

# TransBaltic Extension

## Task 4.4:

### *Corridor Planning for Streamlined Intermodal Flows*

## *Summary Report*



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## 1. Introduction

### 1.1. Preface

WP 4 – “Deployment of Transport Greening Actions” of the TransBaltic Extension project, is dedicated to follow up and update selected MTAP policy actions in the original TransBaltic project – with the aim to strengthen the transport greening dimension of the MTAP through deployment of selected policy actions.

Task 4.4 in the project – a pilot on “Corridor planning for streamlined intermodal flows” – focus has been on deploying the MTAP Policy Action 2 to increase potential for intermodal flows in the corridor connecting the north of Scandinavia with Central Europe. This action is based a study in the TransBaltic project (Task 5.5) assessing that the intermodal transport between Poland and Scandinavia has a large volume potential, and that through providing container block trains intermodal operators are able to offer competitive freight charges. The study also inspired the BGLC project to help launch intermodal transport service in this corridor – here named the “Atlantic to Adriatic Corridor (A2A)”. In this way task 4.4 complements the BGLC work, giving directions for further actions on implementing enhanced corridor planning to optimise a network of intermodal terminals along the corridor. This also included issues like standardising operations making them able to handle intermodal load units (both loaded and empty), stimulate cooperation between terminal operators and give recommendations on operational standards between the terminals regarded as acute challenges for intermodal freight flows along the corridor. The challenges pointed out was to convince stakeholders to modify their business models (from road to rail), to encourage them to cooperate and to identify investments needed to unblock potential for long-range intermodal services.

On this background, the focus of task 4.4 has been to identify relevant public and private stakeholders interested or involved in the intermodal terminal operations along the corridor. This by extending the group of committed associated organisations from BGLC, and by interfacing with WP 4 in the BGLC project come up with a package of corridor greening proposals (ref. MTAP policy action 2). Dialogue with the market stakeholders has therefore been very important as part of the project activities.

### 1.2. Partnership. Interface with other projects.

With Port of Bodø as task leader and only project partner responsible for the task, and a very short project period, it has been very important to involve associated partners who could represent continuity related to earlier projects and interest to secure quality of the outcome. In this respect Karlskrona Municipality and Region Örebro in Sweden has been the most important partners, and involved very closely in the activities throughout the project period. In addition, there has been good support from both public and private organisations in the regions of Pomorskie, Blekinge, Västernorrland and Trøndelag.

Is has also been good dialogues and inputs from representatives of other relevant projects throughout the period in order to use their experience and findings, and avoid overlapping activities. Apart from BGLC, the most relevant projects here was MidNordic Transport Corridor (NECL), Baltic Link Association, East-West TC, and the Baltic–Adriatic Transport Corridor (BATC).

Most of all there has been a very good dialogue and close cooperation with the involved service providers, and in particular with commercial transport operators (rail, road and sea), forwarders, terminal operators, cargo owners, and other commercial enterprises in Poland, Sweden and Norway as the three countries directly involved in this task.

As result of participation in the TransBaltic Extension project, the realisation of the ACE Green corridor has therefore become closer than ever.

## 2. Description of the corridor

### 2.1. Historical review

The idea of a dedicated corridor for transport of seafood, minerals and other industrial cargo between northern Scandinavia and the processing industry and markets in Central Europe has developed over several years – and has been an issue in several international projects and initiatives. The starting point was the “InterBaltic” project (2005-07), (predecessor to the TransBaltic project), also part financed by the BSR Interreg programme. A more “political” outcome of this project was the establishment of a close and lasting cooperation between partners in the regions of Pomorskie, Blekinge and Nordland on the idea of new transport corridor between Poland, Sweden and Norway. These regions have in common that they are situated in the periphery of their respective countries and the main European transport corridors. It was therefore important to get improved access to the Central European markets and by this improved framework conditions for their businesses. Cooperating towards establishing a new intermodal transport solution for seafood and other time critical cargo between the Arctic area and Central and Eastern Europe was regarded a project of common interest that could benefit all three regions – and the environment.

When designing the project, it was regarded important, as far as possible, to avoid capital areas and other congested railway lines and terminals, and to avoid reloading along the route. This as a prerequisite to be able to compete with road transport on time. It should also be noted that instead of the traditional north-south corridors within the Scandinavian countries, this corridor represents a combination of north-south and east-west thinking in a way that has not been seen before.

Originally, the main target group for the project was the extensive salmon industry in Northern Norway, due to the fact that Poland (followed by Russia and France), was the largest market for Norwegian salmon. This cargo demands high transport quality, particularly when it comes to lead times, frequency, regularity and price – at the same time as the industry regards green transport as an important marketing image.

On this background, the project was upon application to EU’s “Marco Polo” programme, in 2011 granted financing to assist start-up of services, but due to very strong competition on price from foreign truckers, it was not possible to attract customers from the seafood industry at that point. As it was not possible to start up services within the time window given, the commitment from Marco Polo had to be turned down – however with recommendation from Marco Polo to come back at a later stage as the project was regarded very well founded and interesting.

Following this, the project had to be somewhat reformulated to focus on other types of cargo that could be the base for the service, and later convince also the seafood industry to use this service.

So, by participating in the TransBaltic Extension project, it has been possible to put some extra effort behind realising the ACE Green project by involving also the private sector quite deeply in the process.



Figur 2-1 The ACE Green Corridor (Gdynia - Tromsø)



## 2.2. Definition of the ACE Green corridor – and the A2A corridor.

The activities in the in the corridor during the period of the TransBaltic Extension has been concentrated to focus on the railway line between Bodø (Norway) and Karlskrona (Sweden) as well as the sea legs between Karlskrona and Gdynia in the south and between Bodø and Tromsø in the North. The total length of the corridor is therefore between Gdynia in the South and Tromsø in the north – and is in this project named **ACE Green** (Arctic Central—European Green Transport Corridor).

The routing for the railway part of ACE Green corridor is:

**Bodø – Hell/Trondheim – Ånge – Örebro/Hallsberg – Alvesta – Karlskrona**

Between Hell/Trondheim and Örebro/ Hallsberg there is an alternative routing via the railway line via Røros and Kongsvinger, which is a parallel line to the main line between Oslo and Trondheim. Using this line will give more flexibility to choose between the alternative routes depending on cargo to and from different areas, to avoid congestions and possible closures, to obtain more suitable slot times etc. This is particularly important in the period when the Meråker Line between Hell and Storlien is to be upgraded and later electrified with possible closure at times.

The defined railway lines in the ACE Green are electrified on the Swedish, but not on the Norwegian side of the border. On the Norwegian side trains are therefore powered by diesel. Decision is made to electrify the line between Hell and the Swedish border on the Meråker line, but this will not be a reality until after 2020.

Between Bodø to Tromsø in the north, there used to be a container line functioning as a continuation of the railway line on the sea, carrying 13 000 containers per year. This line closed in September 2013, as the ship was outdated after servicing this line for 30 years. It is indeed regarded important to start up this service again as soon as possible with a new ship that also can transport semitrailers – and it is therefore natural to regard this as part of the corridor.

From Karlskrona the corridor connects via the sea leg to Gdynia in Poland by the ferry operated by Stena Line. From Gdynia and Gdansk there are several connections to other destinations in Europe.

In the project is has been particular emphasis on connecting the ACE Green to the Baltic-Adriatic corridor, and together these two corridors are in this in this project named the **A2A Corridor** (Arctic to Adriatic), and may be regarded as part of a global corridor.



Figur 2-2 The Arctic to Adriatic Corridor (A2A)

## 2.3. Connections to other corridors and initiatives

### Railway corridor Karlskrona – Bodø

The main idea behind the ACE Green concept is to establish new solutions to improve accessibility for industries in peripheral areas to the main European corridors and markets, and at the same time offer more direct transport between areas that common interest in more efficient internal transport between them. To be successful, it is also important to have good connections to other important corridors. In this respect, the most important hubs / terminals along the railway part are:

**Alvesta.** Rail connections to Gothenburg and Karlskrona (Baltic Link) and to Trelleborg with several ferry connections to ports in Poland and Germany. From Alvesta there are also railway connections via Öresund to the rest of Europe.

**Hallsberg (Örebro).** The most important inland hub in Scandinavia, with rail connections to Gothenburg, Stockholm, Oslo and frequent services to these and several other destinations in Sweden and Central Europe.

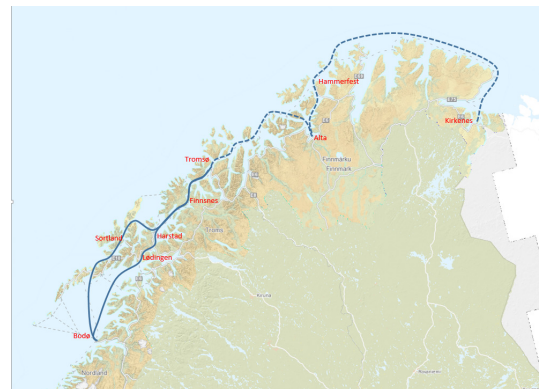
**Ånge (Sundsvall).** Important as hub for connecting cargo flows on rail in Norway and Sweden via Meråkerbanen / Atlantbanan, and connecting ACE Green to Northern Sweden and Finland via the Bothnian Corridor.

**Hell (Trondheim).** Hell is where the railway line Nordlandsbanen from Bodø meets the railway line from Sweden, and also a convenient location for consolidating cargo to and from Mid-Norway (Nordland, Trøndelag, Møre) that has markets in the Baltic Sea Area / Central Europe.



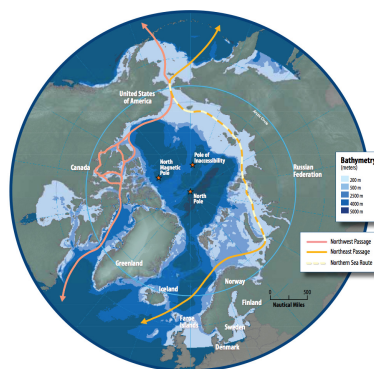
### Connection to the Arctic Area – and the Northern Sea Route to Far East

The ACE Green Corridor is in this project defined as ending in Tromsø, and should ideally be served by a sea route for semi-trailers and containers on a daily basis. This does probably not allow more than one intermediate stop to manage the round-trip with only one ship. Intermediate ports could, however, be served on a less frequent basis allowing alternate calls on different days. There is also potential for extending the service to Hammerfest as important petroleum base in the Arctic, and even to Kirkenes as industrial port – and possible starting point for future intermodal transports via the Northern Sea Route to the Far East.



The map shows possible ports of call for the total route, but a deeper research related to expected cargo from each port, and several other factors are required to decide which ports to serve.

When comes to the Northern Sea Route, traffic is increasing from year to year – but still more or less on a test basis, and in general only wet and dry bulk so far. Its status is therefore somewhat uncertain how interesting it is to consider this, but inputs to the project group indicates that in the further development of ACE Green this should absolutely be planned for. This also seen in the perspective of the further considerable economical development that is expected in the Arctic area in the near future.



*These maps indicate how ACE Green could be connected to the Northern Sea Route*



### 3. Transnational approach and achievements

#### 3.1. Reference to MTAP

It has been important in Task 4.4 in the TransBaltic Extension Project to focus on transnational issues in order to strengthen the greening dimension of the TransBaltic Macro-regional Transport Action Plan (MTAP). The overall objective was to facilitate increasing increase the potential for intermodal cargo flows through enhanced corridor planning. The working method in Task 4.4 was mainly based on extensive use of seminars, workshops and individual meetings and discussions mainly with commercial stakeholders on challenges and possible solutions related to achievement of more efficient and greener transport services.

This has resulted in the following findings related to challenges/bottlenecks, achievements, results and directions for future policy and activities:

#### Challenges:

- ✓ Railway organisations and systems are in general regarded conservative and hooked up in traditional thinking. This indeed applies to national railway companies who earlier had a monopoly situation on operating trains and terminals in their respective countries. It has therefore been difficult to impose new ideas and solutions to make rail transport more efficient and competitive towards road transport. Dialogues with operators in this project has however demonstrated that it is possible to influence on this situation if able to demonstrate realistic alternative solutions that are challenging their current position.
- ✓ Just now, the main challenge related to boost intermodal services in the ACE Green corridor is the unfair competition from truckers from low-cost countries – also about to destroy the Nordic trucking industry. Not paying taxes, toll fees and other costs Nordic truckers have to do, taking on extensive illegal cabotage transport, and in addition causing very high costs related to traffic accidents, the social costs caused by this group is very high. It therefore high time that the authorities in the Nordic countries together take steps to impose better control systems and penalties for illegal operations making it less attractive to use road transport where intermodal transports could be an alternative. This could really boost the shift of cargo transport from road to rail.
- ✓ Cooperation between competitors in the transport business is tradisionally regarded quite unlikely, even if all could benefit from this - not least the cargo owners who could get more frequent services to a lower cost, particularly in peripheral areas. Working directly with stakeholders in the ACE Green project it has been experienced much higher willingness to discuss alternative solutions, also with competitors. Meetings and seminars with Polish transport operators has been very positive in this respect – also with regards to send semitrailers by train to Northern Scandinavia. (Ref. ACE Green Think Tank published by Baltic Transport Journal)



Figur 3-1 Meeting with Polish Transport operators in Port of Gdynia

### 3.2. Main results and findings

- ✓ (Large) cargo owners have a central role in the development of an integrated intermodal transport chain along the ACE Green Corridor. The base volume for services in the ACE Green Corridor is found among large enterprises with commodities like metals, minerals, paper, steel and chemicals as well as consumer goods. It is expected that when services based on these products demonstrates acceptable transport quality, then also the seafood industry will join. However, these cargo owners often only possess transport volumes in one direction.
- ✓ Introducing a “neutral agent”, a Business Corridor Management based on neutral stakeholders in each Region (e.g. Regional Transport service providers), could act as a Joint Consortium and as such be a platform for the development and marketing of multimodal transports along the corridor. Based on regional market knowledge (know-how), knowledge about efficient terminal service as well as collection and distribution services this consortium could act as a facilitator in order to stimulate change from a road paradigm towards a multimodal paradigm along the ACE Green Corridor. The potential saving is 10-40 % and the CO2 emissions could be reduced by 70-75 %. Thus, the Business Corridor Management could not function and will not be established unless a general Governance structure, a Public Corridor Management Structure, is being established prior the Business Corridor Management.
- ✓ For transnational intermodal corridors, particular in areas with small and dispersed freight flows, it seems vital when establishing new services to form a (commercial) corridor management company taking care of organizing the service and offering fixed and predictable prices for terminal to terminal transports – available for users on equal terms like a ferry or toll road. Such company could/ should be eligible for funding related to development of new marginal services for CEF or other international financing instruments (when part of a transnational service).
- ✓ A scattered number of independent and none-coordinated terminal operators results in a sub-optimized situation and in general a weak market position. Extension of the market portfolio from sole terminal operator towards offering a joint network solution based on regional know-how and regional adapted last mile service would improve the market position – and particularly in regions characterized by small and dispersed freight flows.
- ✓ A more suitable and competitive regional portfolio could include:
  1. Introduction of a standardized service supply (additional services) for the terminals along the corridor (harmonization), and development
  2. Identification and implementation of terminal niche services, e.g. the proposed multimodal gateway concept.
  3. Improving last mile terminal to/from consignor/consignee by;
    - Co-location of multimodal terminal and Consolidation terminal,
    - Analysis, and potential implementation, of European Modular System or High-Capacity Transports are measures to improve collection and distribution around a multimodal terminal (radius up to 150 km in accordance with EU Intermodal Directive). Introduction of more efficient collection and distribution could save up to 10-30 % in the transports costs and 20-50 % of the emissions of carbon dioxide.
- ✓ The ports need to pay more attention to its respective hinterland – in the business plan called shipping industries going inland. Increasing vessel sizes and concentration towards fewer ports call for efficient hinterland transports. Marketing and sales by a customer oriented ICT-interface (as Stena Line) a customer will have only one contact point for the entire service – a prerequisite for success on the market. No customer is willing to negotiate with all the actors involved in the ACE Green Corridor to get a trailer e.g. from Bodø to Gdynia.
- ✓ The intermodal transport service need to be tailored to the business and stepwise introduced based on the existing service supply. A highly demanding issue, particularly on the Nordlandsbanen with a large volume spread along a 700 km long geographical area (small and dispersed freight flows). Network- and system development is needed for the future service to be a fully-fledged intermodal transport adapted for time critical consumer goods and temperature sensitive shipments in both northbound and southbound direction. The intermodal service provider (here represented by the neutral agent consortium) need public support to develop this vision and to bridge the transport operators unwillingness to further



develop a service beyond the standard of today, i.e. towards a future transport system for time and temperature sensitive shipments. Designing a time/cost efficient transport system for farmed fish, seafood and consumer goods will, if implemented, be a self-marketing system (Bärthel and Woxenius, 2003) and will get significantly publicity in the European arena.

- ✓ For rail and sea transports services today powered by diesel, use of LNG as fuel is in general a greener alternative – also with reference to the recently signed agreement on reducing emissions in EU and EEA. LNG as fuel in transport in general will probably also be economical both in a short term and long term perspective – however to some degree depending on political decisions and market reactions to this. It is particularly interesting to establish full-scale pilots on LNG as fuel for trains in the ACE Green Corridor. “Nordlandsbanen” in Norway and “Inlandsbanan” in Sweden are relevant lines to try this out on long transports, while operators in Poland are interested to try out LNG locomotives in shunting yards, given reasonable access to supply of LNG.
- ✓ For transnational intermodal corridors, particular in areas with low volumes to be transported, it seems most efficient when establishing new services to form a (commercial) corridor management company taking care of organising the service and offering fixed and predictable prices for terminal to terminal transports – available for users on equal terms like a ferry or toll road. Such company could/ should be eligible for funding related to development of new marginal services for CEF or other international financing instruments (when part of a transnational service).
- ✓ For an intermodal service to be attractive for most customers (cargo owners) in the ACE Green corridor a service needs to be available at least 3 days per week – also for the sea leg between Bodø and Tromsø. It also needs to have very high degree of punctuality and reliability – and able to compete with road transport on time and price.
- ✓ For most purposes, the most relevant load carriers in the ACE Green corridor seems to be liftable semi-trailers due to the necessity of road transport normally in both ends for the logistic chain. For transport of seafood they need to be refrigerated, but able to take commodities or other types of cargo in the opposite direction.

### 3.3. Policy actions

Working with Task 4.4, it has come more and more obvious that there is a potential for developing intermodal transports deviating from the traditional thinking that all cargo has to go through one national hub – particularly in Norway. The idea of ACE Green represents a new way of thinking that may have a considerable greening effect. However, as a new and different solution, it still takes some effort to make it the natural choice for cargo owners and transporters. The public support the project is so far mainly from local and regional bodies, but it is also important to get the national transport authorities involved.

Although trade between the Baltic Sea area and Eastern and Central Europe and Northern Scandinavia is growing significantly, the total freight flows are still rather small in the north, and split up between several actors. Therefore it seems essential to get some public support to start up services. EU's Connecting Europe Facility (CEF) could be an efficient instrument here, also including support for the sea leg between Bodø and Tromsø in the north as part of an international corridor.

On this background, it is need for political attention and lobbying activities, both related to general policies, and policies directly related to the corridor in favour of support to developing the ACE Green idea.

Examples of general policy actions to boost intermodal (cross-border) transports are:

- ✓ Just now, the most important action in favour of intermodal transport is probably increased control and reactions to violations related of rules related to road transports, including illegal cabotage, standard of equipment, qualification of drivers, failure to pay road toll fees, taxes, fines etc. This to reduce the present unfair competition between trucks and drivers from different countries as well as between road and rail transport.
- ✓ Harmonisation of working regulations for train drivers and technical and administrative systems for train operators in Sweden and Norway to allow Swedish trains to operate regularly in Norway – and opposite
- ✓ Simplification of procedures for trains and train drivers to pass national borders.

- ✓ Actions in support of better general framework conditions for intermodal transport (rail and sea) as compared to road transport.

Proposals directly relevant for ACE Green:

- ✓ Establishing a corridor management company to organise an efficient and a streamlined intermodal service available on equal terms for customers. This is regarded essential to work out solutions involving 3 modes of transport and 3 countries, and probably also a prerequisite to get financial support if needed for a start-up period.
- ✓ Influencing the possibility to get financial support from EU's Connection Europe Facility (CEF) or other financial instruments to support start up of services. This is important for the Northern part of ACE Green, with particular focus on re-establishing the intermodal sea-route between Bodø and Tromsø/Alta as part of an intermodal transport corridor.
- ✓ General upgrading of the infrastructure along the corridor (capacity, electrification, signaling system and crossing loops) to increase transport efficiency and decrease environmental impact.
- ✓ Solutions for increasing shunting and handling capacity at terminals where this could be a problem or bottleneck as result of increased traffic.

Country specific actions, Norway:

- ✓ Upgrading of the none-electrified lines (Nordlands-, Røros-, Solør- and Meråkerbanen), including signaling and safety system, electrification or other environment friendly energy sources to power locomotives (e.g. LNG).
- ✓ Influence on establishing an intermodal terminal near the crossing point between Nordlandsbanen and Meråkerbanen (the Nordland and Meråker lines) north of Trondheim – to avoid time-consuming transport through the Trondheim area for cargo to and from the Baltic Sea area via the Meråker line. This is also interesting related to possible increased export and import to and from the Baltic Sea area following the introduction of SECA 1. January 2015.
- ✓ Introduction of allocated freight time table slots from Trondheim to Steinkjer to improve transit time and time reliability on the Nordland line. Suggestion is one slot time every second hour.

Country specific actions, Sweden:

- ✓ Establishing triangular track Gullberna/Karlskrona
- ✓ Solve capacity problems Växjö – Alvesta and at the shunting yard in Alvesta
- ✓ Terminal design (layout) including trunk lines to the terminal in Hallsberg.
- ✓ Increasing capacity by constructing more passing loops between Borås – Göteborg – Öxnered and Kristinehamn – Karlstad – Kil.

## 4. Project activities - description

### 4.1. Overview

This chapter describes a summary of task 4.4 activities during the project period.

#### **Planned activities and output**

In the TransBaltic Extension project, Port of Bodø as project partner was assigned responsibility to execute Task 4.4 – Corridor planning for streamlined intermodal flows.

Proposed activities of Task 4.4 was in the project description indicated as follows:

- ✓ Activities (from application) focussing on the link between BGLC and TransBaltic Extension:
- ✓ Interface with BGLC to secure communication and transfer of relevant data, information and network from BGLC project (and other relevant projects) to TransBaltic Extension
- ✓ Identify public and private stakeholders interested / involved in the intermodal terminal operations along the corridor, in communication with the BGLC project
- ✓ Dialogue with the market stakeholders to boost intermodal services in the A2A corridor
- ✓ Interface with BGLC, WP4 to come up with a package of corridor greening (ref MTAP policy action 2)
- ✓ Analyse strategies and development approaches for intermodal terminals and hubs, identify upgrading needs (e.g. organisation, standardisation and investments in rolling infrastructure) to ensure better efficiency, and reliability towards customers – and selected cases to analyse effects of possible investments
- ✓ Enhance corridor planning in order to optimise a network of intermodal terminals along the corridor, standardise their operations and make them able to handle intermodal load units (both loaded and empty).
- ✓ Consider/propose corridor management organisation for the corridor

Expected outputs of task 4.4 was defined as:

1. Manual for administration & standardisation of load carriers (containers, incl. return of empty containers) and equipment in intermodal terminals along the A2A corridor to increase efficiency and reduce costs (optimised performance)
2. Detailed business plan to boost intermodal services in the A2A corridor, with elements of corridor management, approaches (plans/budgets) to investments in intermodal terminals and proposals for cooperation agreements between the involved partners)

#### **Organisation**

Port of Bodø as partner in the project contracted Per Strømhaug (Strømhaug AS) as Task manager to coordinate all activities, while Fredrik Bärthel was (WSP Group) was engaged as service provider with main responsibility to produce the described outputs (business plan and terminal analysis)

To secure interface with other relevant projects (BGLC, NECLA, Baltic Link etc.), a “project group” has was set up consisting of Leif R Peterson (Blekinge Municipality / Baltic Link Association), Fabian Ilgner (Region Örebro) and Jon L Gjemble (El-Banen, NECL). This group has been working in close contact with the contracted task manager and consultant. Also Hans Dunder (Municipality of Sundsvall) and Marcin Wolec (Protrans, Gdynia) has from time to time also participated in this group.

Martin Ytander (ScanLog) and Robert Jakobsen (Meyership) has also contributed considerably to the activities of the project as commercial experts.

The group have had physical meetings or telemeetings 2 – 4 times pr. month during the period, and the members of the group have also participated in other meetings and a great number of individual contacts and meetings with stakeholders mainly in Poland, Sweden and Norway.



## 4.2. Prioritised tasks

### *Transfer of information, lessons learned and further joint activities with the BGLC project*

Following a “preparation” period, Task 4.4 activities in the TransBaltic Extension project really started 1 November 2013, with first priority to cooperate with, and participate in BGLC project activities to secure continuity between the BGLC and TransBaltic Extension projects – and to build up a network of former and new stakeholders.

18 November 2013, Vectura (service provider for the BGLC project) organised a first meeting related to the cooperation with the BGLC project. The meeting took place at Vectura’s office in Solna – with participants:

Per Strømhaug (Port of Bodø), Leif R Pettersson (Region Blekinge), Jon L Gjemble (TransLog / Elbanen AS), Michael Malmquist, Nicklas Hansson and Fredrik Bärthel (Vectura)

Main issue on the agenda was the transition between these two projects, including transfer of information and lessons learned. Joint meetings and practicalities related to project activities and cooperation in the transition period until the BGLC was ending was agreed. A set of upcoming activities and actions was discussed and agreed.

### *Initial meetings with stakeholders*

A range of meetings and workshops between the whole, or parts of the project group and relevant stakeholders has been organised – some of the more important here:

17 December 2013, meeting at Radisson Hotel, Trondheim airport. Main issues here was discussion of electrification and upgrading of the Meråker railway line as part of the ACE Green, possible cargo volumes and other local and regional issues.

Prospects related to electrification and other technical issues related to the Meråker and Nordland lines was discussed in a separate meeting with Tor Nicolaisen of the Norwegian Rail Administration (Jernbaneverket). This discussion also included possible cooperation and joint financing of activities related to a study, and may be later full scale pilot project, on LNG as fuel for railway locomotives. This is particularly relevant for the Nordland line where the prospects for electrification are next to non-existing.

21 January 2014, meeting with local stakeholders in Mosjøen. At this meeting, also representatives from CargoNet was participating. Main issues was cargo flows and capacity on railway line and terminal, possible further cooperation with CargoNet and the Port of Mosjøen.

In addition, there was a guided tour of the Mosjøen port with information about the port and terminals.

22. January 2014, a meeting at the Meyership office in Mo. Manager Leif Sagen and Robert Jacobsen participating from the company. Also Per Jakobsen, area manager for Schenker, Northern Norway participated.

Also here the situation related to local and regional cargo volumes and terminal situation was discussed, including an informative tour of the port with terminal and warehouses.

28 January 2014, the work group was represented at the “Wider MoS” Work Shop in Gdynia. The aim of the conference was to: explain the WiderMos project in the new TEN-T framework, to describe the Corridor Management Platform leading principles, to collect the needs of the Polish maritime and logistic operators in terms of interoperability of systems and new logistic services, and to explore the opportunities for future EU funded projects.

The workshop was very informative and useful in order to extend the network of stakeholders.

7 February, meeting in Solna with focus on summing up the situation related to stakeholders already active, and who are the most important stakeholders still to invite to in the activities ahead.

Robert Jacobsen (Meyership) and Martin Ytander (ScanLog) will continue their work on collection volumes, O/D structure, quality demands, load-carriers and other specifications for selected large cargo owners in the project area.



### Work Shop Gothenburg

A work shop was organised by WSP in Göteborg 19 May 2014 with 12 participants of which 8 was from private sector (mainly terminals), 2 from the public sector and 2 consultants attached to the project.

The main themes discussed on the seminar was the introduction of co-operation between terminals as a foundation for a corridor management, pros and cons with the introduction of a transport service along the ACE Green corridor, the introduction of gateway functions along the corridor and the introduction of high-capacity rail service as integration between rail and sea transport.

The was mainly related to the situation in Sweden, with the following conclusions:

- ✓ The terminals have in Sweden a weak market position, since they are not controlling the load units or shipments, i.e. only subcontracted for terminal handling. In order to strengthen their position they need to extend the service supplied to the market with either pre- and end haulage and/or additional services.
- ✓ The infrastructure bottlenecks in Sweden affect the competitiveness of intermodal transports – particularly along the single-track infrastructure.
- ✓ Lack of co-operation between terminals affect the competitiveness of the services offered and it affects the profitability in the business. Lack of co-operation also affects the introduction of standardised administration and implementation of ICT-support systems.
- ✓ The opening up of the market for “low-cost” drivers from Eastern Central Europe and the Baltic Countries have put a pressure on the transport prices from 1.2 Euro per to 0,7 Euro per km for a EU18,75 road train. Harmonisation of working conditions for all drivers was seen as a first step to improve social sustainability in the transport branch.
- ✓ Intermodal transport should not be operated in the wagon load system; rather as block trains with fewer origins and destinations. A wide spread network increases production costs by 15 % (Woxenius and Bärthel, 2008) and makes the lead time non-competitive to road transports.
- ✓ Proposals to introduce logistics gateways where domestic high-capacity links could meet the import flows of load units where discussed and also seen as a competitive market niche for rail transport. Such gateways were proposed in Alvesta, Eskilstuna and Hallsberg.
- ✓ Introduction of high-capacity load units for integrated rail-sea links where proposed for industrial products as paper, metals, sawn woods, minerals and other products requiring low transport costs with decent time requirements. These HCT-rail and sea units could lower the transport costs in frequent flows up to 20 % related to a road transport.
- ✓ Road tolls where discussed; criticised by road transport companies, however with a final conclusion it could be one tool to improve environmental and social sustainability in the transport branch.



**Figure 4-1 HCT Rail transport (load unit) in the Port of Göteborg.** These units could be loaded onto dedicated rail wagons, is in the port transhipped by using Straddle carriers and loaded onto the ships. The loading efficiency per load unit meter is up to 80 % more

### Conference Bodø

The main event of Task 4.4, was a joint conference for the TransBaltic Extension project and the North Sea project



**Thu 12. June 2014**

#### North Sea / Baltic Sea Conference:

#### *Opportunities related to Transport in a North European Perspective*

0830-0900	Morning coffee
0900-0915	Opening of Conference <i>Ingvar Mathisen – Port Director, Port of Bodø</i>
0915-0940	The High North in an European Perspective <i>Pawel Stelmazczyk – EC Special Envoy for European Mobility Networks, DG MOVE</i>
0940-1000	Perspectives on transport as seen from the Export Industry <i>Per Jacobsen – Confederation of Norwegian Enterprises, Robert Jakobsen – Meyership AS</i>
1000-1020	Northern Sea Route – New opportunities for Northern Europe? <i>Oddgeir Danielsen – Director, Northern Dimension Partnership for Transport and Logistics</i>
1020-1040	Contact break
1040-1100	SECA – expected effects for future transports in the North Sea and Baltic Sea regions Agent-based analysis of sulphur directive – case studies. <i>Johan Holmgren – Blekinge Institute of Technology</i>
1100-1120	Smart, Green and Integrated Transport – New opportunities for EU financing <i>Bernd Seidel – EU-Info Germany</i>
1120-1220	Introduction to the “LO-PINOD” project Diversification of North Sea ports <i>Laurienne Tibbles - Institute for Sustainability, London</i> Focus on extending North Sea routes to the Baltic Sea region <i>Wim Stubbe – Port of Ostend</i>
1220-1330	Lunch on site
1330-1410	Introduction to the “TransBaltic Extension” project ACE Green – Pilots on green transport between the Arctic area and Central Europe Focus on streamlined intermodal transports (efficiency of terminals, corridor management, etc.) <i>Fredrik Bärthel – WSP Group, Mathias Roos – Region Blekinge</i> <i>Three Links – make a difference</i> <i>Christer Kjellberg – Stena Line Scandinavia AB (TBC),</i>
1410-1500	INTERVENTIONS (å max 5 minutes):
1500-1545	Panel debate / Discussion
1445-1600	Summing up – closing of conference
1600-1900	<i>Facilities provided for B2B-talks, group meetings etc. for participants who will use the opportunity to develop further cooperation while in Bodø</i>
1930-0000	Joint evening event with dinner



### **Results of initial meetings – shift of focus**

In addition to the initial meetings referred to above, there was several individual meetings with both public and commercial stakeholders discussing greening measures and activities related to boost intermodal transport. As result of discussions after these meetings, the overall situation is summed up as follows:

The potential for a considerable shift from road transport to intermodal solutions seems very large. Seafood industry is still pending, but will come when transport is up and going and demonstrating reliability, frequency and price. In the meantime it is identified enough industrial cargo to start up at least one train pr. week in the full length of the corridor, and possibly 2 – 3 trains in the most central part (e.g. Trondheim – Hallsberg/ Alvesta/ Karlskrona).

For volumes of this scope, capacity and efficiency of terminals and need for investments in infrastructure, is not a critical factor for the nearest future. It is of much higher importance to motivate cargo owners and forwarders to take interest in the corridor – and start using it.

Most important here is to be able to compete on lead time compared to road transport. This makes it essential to avoid congested railway lines and terminals, and there is also a great potential for improvement by negotiating favourable slot times and priorities to avoid waiting at stations and terminals along the corridor.

When it comes to load carriers in this corridor, 25 feet containers and semitrailers will in general cover the needs of the industry. For fresh seafood (salmon), refrigerated semitrailers are today used close up to 100 %, and are so far regarded the most efficient load carriers taking into account the need for road transport in both ends of the logistic chain. The semitrailers must be liftable for reloading on and off trains, and even refrigerated trailers must be able to transport other types of cargo in the northbound direction.

To compete on price, empty load carriers in one or the other direction should be avoided. It has here been observed that while trucks/ trailers with salmon from the north often are going back north empty, trucks from Poland taking furniture and consumer goods north have problems to find return cargo back south. This calls for special attention to try to establish cooperation between Polish and Norwegian / Swedish forwarders and transporters to cooperate.

Cooperation is also an important key word here, but somewhat complicated due to the fact the ACE Green corridor is covering 3 different transport modes through 3 countries. This is, particularly in Norway strengthened by the fact that both railway operators and forwarders do still not see a national hub for all cargo as the best solution. This means longer lead times for customers (cargo owners) as all the cargo has to go via Oslo for reloading, with unnecessary delay as result. The common argument from the transport industry in this connection is that there is not enough cargo for other solutions to be viable, an argument will be valid until someone manages to establish alternative solutions.

This led to the following “mid-term” conclusion regarding priorities of tasks for the remaining project period:

- ✓ Proposed output “Manual for Administration and Standardisation of Load Carriers” is not relevant for ACE Green at this moment, and will not have any greening effect until there is quite large numbers of trailers and containers in use. By the time volumes are large enough to make this is relevant, new equipment and technologies may make any result at that stage outdated.
- ✓ As an alternative, these project resources could be used much better on establishing meeting places for stakeholders to get more direct and up to date inputs from the industry. In particular, it is important with individual meetings with the commercial operators who in such setting probably will give more important and in depth inputs of use for the further planning. Such meeting could also aim at convincing commercial operators to see the advantages of cooperation with others on certain issues.
- ✓ Indeed, the most important output of task 4.4 will be the “Business plan” that will be an important tool to convince and market to support the solution. Already there is indications from stakeholders on starting up services in parts of the corridor quite soon. However, to coordinate activities along the whole corridor including the sea legs to get a streamlined service there is no obvious operator. The Business Plan therefore need to focus on establishing some form of corridor management.
- ✓ Finally, as a concrete greening action it has been noted growing interest for LNG as use for fuel in transport in general – but particularly for railway locomotives. Therefore is should also be found room for some form of pre-study to check out if this could be relevant for a later project.

### 4.3. Business meetings with commercial stakeholders.

Taking the consequences of prioritising contact with commercial stakeholders, there has been a great number of contacts with the commercial partners in the involved countries. This includes a number of seminars and workshops with participation from commercial companies, but also more than 50 individual meetings with representatives from the transport industry.

In order to strengthen the results and to continue working with the business contacts in Norway and Poland five days of meetings were arranged by the project. The idea was to increase projects business interfaces with the public and private contacts in both countries.



Some results of these discussions:

- ✓ The poor business contacts and trust between Polish and Scandinavian actors are clearly shown in these discussions. E.g. the Polish actors prefer to start their own business in Scandinavia using Polish hauliers rather than co-operation with regional or local hauliers. Without any business contacts the struggle for return flows affects the transport prices and the profitability in the road transport branch. On the other side, Polish hauliers are interested in better business contacts with Scandinavia. They have also proposed efficient transport solutions within Poland – and between Poland and neighbouring countries in Central and Eastern Europe.
- ✓ The business councils were interested in support for the marketing of a new service to Polish and Scandinavian actors in the seafood industry. However, due to previous attempts the need for action is pronounced.
- ✓ Polish actors have been approached by the Three Links, however claim that the lead time and cost efficiency is not competitive towards road transport between Karlskrona and Norway. The transport price from middle Poland to Oslo is 1800 - 2000 Euro, which is regarded rather low in the business. Consequently, if the actors could get help with arranging transport operations in Norway with one domestic leg and one back flow) – all intermodal – a transfer to intermodal could be of interest. However, only and just only if the transit time from Karlskrona to Oslo would decrease to less than 24 hours.
- ✓ For the northbound freight flow Oslo is and will be a central hub for distribution in Norway, however southbound all actors agree upon by-passing Oslo.
- ✓ A large freight forwarder shows strong interest to use intermodal transport from Nordland and Trøndelag in the direction Southern Sweden and Denmark. A competitive solution in this relation could increase the share of intermodal transport to/from Trøndelag significantly from 10 % upwards – if the lead time and the price would be competitive to road transport. The company argues that a direct connection Trøndelag to Southern Sweden would be of great interest – by-passing the Alnabru terminal southbound (but not northbound).
- ✓ The terminal in Hallsberg is not designed for efficient intermodal operations. The lead time to pass both the marshalling yard in Hallsberg and the terminal in Hallsberg disqualifies intermodal transport to road transport. In the seminar in Göteborg (May 19<sup>th</sup>) Örebro/ Hallsberg was proposed as a gateway; however there are several bottlenecks to be solved in order to be competitive and attractive enough for this. Consequently, the Norwegian freight forwarders propose Alvesta as transshipment point (discussions in Oslo October 20-21, 2014) and consequently a transport service via Göteborg and thus by-passing Hallsberg/ Örebro.
- ✓ The proposed organisation for business contacts using TBE project as facilitators and neutral agent is accepted by a majority of the transport actors.
- ✓ The service proposed by the project is also accepted by a majority of the transport actors due to its operational characteristics. Consequently, the business model and the offer is recommended to be commercialised, including development of a customer oriented ICT-interface (as Stena Line). As a customer you have one contact point for the entire service.

To be noted: The interest for the project ACEGREEN is far higher in Norway and Poland than in Sweden. Anyway, two major companies have shown interest in the development of an integrated intermodal service in the last part of the project and are now a part of the TBE consortium.

# TransBaltic Extension Seminar: ACE – Green

## Artic - Central Europe Green Transport corridor

### Purpose:

- To present intermodal and rail service solutions along the corridors from the Scandinavian Peninsula to the European Continent
- To identify measures to improve and integrate these transport networks in order
- To increase the service level for the private sector along these corridors

### Agenda

Örebro Castle, 30 September 2014

September 29 th 20.00 -		Optional
Get together		
September 30 th		
08.30-12.00	Site visit Logistics Region Örebro	
12.00-13.00	Lunch	
13.00-13.20	Welcome to The Heart of Sweden - Scandinavias intermodal hub	Andreas Svahn, Mayor of Hallsberg Fabian Ilgner, Regionförbundet Örebro
13.20-13.40	Introduction TransBaltic Extension project & ACE Green Corridor	Wiktor Szydarowski, TransBaltic Extension Per Strömhaug, Port of Bodø
13.40-14.00	ACE Green in a global perspective	Oddgeir Danielsen, NDPTL (tbc)
14.00-14.20	ACE Green - Introducing a new transport service between Northern Norway and Central Europe	Robert Jakobsen, Meyership Fredrik Bärthel, WSP
14.20-14.40	Three Links – combined rail & sea transports to and from Gdynia	Christer Kjellberg, Stena Line
14.40-15.10	Perspective: ACE Green linking Scandinavia with Central and Southeastern Europe	Marek Eron, Erontrans NN, Bring Frigo
15.10-15.30	New Swedish Domestic Intermodal Freight Solutions	Tommy Jonsson, TM Rail
15.30-15.50	Coffee break	
15.50-16.10	ScanLog - a rail freight forwarder presenting existing service supply in the corridor Hallsberg - Antwerpen	Martin Ylander, ScanLog
16.10-16.30	The forest industry's sustainable solutions for transports to Central Europe	Fredrik Öjdemark, Scandifibre Logistics
16.30-16.50	Perspective of the fishing industry on ACE Green	NN, Norwegian Seafood Council
16.50-17.10	Perspective of a consumer goods retailer on ACE Green	NN
17.10-17.30	Lessons from European Rail Corridor 3	Gerhard Troche, European Commission (tbc)
17.30-18.00	Panel Discussion	
18.00-18.10	Summary and conclusion	
18.30	Dinner	Optional

Limited number of participants!

[Click on this link to sign up](#)

Deadline 22 sept 2014!





***This chapter is a summary of the report “Business plan to boost intermodal services in the ACE Green corridor” – a separate report as output from the TransBaltic Extension project***

## 5. Business Plan

This idea of an intermodal train in the ACEGREEN corridor is a more or less continuation since the previous ACE Green project from 2010-2011. The idea was supported by the implementation of the Three Links concept in 2014 and in order to develop and implement a sustainable transport system we have used a business plan based on a demand based system model. The system model is based on the system designer needs to develop and implement the service based two basic conditions or objectives. The two objectives are not independent.

- ✓ To design a transportation service that exploits a significant and sustainable competitive advantage (SHKF). The significant and sustainable competitive advantage could, according to Jensen (2008), be based on a combination of three sub-strategies (1) cost advantage, (2) differentiation, and (3) focusing.
- ✓ To design a transportation service with the ability to penetrate the market (market entry ability - MEA). The concept concerns the system's integration (with the present logistics and transport systems) and its communicability (marketing abilities).

The design of the transport system focuses on the Core of Intermodal Transport, i.e. from being a competitor to road transport intermodal transport has become a complement to road.

A demand based analysis (almost) always starts with a market analysis and this analysis indicates an interest to develop an integrated service in the following links:

- ✓ Nordland – Trøndelag – Southern Sweden/Denmark/Western Europe – northbound via Oslo and southbound directly (mainly industrial products and consumer goods in an intermodal transport connection).
- ✓ Nordland – Trøndelag –Hallsberg – Mälardalen for industrial products (semi-finished) and recycling products
- ✓ Nordland – Trøndelag –Poland/Eastern Central Europe for industrial products and in the future for farmed fish. By-passing Oslo will be a necessity in order to improve lead time for farmed fish to be competitive with road transport.
- ✓ Nordland – Trøndelag – Region of Jönköping for consumer goods northbound and industrial products southbound
- ✓ Nordland – Trøndelag – Oslo – increased capacity to improve transport accessibility for domestic transport within Norway.

The transport volume identified ranges from 200 000 – 300 000 tons (initially) representing a volume for 3-4 departure per week.

- ✓ In the northbound direction there are large flows of consumer goods and recycling products from the Region Småland and Region Mälardalen towards Trøndelag and Nordland. These freight flows form the foundation for the development of the intermodal network since these freight flows pay 70 % of the round trip. The identified freight volume is 100 000 – 110 000 tons per year. These volumes seem to be enough for the re-implementation of a direct train from Hallsberg – Trøndelag 3-4 times a week.
- ✓ Receiving areas are primarily Trondheim, Mosjøen and Mo i Rana. The transported volumes comprises of raw material to the aluminium production plant in Mosjøen and steel plant in Mo i Rana and sorted industrial waste to paper mills to the paper mills in Trøndelag. All these companies are asking for the re-implementation of the wagon load service once closed by Cargo Net in 2003. However, the re-establishment of wagon loads and competition on the Norwegian railway network is hampered by working regulations for foreign workers (as Swedes).
- ✓ The transport volumes along this corridor from Middle Sweden to Trøndelag might increase in the future. Because there is a continuous centralization of central warehouse / distribution centre in Scandinavia. Regional warehouses have gradually been replaced with national and a national by Scandinavian central warehouse. Centralization is a clear trend, and it indicates that the regions that the Swedish west coast and Mälardalen will become increasingly important for the Scandinavian logistics. What guides the design of logistics networks is not only the location of central warehouses but also controlling the flow of goods / resources in transporters and the freight forwarders' transport network

- ✓ Further south there is large transport volumes between East Central Europe and the Scandinavian Peninsula and these are along the trade continually increasing. Transportation is either by the ferry link Gdynia - Karlskrona or via Swinoujscie – Ystad. Choice of transport routes is done based on logistic and transport related parameters.
- ✓ In the southbound direction there are one main category of products; base industry products as metal and steel products and paper transported from the production areas in Nordland and Trøndelag to the Swedish and markets of Central Europe. In all these base volume comprises 150 000 tons per year or enough for daily departures. From Nordland and Trøndelag are also large volumes of RDF waste transported from region.

The need for an intermodal service along the corridor of the cost, lead time and time reliability equals the road transport. To be implemented (considered) a transport frequency of three times a week is a prerequisite – for the freight forwarders to at least consider the solution. Consequently there is need for a bundling of shipments along the corridor in order to achieve capacity utilization enough for profitability during the vital implementation. ‘

The interest for a new service is of particular interest in Norway and particularity regarding the re-establishment of wagonload services.. The latter development is already being re-established through co-operation between rail operators in Sweden and Norway – however not north of Trøndelag. Consequently, among shipper and freight forwarders there is an interest in the development of a combined intermodal and rail (wagonload) to the hub Hallsberg.

The implementation will in accordance with the system design be based on consumer goods and industrial cargo, and not on farmed fish and seafood. The proposed service supply will be summed up in a joint marketing portfolio, which is based on the following characteristics:

- ✓ Scope of service
- ✓ O/D relations
- ✓ Transport capacity
- ✓ Price – lead time
- ✓ Responsibility and contractual terms for transport resources and terminal handling (subcontractors or leasing companies).
- ✓ Other contractual terms

Cargo owners have a central role in the development of an integrated intermodal transport chain along the ACE Green Corridor. The base volume for such a service is found among large enterprises within the consignment groups; metals, minerals, paper, steel and chemicals as well as consumer goods and in the future the farmed fish industry; however these actors often only possesses transport volumes in one direction. By using the neutral agent, a local/regional intermodal transport service provider, for marketing, collection and distribution the whole supply chain could be optimized, offering potential savings by using multimodal transport by 10-40 %. For SME the potential has not been evaluated due to the focus on large enterprises. For actors committing themselves to intermodal transport a potential saving of 70-75 % of the CO2 could be calculated.

There is diverging interest for the establishment of rail transport depending on actors. During the project we have identified a certain interest for the development of intermodal transport among the freight forwarding companies as Bring and DB Schenker, however few is willing to make commitments agreements) and the volume leap to fill one train is for most freight forwarders very large and overwhelming. Consequently, in order to balance the market risks the introduction of a new service need to be based on the present service supply in the corridor, i.e. via Alnabru. There is a strong inertia if someone would like to break this structure, except for the FTL.

The terminal operators in Scandinavia have in general a weak market position, unless they market and offer pre and end haulage. A combined terminal and regional haulier organization is suggested. For the transport corridor the regional supply is integrated in a two-step approach to increase corridor competitiveness; (1) introduction of a standardized service supply (additional services) for the terminals along the corridor (harmonization) and (2) identification of niche services (as the proposed multimodal gateway concept). Improving last mile terminal to/from consignor/consignee by using a three step measure; (1) location of terminal, (2) co-operation at the terminal and (3) introduction of more efficient collection and distribution could save up to 10-30 % in the transports costs and 20-50 % of the emissions of carbon dioxide.

The ports should pay more attention to its respective hinterland – in the business plan called Shipping industries going inland. Increasing vessel sizes and concentration towards fewer ports call for efficient hinterland transports. Marketing and sales by a customer oriented ICT-interface (as Stena Line) – as a customer you have one contact point for the entire service is a prerequisite for success on the market. None of the customers are willing to negotiate with all the actors involved in the ACE Green Corridor to get a trailer from Bodø to Gdynia.

In this development, the project acts as a neutral agent (facilitator) to promote the intermodal solution and hence support both marketing activities as well as the development of an efficient transport supply. Thus the project will in co-operation with the core stakeholders contact the target customers and jointly with the core stakeholders arrange business-to-business meeting between the core stakeholders (denoted transport operators) in the figure below and the shippers (consignor, consignee and freight forwarder) in order to stimulate a change in modal and transport choice.

The intermodal transport service need to be tailored to the business and stepwise introduced based on the existing service supply. However, the long-term target need to be a fully-fledged intermodal transport link adapted for time critical consumer goods and temperature sensitive shipments in both northbound and southbound direction. The transport operators need public support to develop this vision and to bridge the transport operators unwillingness to further develop a service beyond the standard of today, i.e. towards a future transport system for time and temperature sensitive shipments. Competitive (time and cost) with road transports for farmed fish and consumer goods and with a market entry ability as significantly higher environmental and social sustainability.

## 6. Corridor management

Working with Task 4.4, it has become obvious that there are several needs regarding development and implementation along the ACE Green Corridor – particularly regarding development of cost-efficient reliable multimodal and intermodal transport solutions integrating the transport modes rail and sea. It has also become evident that the ACE Green Corridor however possesses a large potential, not considered as a central corridor neither in the strategic planning conducted by the Transport Administrations nor the Public transport operators. THE ACE Green Corridor deviates from the traditional thinking in the business (immature corridor) and hence to promote the development of such corridor we have identified a need to establish a formal public corridor management structure as a foundation and platform for organisation of public and private actors/stakeholders along the transport corridor – with the general aim to develop the ACE Green Corridor towards business economic, environmental and social sustainability.

The reason for suggestion a public body, is not only the immaturity, but also the knowledge that not of the transport operators are willing to lift one finger to change behaviour without support from the public side or strong commitments from the cargo owners or freight forwarders. There is strong need in the fragmented and highly competitive transport branch to get neutral public support to overcome the inertia of change.

The public corridor management is suggested to function as a unifying body for lobbying actions, for joint analytical actions (e.g. prioritising the sequence of infrastructure investments along the corridor), support the development and implementation of Greening Actions (e.g. pilot actions of integrated sea-rail transports) and for harmonisation of regulation to improve the efficiency of the Greening actions. Consequently, the public Corridor Manager approaches the corridor from a top-down level.

On a regional level the Corridor Manager will be supported by connected Regional Corridor Managers (not employed by the Corridor Manager) however closely connected to the Corridor Manager as concatenation between the Corridor perspective and the regional perspective. In the project several regional public business communities has been closely connected to the project and the analysis indicate the interlinking organisational body as an important contact and information interface between the Public Corridor Manager and the Private Stakeholders (particularly the Cargo owners) in each Region. The basic premise is that the Regional Corridor Manager is accepted and in possession of a reference group consisting of for the region major private stakeholders (as the Chambers of Commerce).

Initially during the life of the Corridor Management group a To-Do-List of important actions will be identified and categorised depending on issue as well as stakeholders and recipient of each action. Thus cross-geographically among the regional corridor members (including private stakeholders) thematic groups will be arranged for the development and execution of these tasks. These tasks could range from market, organisation, production, administration and ICT, technology, infrastructure to regulations and standards, however with delimitation to a general and not to support one or a few individual actors or regions.



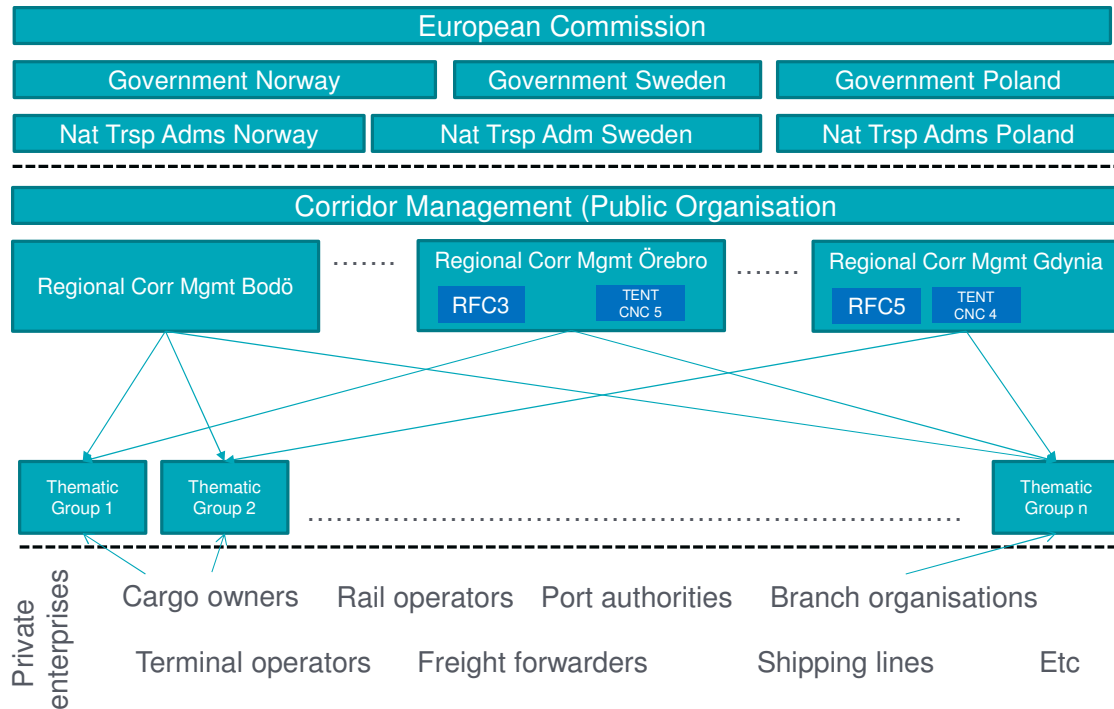


Figure 6-1 Organisation of Corridor Management in ACE Green Corridor

During the TBE project two aims for development have been central; (1) the development of an inter-modal transport service for fast moving consumer goods along the ACE Green and (2) the re-establishment of the ferry route from Bodø – Tromsø/Alta. Both these actions are relatively different in geographical scope and stakeholders involved, however they have one thing in common. This question is how to consolidate enough freight volumes from different committed cargo owners and transport operators to overcome the business risk to introduce a new service – a new service characterised by high initial investments (sunk cost), high business risk and a market seldom willing to make any commitments.

Although trade between Scandinavia and Eastern Central Europe is growing significantly, the total freight flows are still on a low level and split up between several actors. Therefore it seems essential to get some public support to the development of the service based on an implementation strategy to use existing services and in a second step of implementation apply for subsidies from EU's Connecting Europe Facility (CEF) in order to develop the service from a traditional railway service for slow moving industrial products towards a innovative intermodal transport service for fast moving consumer goods, farmed fish and other sea products, including the sea leg between Bodø and Tromsø in the north as part of an international corridor.

Based on this background, it is need for political attention and lobbying activities first to establish a Corridor Management, including regional sub-groupings, and in a second phase om implementation promote and lobby for general policies, and policies directly related to the corridor in favour of support to developing the ACE Green idea.

To be noted: The aim of the Corridor Management and its sub-groups is support the development and implementation of Green (Resource efficient) transport solutions in order to meet future transportation needs. In general the focus should be on short- and medium term development actions based on the existing infrastructure – maybe existing infrastructure with minor or medium adjustments. Consequently, focus on how to use the present infrastructure in a more efficient and effective way.

Within the project there has been organized an embryo of such a network of Regional Corridor Management subgroupings, including the development of a consortium of private stakeholders, in order to market and promote the development of an intermodal transport service in the ACE Green Corridor. In this constellation there has been discussions regarding the development and implementation of intermodal transport systems (private stakeholders) and supporting policy actions to boost pilot actions for border-crossing intermodal transports:

- ✓ Establishing a platform the development and implementation of an intermodal transport service – a highly delicate task for the organisation, including agreements on platform terms, development of a production proposal (including allocation of transport resources and time slots), marketing of the service – more detailed presented in chapter Business plan.
- ✓ For boosting this development the public side are trying to support better general framework conditions for intermodal transport (rail and sea). This regards
  - harmonized and sometimes stricter regulation regarding road transport, including level of standard and compliance regarding EU regulations for Cabotage, Vehicle and Equipment standards and maintenance (particularly during winter time), EC Drivers Hours Rules for Goods Vehicles and harmonization of taxes and drivers' compliance to pay road taxes.
  - Simplification of procedures for trains and train drivers to pass national borders.
  - Harmonisation of working regulation for train drivers and technical and administrative systems for train operators in Sweden and Norway to allow Swedish trains to operate regularly in Norway – and opposite.

Above mentioned are some examples of questions within the TBE project, however without a formalised structure with a long-term financial solution, i.e. the project characteristics, the ACE Green Corridor will end up being a project (including a pre-defined starting and ending date). When the project ends the activities along the corridor ends. Here public funding for a continuation of the ACE Green project is needed.

Proposals for thematic groups relevant for ACE Green in general:

- ✓ Establishing a corridor management company to organise the structure including Regional Corridor Management Groups and Thematic Groups.
- ✓ Establishment of a market platform in order to
  - promote new business constellations between Polish, Swedish and Norwegian actors – both within the same branch and also between branches.
  - stimulate access to rail transports for SMEs
  - stimulate changes in transport operations and production, and also to change market behavior in order to stimulate higher resource utilization (both northbound and southbound).
- ✓ Establish a thematic group for development of harmonized inter-organizational and intermodal ICT-systems
- ✓ Establishment of a thematic group to develop Green Efficient Last mile solutions, including pro-motion of new standards for Last mile solutions around terminals and ports
- ✓ Establishment of a thematic group for harmonization of regulation; (1) vehicle dimensions and loading profiles, (2) infrastructure charges and (3) regulatory framework and responsibility for cargo securing/cargo lashing differs between countries and modes
- ✓ Establishment of a thematic group for Stimulation of development through creation of new in-terminal innovations and developments by authorities. In addition to the whip, utilizing carrots stimulating development in a positive direction.
- ✓ Support program for innovations development for pilots and commercial support during the development period, for example the EU's Marco Polo program
- ✓ Promote the upgrading of infrastructure along the corridor (capacity, electrification, signalling system and crossing loops) to increase transport efficiency and decrease environmental impact.

Finally, we can conclude that these actions are not independent, rather interdependent. One sole measure implemented or one stakeholder's genuine interest is very seldom enough. However a combination of genuine interest for change combined with public support through regularly change can provide long-term effects, but the process starts with a 3-5 year transition period before the measures support a significant effect (Zuylen and Weber, 1997).

## 7. Terminals

### 7.1. Terminals along the ACE Green Corridor

The second task of the assignment was to make a survey of the terminals along the corridor with the aim to identify development needs (based on bottlenecks) and also identify improvements regarding administration/standardization (e.g. load carriers) to support and guide decisions at each terminal in order to support the general transport competitiveness of the intermodal corridor.

The corridors connecting Bodø and Gdynia is not one but four and the corridor has several interconnections (RFC3, RFC 5, TENT CNC 3 and TENT CNC 4) affecting the administration and standardization of load carriers. For all these terminals, with a particular focus on the gateways between the Transport Corridors, we have been investigating the terminal layout, the organization and the terminal service supply.

The terminal service supplied at the terminals, the terminal layouts and the terminal organization affect the total transport efficiency along the transport corridor, and particularly if time and temperature sensitive shipments as farmed fish and other seafood is to be transported. In the table the Core- and none-core service at all terminals are presented.



Figur 7.1 Terminals and their interconnections

	Gdynia	Karlskrona	Alvesta	Båramo	Nässjö	Torsvik	Soläsen	Falköping	Örebro	Hallsberg	Eskilstuna	Ånge	Sundsvall	Trondheim-Brattöra	Heimdal	Murwik	Mosjøen	Mo i Rana	Fauske	Bodø
Transshipment - Trailers	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X			X	X	
Transportment - SWB (25 fot)	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X
Transportment - 40'ISO-containers/SWB 12m	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X
Shunting	S	X	S	S	S	S	X	S	X	S	X	X	S	S	S					
Gate in/out inspection	X				X			X		X	X			X				X	X	X
Cargo securing	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X
Break tests	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X
Free intermediate storage arrival/departure day + 12h	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X
Storing beyond standard intermediate storing	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X
Storing of reefers					X			?		X	X		X	X				?	?	
Lashing of curtain sidars			X	X	X	X	X	X	X	X	X		X					?	?	
Follow up/down support legs	X	X	X	X	X	X	X	X	X	X	X	X	X	X				X	X	X
Handling of rear bumper	X	X	X	X	X	X	X	X	X	X	X	X	X	X				X	X	X
Handling of seals	X		X	X	X	X	X	X	X	X	X	X	X	?				?	?	
Reparing of unit loads			X	X	X	X	X	X	X	X	X		X							
Cleaning of unit loads			X	X	X	X	X	X	X	X	X		X							
Unloading beyond opening hours	X		X	X	X	X	X	X	X	X	X		X	X				?	?	
Plug in for bulk/tank containers										X	X		X	X				?	?	
ADR labeling										X	X		X	X				?	?	
Removal of snow from wagons													X	X				X	X	X

Fig 7-1 - Terminals including core/none-core services along the ACE Green corridor between Bodø and Gdynia



For the development of an intermodal service along the ACE Green Corridor we can make the following conclusions regarding terminals and terminal handling:

- ✓ The survey reveals a rather standardized supply of terminal service along the ACEGREEN corridor. To be noticed is the different situations in Norway and Sweden where the Swedish terminal system has been deregulated with one terminal operator at each terminal and in Norway two competing actors at most terminals.
- ✓ The consequence for intermodal transport – particularly for a corridor as ACEGREEN with a large number of small and dispersed freight flows – is the need to get terminal operators regards each other as co-operating partners rather than competitors. During the project we have arranged at two seminars to identify the potential for co-operation – however all terminals are fighting for the same volumes (internal competition) and lack strength or willingness to work up new transport destinations or co-operations to increase the freight volume transported by rail.
- ✓ In Nordland there is need for a terminal in Mosjøen (an intermediate line terminal) if Alcoa commits for transport of shipments to Sweden and in long-term Poland/Eastern Central Europe. For all terminals in Helgeland and Nordland we suggest a deeper analysis in order to investigate the possibilities to implement line terminals and also to develop wagon load services in order to introduce a system suitable for small and dispersed freight flows of fast moving consumer goods spread along the coast (e.g. farmed fish).
- ✓ For Trøndelag our suggestion is a three terminal solution.
  - Muruvik for industrial products and recycling products.
  - Heimdal could be extended towards an intermediate terminal for the trains passing towards Brattöra or Muruvik. Heimdal is of importance if DB Schenker will be a base customer.
  - Introduction of small scale terminals a lot of transports passing the city center of Trondheim could be avoided, the pre- and end haulage costs could be decreased and for the future an connection via Meråkerbanan could be introduced.
  - An efficient operation with three terminals in Trøndelag requires a separate analysis including an analysis of the upgrading costs in order to improve the overall efficiency.
- ✓ There are two terminals in the Region Örebro/Hallsberg, however according to the respondents the terminal is neither efficient for collection/distribution in the region nor as a hub for train-train handling.
- ✓ There is a certain request to identify strategic gateways for transshipment of multimodal shipments between road and conventional wagons. In the Terminal report the multimodal terminal in Alvesta is one prosperous example.
- ✓ The terminal operators and the terminals has a rather weak market position, however could be strengthened by integration of the last mile functions (including measures for improving last mile solutions):
  - Longer and heavier road trains are one measure to improve pre- and end haulage. If the EC regulation for intermodality could be adapted for pre- and end haulage up to 150 km to/from the terminals the intermodal service provider would save up to 10-20 % of the collection and distribution costs.
  - Another important factor is a co- location of terminals offering a saving of up to 10 % of the intermodal transport cost or up to 80 % of the collection and distribution costs for general cargo.
  - Co-location and consolidation of shipments could for competing freight forwarders be challenging, however with a neutral agent offering customers with small and dispersed freight flows (outside the strategic freight flows) all actors might benefit from such change. All freight forwarders indicate more or less poor transport economy in the freight relation to/from the Region of Nordland.

In the table above the terminals and facilities for wagon load service are not included. In the project we have identified wagon load services with multimodal unloading/loading as an important service function for the future. This is of particular importance for industrial products (Steel/metal, paper/pulp, sawn wood) including storage functions connected to the handling functions.

## 8. Greening action – use of LNG as fuel in railway locomotives

### 8.1. Introduction

#### Background

Task 4.4 in the TransBaltic Extension project is expected to come up with proposals for some greening actions as result of the project. Most important is the business plan aiming at promotion of considerable shift of cargo transport from road to rail and sea by establishing the intermodal corridor project ACE Green (Arctic – Central European Green Transport Corridor). However, the ACE Green Corridor includes railway lines in Northern Scandinavia that are not electrified, and due to very high investment costs for electrification and rather low capacity utilisation of the infrastructure, the line will (most likely) not be electrified – at least not in the near future. Instead of electrifying the lines a technological shift from diesel to LNG engines has been regarded an alternative.

Nordland County Council has already several years ago, as input to the Norwegian national transport planning process (NTP), asked for studies related consider use of LNG as fuel for the 700 km long railway line (Nordlandsbanen) between Trondheim and Bodø.

#### Status on use of LNG to power railway locomotives

On this background it has as part of the work in Task 4.4 been performed a simple desktop study combined with some interviews, resulting in the following findings:

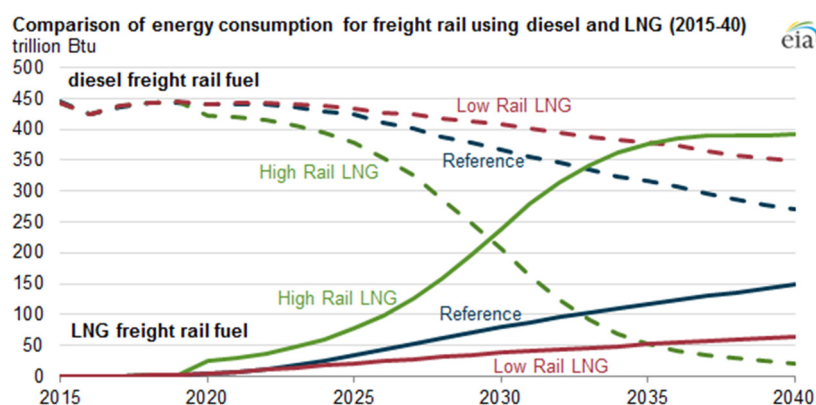
- ✓ LNG as fuel for railway locomotives have been tested out over some years, and is becoming more and more common in USA and Canada. Results so far has shown very positive results regarding reduced emission and economy. New locomotives have been built, but so far most locomotives are converted from diesel to LNG (Dual fuel).
- ✓ LNG is extensively used as fuel in all forms of transport in India, and also Bolivia, Peru and other LNG producing countries in South America are using LNG as fuel for transport.
- ✓ Russia is engaged in developing technology to increase high efficiency for LNG engines to be used in trains.
- ✓ In spite of quite long experience with LNG in ships and road transport, there seems to be little interest to expertise on this issue in Europe.

*LNG technology has the potential to offer one of the most significant developments in railroading since the transition from steam to diesel in the 1950s. That change took many years to complete and began with a lot of unknowns, and this one is no different.*

*GE Transportation has the know-how to provide the right LNG solution for our locomotive fleet and help us better understand the feasibility of LNG technology from a safety, operations and economic perspective.*

*— Oscar Munoz, executive vice president and chief operating officer, CSX Corporation*

#### Liquefied natural gas shows potential as a freight locomotive fuel



Figur 8-1 EIA's Annual Energy Outlook 2014

*EIA projects that liquefied natural gas (LNG) will play an increasing role in powering freight locomotives in coming years. Continued growth in domestic natural gas production and substantially lower natural gas prices compared to crude oil prices could result in significant cost savings for locomotives that use LNG as a fuel source, according to EIA's Annual Energy Outlook 2014*

**Note:** The dotted lines represent diesel fuel use, while the solid lines represent LNG fuel use.

## 8.2. Activities in the project period

### Meeting Warsaw

Following the desktop study on LNG as fuel in trains, the project group for Task 4.4 decided to pursue the issue and invited other possible partners to a meeting in Warsaw 24 June 2014. The meeting was held with the following participants:

Hubert Stepniewicz, VIS Systems, Gliwice - Marcin Wolek, Protrans, Gdynia, Per Strømhaug, Port of Bodø, Fredrik Bärthel, WSP and Leif Petersson, Baltic Link Association

The meeting discussed and summed up the information from the desktop study, and concluded with the following conclusion next step:

Take further actions to establish contact with operators from railway industry, academia and transport authorities with the intention of organising a workshop to sum up knowledge on the issue of LNG as fuel for trains. Workshop should be held during September 2014 – possibly in connection with InnoTrans 2014 in Berlin last week of September 2014.

It was also agreed to contact other relevant organisations to check out interest for participation at this stage, e.g. :

National Railway Authority (Jernbaneverket) / SINTEF (Norway) – responsibility Per

PKP, CTL Logistics, and Railway Institute (Poland) – responsibility Hubert and Marcin

Some railway operator and KTH (Sweden) – responsibility Fredrik

Depending on result from workshop, it could be relevant to perform a feasibility study to clarify the relevance of a project as indicated – including possible partnership, market, and possibilities for public (National/ EU) and private financing for a future project.

### Work shop Berlin

In accordance with agreement from meeting in Warsaw, a work shop was held at InnoTrans 2014 in Berlin, 24 September 2014 with these participants:

Hubert Stepniewicz, VIS Systems, Gliwice – Andrzej Massel, (Polish) Railway Institute, Warszawa – Marcin Wolek, Protrans, Gdynia – Hans Dunder, City of Sundsvall – Fredrik Bärthel, WSP – Leif Petersson, Baltic Link Association – Viktorija Ditmonaite, Molde University College – Per Strømhaug, Port of Bodø

The aim of the work shop was to establish a platform for possible EU-financing of a project dedicated to further development and possible pilot projects on use of LNG as fuel for railway operations. Present at the meeting was also Viktorija Ditmonaite who is planning to do a Master Thesis related to the subject.

The workshop discussed several issues related to possible challenges and opportunities regarding the project, including:

- ✓ Competence related to LNG as fuel in transport in Northern Europe and Poland. Since this area is new, it is vital to identify research institutions, business consultants and others who will hold, or are interested to develop relevant expertise. One issue here is the technological and environmental side related to the subject – another is related to market and economy, including necessary infrastructure and logistical solutions for supply of LNG to customers in the railway sector.
- ✓ Lack of infrastructure and logistical solutions for distribution of LNG was further discussed as a general challenge. According to VIS Systems CEO, from a technological point of view, converting diesel engines to dual system engines is not a difficult task, whereas to establish the LNG supply chain in Poland and necessary infrastructure (e.g. bunkering stations) raises a series of technological, political, institutional, financial and other challenges.
- ✓ Market possibilities. In order to make LNG as economically rewarding fuel in railway transportation in close future, there should be enough customers willing to transport their cargo by particular railway line. Obviously, if load factor is low and investments in new locomotives are high – the LNG solution is not feasible even though it



is the cleanest fuel in transportation. Therefore, participants discussed the importance of finding the interested parties both in using LNG and identifying relevant railway line in all countries for further studies or testing out the solution.

- ✓ Technical feasibility. This point means checking the most efficient technical solutions for converting diesel engine into dual engine systems, and identify concrete pilots for implementation. Norway and Sweden are here interested in long distance lines, whereas Poland only in shunting yards.
- ✓ Interest for stakeholders. First of all, the potential shareholders willing to invest in LNG business have to be identified. It can be port authorities, railway operators, mining companies or private persons. Then, in order to attract and keep them, the comprehensive analysis has to be presented where they could clearly see the possible ROI value of their investments.
- ✓ Time is right to participate and invest in development related to use of LNG in transport, both for strengthening own competence and market possibilities, and to stimulate other organisations to invest in related industries.
- ✓ Institutional differences. In all three countries the requirements for getting certifications for new locomotives are different. Therefore, this issue must also be analysed in pre-study since it can have inconvenient side effects for implementing the project later.

The meeting in Berlin came to the following conclusion for further steps towards project implementation:

- ✓ Polish representatives will send to all project partners preliminary financial estimates of shifting the diesel locomotives to LNG. Also, the comparison between operating costs of diesel and LNG locomotive has to be done.
- ✓ VIS Systems company will contact Polish authorities to check about their interest in this project, requirements and financial opportunities. This because approval of application to EU respective programmes will go through the country's government.
- ✓ Per is responsible for further partners search that would be willing to contribute into pre-study and the project as a whole. In addition, he must search for possible financing sources (e.g. EU programs) during the pre-study and the main project phase.
- ✓ Hans Dunder expressed clear interest to participate in the further process from the Swedish side, and would contact Inlandsbanan as possible participant in line with Nordlandsbanen in Norway as possible railway line for full scale pilot.
- ✓ Master student Viktorija Ditmonaite will develop research questions with her supervisor of Master Thesis in October month in order to bring additional value to the project. Research questions have to conform with pre-study research questions that will also be defined later.
- ✓ All parties must take decisions on their participation in the project and possible contribution to it as soon as possible. In addition, all parties have to give suggestions about the possible pre-study structure, research questions and final goal.
- ✓ A schedule must be set to deliver application for financial support to EU on time.

The meeting in Berlin also gave the possibility to visit relevant exhibitors to get information about the issue in question. This revealed that there in fact is commercial companies who have the issue of LNG as fuel for railway locomotives on the agenda. One locomotive producer informed that they have done a lot of research and had concrete plans for introducing LNG locomotives to the market in 2017.

Further identification and contacts with relevant commercial partners, like producers of LNG engines and locomotives, is therefore essential in the further process related to planning of possible new project(s).

### **LNG Bunkering seminar in Klaipeda 17 October 2014**

The project was also represented at a seminar on LNG Bunkering in Klaipeda 17 October 2014. The seminar was organised by Klaipeda Science and Technology Park (KMTP) in cooperation with the Norwegian Embassy in Lithuania and others. This seminar gave a lot of relevant information on infrastructure and logistics to distribute LNG to users, also relevant for the railway sector.

Participants attending the conference were also informed about the TransBaltic Extension project. As a result, contact was established to several organisations and possible partners for a future project.

A discussion with KMTP revealed that they have plans to launch a project on use and distribution of LNG to users for the first application round for the next BSR Programme (Inter-reg) in early 2015. Details related to the content and aims for the project is under development, with KMTP as possible Lead Partner. During a discussion on possible cooperation it was agreed KMTP will adapt the conclusions from TransBaltic Extension, and propose a separate section (Work Package) in the planned project dealing with LNG as fuel for trains (or for transport in general) in their project.

### **LNG for transport**

In the future, Shell believes that liquefied **natural gas (LNG)** could form a bigger part of the **transport** energy mix, alongside developments in areas such as greater vehicle efficiency, biofuels, hydrogen and electric mobility.



### **8.3. Conclusion**

The activities and discussions in the TransBaltic has resulted in increased interest to consider LNG as fuel for the railway sector. Infrastructure for delivery of LNG is now being developed to new regions, and it is important to secure that the future needs of the railway industry as well as other customers are taken care of. In addition, with the new measures taken by EU and national states to reduce emissions, the time seems right to get on the track towards considering reductions from the transport sector. Therefore, the time seems right to try to finance a study to gather available information on the issue, and as a next step to finance a project on full-scale tests with LNG driven locomotives in Europe.

Steps should therefore be taken as soon as possible to check out possible partnerships and financing of project related to implementation of LNG in the railway sector.

## 9. Taking results forward

The TransBaltic Extension project had a very short timeframe for executing activities and coming up with concrete outputs related to the aims of the project. The Task Manager and project team responsible for the very ambitious aims for Task 4.4, are however very satisfied with the way the project has developed. Task 4.4 of this project has been somewhat different from earlier projects in the way that it has not been focussed on new extensive studies, but instead given very high priority to involvement of commercial stakeholders. This mainly in the form of participation in seminars and workshops, but most important of all through visits and individual meetings with a large number of companies within the transport sector.

The result of this process is a clear feeling of having come a great step further towards realising the ACE Green idea, but still some tasks have to be completed in a short term perspective:

### ✓ Immediate start-up of services in the corridor

The dialogue with the private sector, and in particular cargo owners, has come to a stadium where start-up of services in part of the corridor could start during the winter 2014-15. However, it still required to follow up discussions towards signing agreements with cargo owners and railway companies. Even though the project financing from Interreg has ended, it is strongly advised to try to find possibilities to continue the process towards realisation. Given that adopted restrictions and control with road transport that has been adopted by Norwegian and Swedish transport authorities will come into force from 1 January 2015, it is important to be in position to implement solutions on rather short notice.

Responsibility: Task manager, project team and associated public and commercial partners

### ✓ LNG as fuel in transport / trains

Although somewhat limited, activities related to LNG has clearly indicated that the time is right just now to make further market, technical and economic studies related to the issue on fuel as transport in transport in general and trains in particular. This also includes infrastructure related to supply of LNG to customers in the transport sector.

A quick feasibility study (as described earlier) should therefore be made during the next few months to prepare the ground for financing a more extensive project including full scale pilots from relevant EU-programs in 2015.

Responsibility: Task manager and partners participating in meeting in Berlin in October 2014

### ✓ Corridor management

It has become very clear that to establish streamlined and competitive solutions for intermodal transport along the whole corridor (Gdynia – Tromsø), an overall corridor management structure is required. Particularly when it comes to including the sea leg in the north, it also seems quite clear that no commercial companies are ready to take the economic risk by investing and starting up services – and it will be a lengthy process to find public (national) financed solutions. Preparations should therefore be made immediately to prepare application for financing a project through the “Connecting Europe Facility – CEF” or other international financing instruments (EIB, NDPTL etc.).

Responsibility: Task manager ?



Other relevant activities to be followed up in a medium / long term perspective could be:

✓ New standards and regulation for terminals and pre- and post haulage to promote the ACE Green Corridor

The terminal operators and the terminals has a rather weak market position, however could be strengthened by integration of the last mile functions (including measures for improving last mile solutions):

- Longer and heavier road trains are one measure to improve pre- and end haulage. If the EC regulation for intermodality could be adapted for pre- and end haulage up to 150 km to/from the terminals the intermodal service provider would save up to 10-20 % of the collection and distribution costs.
- Co- location of terminals offering a saving of up to 10 % of the intermodal transport cost or up to 80 % of the collection and distribution costs for general cargo..
- Co-location and consolidation of shipments could for competing freight forwarders be challenging, however with a neutral agent offering customers with small and dispersed freight flows all actors might benefit from such change. All freight forwarders indicate more or less poor transport economy in the freight relation to/from the Region of Nordland.

Responsibility: Task manager and partners participating in the Business Corridor Management Organisation

✓ Gateway terminals for industrial products

We have concluded that a harmonisation of the service at the terminals along the corridor would be beneficiary. However, for some consignment group's intermodal transport is not efficient enough to be regarded as an alternative, i.e. for industrial products as steel/metals, minerals, paper products, sawn wood and other forest products the loading capacity the utilization of conventional wagon load wagons or sea cassettes would increase the transport efficiency significantly. Analysis of the market, location and design of these terminals