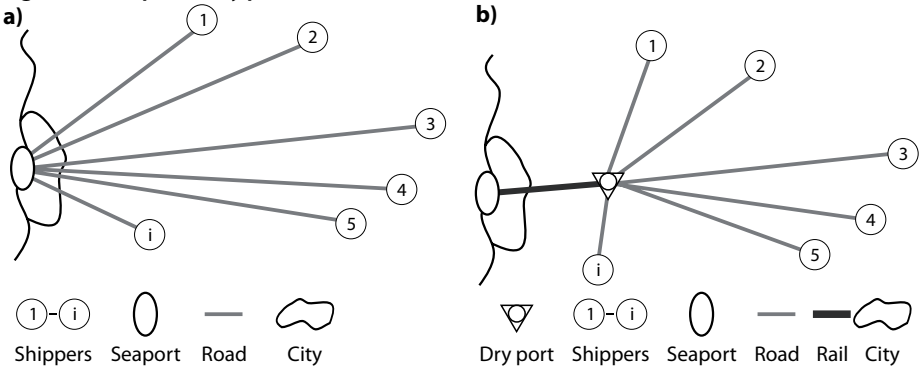
TransBaltic Project Task 5.1 will demonstrate how the dry port concept can contribute to the cohesion and co-modality objectives of EU transport and regional policies; therefore, dry ports can be seen as components of the future Trans-European Transport Network (TEN-T) to be established as a key element in the revised Lisbon strategy. Considering TEN-T's primary focus to fill the gaps and eliminate bottlenecks in European transport infrastructure, as well as to ensure the sustainability of the transport networks, the dry ports concept is clearly a perfect answer to many of the challenges involved.

The dryport – a development worked upon in TransBaltic project is a good example on how both knowledge transfer and crossover of results can be achieved between other ongoing and previous projects. In this case, this has been SustAccess, a project completed in 2006, where the dryport issue was introduced as an Interreg North Sea Programme important development and the ongoing „Dryport – a Modal Shift in Practice", both these projects with Region Västra Götaland as a lead partner.

Having introduced the dry ports concept as a component of the TransBaltic project, let us now get a deeper insight into how this innovative solution is expected to work in practice, as an element of the freight transport chain.

Małgorzata Nosorowska

Fig. The concept of a dry port.



network of intermodal terminal facilities some of which play the role of a close dry port. MIST terminal in Minto, 45 km from Port Botany, is an intermodal precinct with daily rail shuttles to the seaport, handling 40,000 TEU/year and generating benefits not only for the operator but for the seaport and society as well.

The benefits of distant dry ports derive from the modal shift from road to rail, resulting in reduced congestion at seaport gates and their surroundings as well as reduced external environmental effects along the route. A reduced number of lorries on the roads brings down congestion, accidents and road maintenance costs as well. The distant dry port extends the gates of the seaport inland, with shippers viewing the dry port as an interface to the seaport and shipping lines. In other words the distant dry port improves seaport access to areas outside its traditional hinterland, i.e. extends the seaport's hinterland and attracts new customers. Virginia Inland Port (VIP) is an excellent example of extending a seaport's hinterland and bringing competitive advantage since all 30,000 TEU handled there come from newly acquired customers for the Virginia port. There is a high level of integration between the seaport and the dry port. It was the Virginia Port Authority which initiated the expansion into the 330 km distant hinterland, i.e. extended the seaport's interface through the dry port. VIP is considered a US customs designated port of entry where a full range of customs services is available for its customers.

A midrange dry port is situated within a distance from the seaport generally covered by road transport and serves as a consolidation point for different rail services. The high frequency achieved by consolidating flows, together with the relatively short distance, facilitates the loading of containers for one container vessel in the dedicated trains. Falköping dry port is situated 130 km from the Port of Gothenburg on the rail junction to the network of inland terminals and as such is an excellent consolidation point. The facility is undergoing major development and soon, apart from accommodating bigger trains, will offer a range of value-added services for the customers in the area.

Benefits

The table below summarizes potential benefits that might result from a dry port.

Although the concept itself should bring numerous benefits to the actors of the transport system, there are still many impediments to its implementation. The most common are land use, infrastructure, environmental and institutional obstacles. Therefore, a dry port must fit into the transport system where regulations are designed to optimize the use as well as development of existing infrastructure and its belonging modes of transport.

Dr Violeta Roso

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Seaport cities	Rail operators	Road operators	Shippers	Society
– Lower road congestion – Land use opportunities	– Economies of scale – Gain market share	– Less time on congested roads and in terminals	– Improved seaport access – "Green" marketing	– Lower environmental impact – Job opportunities

North-West Russia

An area in mobilisation

Photo: Evelina Hansson Malm

In connection with the outcomes of the foresight debates in the "TransBaltic Policy Report 2010", the project representatives went to North-West Russia to discuss transport investments of this key area in the future geography of freight flows.

TransBaltic is regarded as a strategic project in the implementation of the priority area 11 "Improvement of internal and external transport links" within the European Union's Baltic Sea Strategy. The project intends to deliver a broader perspective for the transport policies in the Baltic Sea region, inter alia, by investigating its external accessibility and the potential as a gateway area. In this context the foresight debates concerned two future scenarios for which participating stakeholders highlighted some potential risks. Infrastructure investments in the Eastern part of the region including Russia might not take the greening of transport into consideration, posing the risk of a gradual east-west divide. In turn, investments in the Barents area might change the future freight flows from North-South to an East-West direction. This would decrease the use of the Baltic Sea networks, resulting in moving the economic centre of the region to the north.

The plans for each way

As a response to the predicted future developments, TransBaltic has formulated a set of actions for each scenario.

Actions for the Green scenario:

- to further verify the probability of the new East-West divide introduced by the implementation of the green concept,
- to examine readiness to launch institutional cooperation and to apply a steering mechanism for potential green corridors in various parts of the BSR,
- to discuss pre-requisites for introducing the green corridor concept in Russia and other countries generating intercontinental freight flows to and from the BSR.

Actions for the Barents scenario:

- to verify the likelihood of the Barents Scenario by investigating transport infrastructure strategies and investment plans bringing the intercontinental flows closer to the Barents Region,
- to obtain deeper knowledge on the state and prospects of available infrastructure enabling the navigation on the Northern Sea Route,
- to further examine the capacity of land bridge connections for transiting the containerised cargo to the EU in general, and to the Baltic Sea region in particular.

The ports of Arkhangelsk and Murmansk are by the foresight stakeholders deemed as having strategic importance in relation to the development of the Barents area and the future trade exchange between North-West Russia and the EU/Norway. Therefore, TransBaltic organised meetings with regional and local authorities and transport/logistic operators for an overview of investments plans in port, ship and rail infrastructure in the Murmansk and Arkhangelsk area.

Murmansk & Arkhangelsk ports

Murmansk Commercial Sea Port and Arkhangelsk Sea Commercial Port have a lot in common operating in North-West Russia about 1,000 km from each other. At the same time some factors tear them apart. The main difference is that the Port of Murmansk, with its close proximity to the Gulf Stream stays ice-free throughout the year, while the Port of Arkhangelsk freezes during winter months. Future development plans for both ports have been on the agenda for some years but the slow process is partly due to the reliance on federal government funding. While Arkhangelsk still is waiting for a decision, Murmansk has already received such and is now in the phase of

mobilising for modernisation. Export is the main direction in both ports with over 96% of total cargo being loaded onto the vessels. The main orientation is towards North America and Western Europe through the Northern Maritime Corridor.

To be able to receive investment grants from the federal government, the Port of Arkhangelsk needs to prove that it has reached its maximum capacity in serving its own hinterland. This threshold is estimated at 5 mln tonnes (the port turnover was 1.48 mln tonnes in 2007). The handled commodities include local products (e.g. timber), as well as commodities shipped to and from the Komi Republic, such as pulp, cardboard, lumber, metal, containers, heavy equipment and fertilisers. Also, some local products are exported to Asia by railroad to St. Petersburg.

Preparing for the expansion

The development plans till 2015 contain a logistics centre, with port-clustered business enterprises and educational institutions. With a few already established educational institutions, the port authorities see the serious potential of researchers involved in the future development.

At present, the Port of Arkhangelsk conveys no intercontinental cargo transit from Asia. Such a function is generally attributed to the planned one-track rail connection between Arkhangelsk with Perm (Belkomur), which will be complemented by construction of a new deepwater port in Arkhangelsk. Before the financial crisis Belkomur was a prioritised federal-level project; yet, due to economic constraints, the federal government decided to split the investment into two parts, with the northern section of the line to rely on private funding. Surprisingly, the regional government of Arkhangelsk sees the Belkomur as a solution for interregional transportation (raw materials from the Komi Republic), while the trade exchange with Asia would in its view require an utterly new double-track railway line.

Murmansk is already in the process of modernisation and has for the last decade experienced a steady increase in turnover, peaking at 15.85 mln tonnes in 2009. The port was not considerably affected by the economic downturn due to its focus on exporting coal and apatite concentrate, and the strategic decision of the port authorities to decrease the tariffs in order to uphold the cargo volumes and stimulate economic growth. Impressive investment plans of the port authorities include construction of new terminals on the western bank of the bay for handling coal, oil and containers (the latter are estimated to reach 4 mln TEU by 2025). Railway connections serving the area will be upgraded and together with the proximity to airport, the port can offer extended services. Altogether, Murmansk aims for a turnover of 75 mln tonnes in 2025, which shall be reached through an intensified trade exchange with Asia and North America via sea routes.

Photo: Evelina Hansson Malm

Vasiliy Boyko, Deputy Minister of Transport of the Arkhangelsk Region and Wiktor Szydarowski, TransBaltic

Both ports' desire to become more universal in cargo handling is partly due to the capacity problems faced in St. Petersburg. Currently, most of the cargo is transported for further distribution by rail via St. Petersburg and the two ports are keen to promote an alternative logistics solution, which guarantees a quicker handling time and lower tariffs than what St. Petersburg can offer shippers today. Such a solution points at the Northern Sea Route. Both Murmansk's need for heavy investments in an improved railway connection to St. Petersburg and the enormous investment that the land bridge connection to Asia would mean for Arkhangelsk makes the Northern Sea Route an attractive option serving the ports' ambition of increased traffic towards Europe, North America and South-East Asia.

Across the Arctic

The Northern Sea Route was first established for commercial use in 1935 and since then has been of great importance for the economic development of Russia. To be able to navigate the icy waters, Russian nuclear icebreakers escort the cargo ships, and this is the reason why Arkhangelsk does not consider the freezing waters as something to their disadvantage. Going along the Russian coast exclusively makes the Russian Federation the sole decision-maker of to what extent the route could be used by international shipping companies.

The federal government expressed its desire for more Western companies to use the Russian ports for transit. Yet, some hindrances remain for such a development. Lengthy customs procedures that can be both prolonged and costly are the foremost discouraging reason. However, the Icelandic shipping company Eimskip is an example where persistency does pay off. Some years ago they started to call at Murmansk with varying results but did not give up. They are now successful in discharging cargo at Murmansk every 10th day, and bringing goods back to Europe.

The scenario highlighting the Barents area as an economic centre of importance in the near future is additionally becoming legitimate on account of possible exploration of oil and gas fields on the Russian/Norwegian border and Finland's rich mineral recourses in need of a transport corridor. North-West Russia is mobilising and setting up for intercontinental transport flows with Murmansk and Arkhangelsk serving as hubs. It might also be so that Norwegian ports, like Kirkenes, will take up the hub competition. Thus, the Northern Sea Route may become the main artery in serving intense East-West flows to the advantage of the land bridge connections, even though they are still of importance for both ports as a complementary option route.

What about the environment?

The greening of transport seems to be discussed at the federal government level but has not yet found enough anchoring in the planned investments. Russia will probably implement the concept only if it offers an economic gain. However, after a conducted study trip, the regional government of Arkhangelsk expressed the wish to formalise further collaboration with TransBaltic.

As the next step TransBaltic will visit Kazakhstan, China and India to verify the likelihood of the scenarios and carry on the dialogue on the future geography of freight flows.

Evelina Hansson Malm