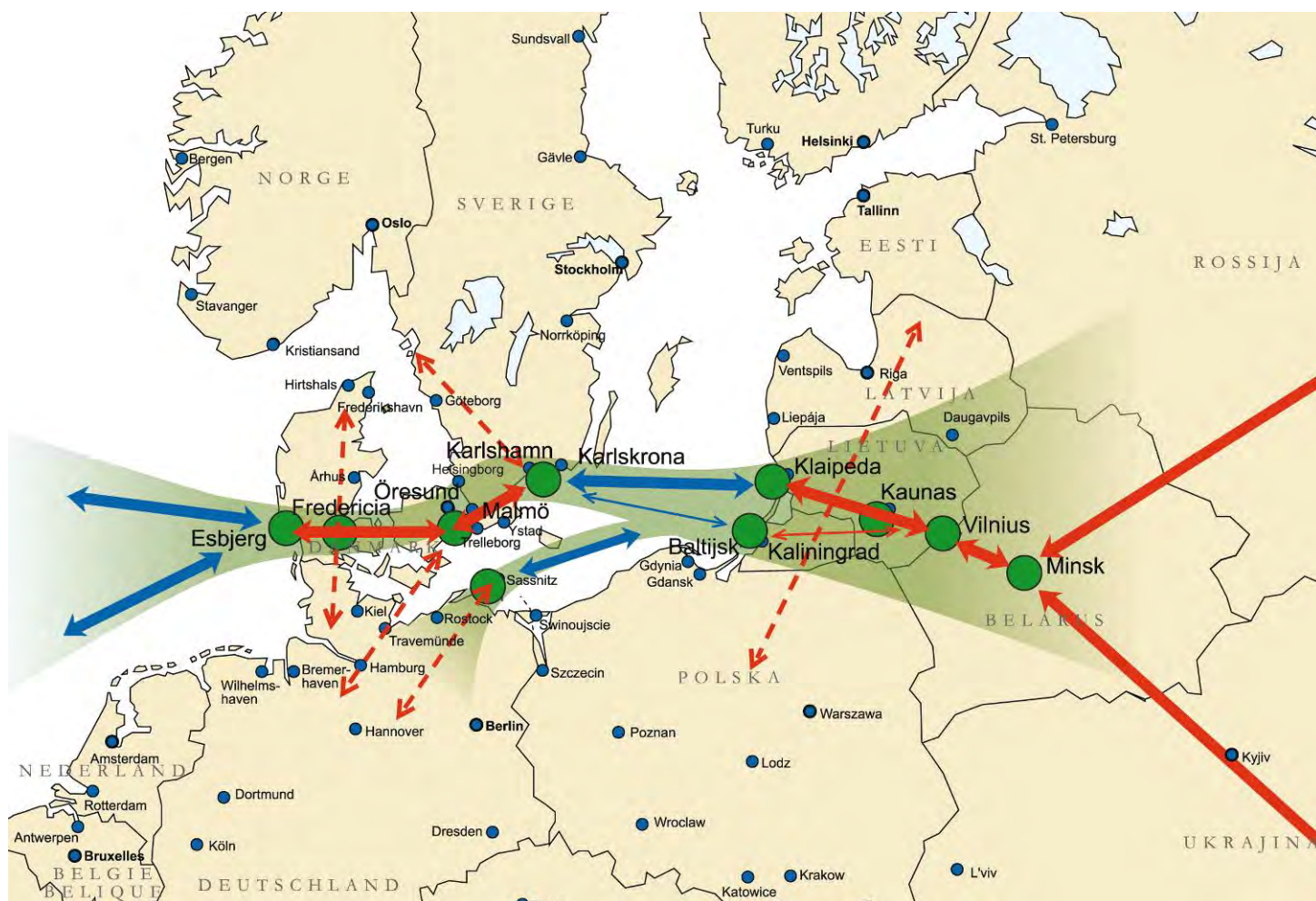




Green Corridor Manual (Draft)

- Purpose, definition and vision for Green Transport Corridors



Title: **Green Corridor Manual (draft)**
- Purpose, definition and vision for Green
Transport Corridors

Date: 2011-06-21

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ISBN: 978-87-91726-63-7

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Introduction

The main purpose of the Green Corridor manual is to guide and identify the basic elements, which constitutes a green transport corridor compared to a traditional transport corridor. This identification will assist in improving existing corridors as well building new corridors. Therefore the manual can be seen as both an instrument for checking existing corridors, as well as a tool when it comes to improve or build new green transport corridors.

The manual will give advice for organisations that are setting up a green corridor, on all issues concerned, e.g. infrastructure, operations, services and marketing of these. At the same time the manual will give information to customers that are interested in using the green corridor.

As an integrated part of the manual the background, history and purpose of the green corridor concept will be listed in order to establish a common platform for the development of the green transport corridors. One of the crucial elements is related to the understanding of the corridor being constituted of a mix of elements being of both technical and organisational nature, and that only corridors where all elements are interacting, will be successful.

An example could be, that the first green steps involve an optimization of the truck based solutions (better capacity utilization, more energy efficient engines, eco driving etc.) developing into a solution based on intermodal trains or ship, when the necessary freight volumes are at hand. By developing the corridor in such a manner, both environmental and commercial aspects are being taken into consideration in a proper way. Therefore, it is of the utmost importance, that the manual can encompass a time dimension when directing the project development.

This manual is made within the EWTC-project, but the findings are for all green corridors throughout Europe.

The Green Corridor Manual

Based on the above, the manual will assist in:

- Defining the elements and contents of a green corridor, focusing not only on the different actors in the corridor itself, but also of the relationship between the corridor and society
- Be a guideline for the strategic management of a green corridor, as well as an instrument for the customers that wish to use the services that are offered in the green corridor.
- Help identify existing and new corridors which are suitable as part of a green corridor network
- List experiences from already existing corridors, focusing on how to improve the concept and get the green results in the most cost efficient manner

- Ensure that different approaches to green corridors are displayed and the possibility and necessity of combining elements related to transport modality, infrastructure and surroundings are reflected in the approach.

The History of the Green Corridor 2006 - 2011

The Green Corridor concept was introduced as part of the revision of the EU Transport White paper in 2006. As part of this revision the very strong focus on intermodality was being somehow reduced, as a consequence of the lack of success with respect to introducing intermodal solutions. Instead the term “co-modality” was introduced, reflecting that cooperation between transport modes is a more successful way to improve the quality and environmental performance of the freight transport sector.

Among the elements being stressed, were the focus on shifting goods between modes, stressing not only the importance of physical connections, but also the possibility to handle goods efficiently in terminals, using good transshipment facilities, and performing these activities at defined strategic locations.¹

Another important issue was related to the important issue of ensuring the support to a green corridor by all relevant stakeholders, in other words, that the corridor must be seen as a business-oriented bottom-up approach, indicating an important role for the private sector.²

In addition it is of major importance to understand, that the notion of a “corridor” do need a spatial dimension representing a local, regional, national or trans-national focus of the initiatives. Besides the positive effects regarding the transport sector the corridor will also mitigate negative impact to the environment with an emphasis on the conservation of resources and energy efficiency.

Since 2006 both the green corridor concept as well as the green corridors as such has been part of a development process. In the list below, the major projects and initiatives with respect to developing the green corridors are listed

2006: Review of EC’s 2001 Transport White Paper

2007: Freight Transport Logistics Action Plan

2008:

- Greening Transport Package
- Action Plan for the Development of ITS in Europe
- Swedish Green Corridor project covering a number of corridors based on more than 30 local projects

2009:

- Green Paper on TEN-T
- EU Strategy for the BSR – Action Plan
- TransBaltic, covering corridors a cross the Baltic Sea

¹ TransBaltic 4.3 Green Corridors-11-02_final, p 32

² TransBaltic 4.3 Green Corridors-11-02_final, p 33

- Scandria, covering the corridor from Region of Halland, via Zealand to Mecklenburg-Vorpommern and Berlin
- EWTC-II, Denmark to Lithuania and further on to Russia/China
- SoNora, Berlin to the Adriatic Sea in cooperation with Scandria

2010

- SuperGreen, with focus on the implementation of the Green Corridor elements within the EU Freight Action Plan, focusing among other things on defining KPI's, and getting stakeholders to work together
- TEN-T Policy Review

2011

- EC White Paper on "A Sustainable Future of Transport".

Further to this, Corridor A, Rotterdam-Genoa and Brenner Corridor, München-Verona can be mentioned as corridors of interest.

As the list above indicates a number of initiatives, definitions and corridor studies have been initiated with the purpose of defining and establishing real green transport corridors. In order to achieve this goal, the Greening Transport Package from the EU stressed the necessity to come up with strategies, which ensures a better reflection of the real cost to society in the transport prices.³ This might be achieved by introducing efficient and green road tolls for lorries, as a viable means. But the statement also reflects the broader challenge faced by the green corridors, namely that they have to be an integrated part of the mindset when planning both transport in existing corridors, but especially new freight transport corridors. However, introducing real cost in the transport sector have to go hand in hand with a general efficiency improvement of the different modes of transport.

Therefore the manual is not only part of the present, but is also an efficient tool for describing how the necessary elements of the future should be planned and designed.

Green Transport Corridors in Europe

- The **EWTC II** (East West Transport Corridor II) corridor links together Denmark, Sweden, Lithuania and Russia in a network. The corridor runs from Esbjerg in the western part of Denmark across the Great Belt bridge, via Koege and further on to Karlshamn in Sweden, and from here on, via the Baltic Sea to Klaipeda in Lithuania and further on to Moscow. From this point a possible further connection to China and the North East part of Russia is possible. The corridor is mainly land-based, based on intermodal train solutions and sea based solutions across the Baltic Sea.
- The **Scandria** corridor, which is adjacent to the SorNorA corridor covers the area from the south western part of Norway and south eastern part of Finland via Sweden (Region Halland and Region Skåne) and further on via Zealand to Berlin/Brandenburg in Germany. At present, the corridor is mainly a road based

³ TransBaltic 4.3 Green Corridors-11-02_final, p 35

corridor supplemented with ferries/bridge when crossing The Øresund and Femern, but with a possibility of introducing more intermodal rail, especially on the German part.

- The **SoNorA** corridor (South-NORth Axis) connects the Baltic Sea with the Adriatic Sea. The project involves 6 EU countries (Germany, Poland, Czech Republic, Slovenia and Italy). The corridor is adjacent to the Scandria corridor, and the aim with the development of the corridor is to develop an efficient multimodal network within the corridor.
- **TransBaltic** has its focus on improving the transport system around the Baltic Sea and cores partners from Norway, Sweden, Denmark, Germany, Poland, The Baltic States and Finland.
- **Corridor A** is a rail based corridor linking the sea port of Rotterdam with the sea port of Genoa based on an efficient intermodal train setup. The railway section will be upgraded including the ERTMS technology opening up for better performance along the corridor.
- **Corridor B** links Sweden (Stockholm) with Italy (Rome and Napoli) via Denmark, Germany and Austria. The corridor is very much seen as an alternative to road transport activating an efficient and competitive rail based concept.

Apart from the 6 corridors mentioned above, the EU FP7-project SuperGreen is working with promotion of environmentally friendly transport corridors. SuperGreen is evaluating 9 different transport corridors in Europe and the corridors are selected based on a row of elements, among others freight volumes, infrastructure and geography. These corridors have only a limited or no management body, but consist of potential future Green Corridors. The following corridors are being evaluated:

1. The **BerPal** corridor, covering the section from Malmö/Trelleborg via Rostock/Berlin and Bologna/Naples to Palermo, including two branches, one going from Salzburg to Trieste, another going from Bologna via Brindisi to Athens. The corridor gives way to an intermodal setup including, road, rail and short sea, the last one including ferry and ro/ro. *To some extent the corridor is overlapping with Scandria/SoNorA*
2. The **MadPar** corridor covering the section from Madrid to Paris via Saint Nazaire. With a possible branch from Madrid to Lisbon. The corridor includes the use of road and intermodal rail. With respect to rail it is a challenging corridor due to the fact, that there is a difference in rail gauge in Spain and France.
3. The **CorMun** corridor covers the section from Cork in Ireland to Stranraer in Scotland with possible branches to Germany (Munich) and along the West Coast Main line. The corridor opens up for use of modalities such as road, intermodal rail and ro/ro ferry.
4. **HelGen** is a corridor especially the Nordic countries from Helsinki to Copenhagen via Stockholm and Göteborg. A possible extension can bring the corridor to Milan

and Genoa via Fehmarn Belt. With focus on the first part of the corridor (the Nordic section), modalities including road, ferry and calls for intermodal rail (Sweden) is a possible setup. Going further on to Milan and Genoa intermodal rail is definitely a very good setup, as we are within the no 1. competitive area of the intermodal rail system. *To a minor extent the corridor is overlapping with the Scandria corridor.*

5. **RotMos** covers mainly the Motorways of the Baltic Sea with a branch to St. Petersburg and Moscow. This corridor is therefore mostly designed for ro/ro transports with pre- and post haulage by road or by intermodal train whenever possible. *To some extent the corridor is overlapping with the TransBaltic corridor and the East West Transport Corridor.*
6. **RhiDan** is an inland waterway corridor covering the Rhine and main Danube. It is therefore mostly an inland waterway concept with the possibility of pre- and post haulage by truck or intermodal rail. Eventually the inland waterway can also serve as feeder for short sea services or overseas connection.
7. **AthDre** covers the area from Ptras via Athens, Sofia Budapest to Vienna, including a possible extension from Prague via Dresden to Hamburg. The area covered calls for an improved, land-based transportation system including trucks with better capacity utilization and rail whenever possible, especially for the last mentioned part of the corridor.
8. **SinOde** covers a vast area from Odessa in the east to Marseille, Barcelona and Valencia in the west, and Algeciras to Lyon via Marseille as one branch and Piraeus to Trieste as another- in many respects this is short sea based corridor with the possibility to use truck or rail on some part of the land based section.
9. **CNHam** is a very long corridor coupling the Far East (Shanghai) with Hamburg/Rotterdam and eventually Göteborg and the Baltic Ports, either by a sea based concept with deep sea ships or as an alternative via an inland railway connection through China, Mongolia, Russia, Belarus and Poland to Hamburg. One of the very interesting features related to this corridor is the possibility to use either a sea-based or a train-based solution, as trucks are really no alternative here. The induced effects

The green corridor has its key focus on developing sustainable, efficient and green transport solutions. Such a development, including the use of new techniques, new knowledge, cooperation between different transport modalities and especially a better cooperation between the numerous actors constituting the transport chain, opens up further perspectives with respect to inducing positive effects on elements related to the corridor. Among these, special focus should be on:

- Reducing negative impact on the environment and climate and thereby preserving natural resources and habitats.
- Develop new, green technologies and new logistic methods focusing on intelligent transport equipment, intelligent logistic solutions and new ways of

thinking the relationship between production – consumption, including the necessary elements related to transport and logistics.

- Include educational and behavioural aspects when designing the transport corridors.
- Remember aspects related to communication when broadening out the positive aspects of the green corridor. (Positive lessons learned by the companies behind the Øresund and the Great Belt bridges might be useful here).
- Focus on the possibilities of building new educations and developing the workforce and its qualifications as an integrated part of establishing the green corridor.
- Focus on creating a win/win situation where more energy efficient transport in green corridors can be beneficial for both environment and European competitiveness.

Defining Green Transport Corridors

This chapter aims at making a draft Definition of the Green Corridors Concept. The work is based on the EU-definition from the Communication from the Commission Freight Transport Logistics Action Plan (COM(2007) 607 final) where the following is said:

"Green" transport corridors for freight

The concept of transport corridors is marked by a concentration of freight traffic between major hubs and by relatively long distances of transport. Along these corridors industry will be encouraged to rely on co-modality and on advanced technology in order to accommodate rising traffic volumes while promoting environmental sustainability and energy efficiency. Green transport corridors will reflect an integrated transport concept where short sea shipping, rail, inland waterways and road complement each other to enable the choice of environmentally friendly transport. They will be equipped with adequate transshipment facilities at strategic locations (such as seaports, inland ports, marshalling yards and other relevant logistics terminals and installations) and with supply points initially for biofuels and, later, for other forms of green propulsion. Green corridors could be used to experiment with environmentally-friendly, innovative transport units, and with advanced ITS applications. A number of initiatives are coming together to promote this objective, including the freight-oriented railway network, motorways of the sea and NAIADES. Account should be taken of the opportunities offered by the TEN-T guidelines on the development and the integration of multimodal transport chains.

Fair and non-discriminatory access to corridors and transshipment facilities is a requirement for co-modality and needs to be addressed. Restrictions of access to the market for terminal operations, inter alia, in ports and marshalling yards, can have repercussions to the customers of these facilities. Open and non-discriminatory access for operators and customers of these facilities should be ensured in accordance with the rules of the Treaty."

Further to the above the draft definition is also based on the definition created by the Swedish Logistics Forum:

"Green Corridors aim at reducing environmental and climate impact while increasing safety and efficiency.

Green Corridors aim at reducing environmental and climate impact while increasing safety and efficiency. Characteristics of a green corridor include:

- *Sustainable logistics solutions with documented reductions of environmental and climate impact, high safety, high quality and strong efficiency,*
- *Integrated logistics concepts with optimal utilisation of all transport modes, so called co-modality,*
- *Harmonised regulations with openness for all actors,*
- *A concentration of national and international freight traffic on relatively long transport routes,*

- *Efficient and strategically placed trans-shipment points, as well as an adapted, supportive infrastructure, and*
- *A platform for development and demonstration of innovative logistics solutions, including information systems, collaborative models and technology.”*

Methodology

For the purpose of finding a viable draft Definition of the Green Corridors Concept, an email survey was conducted, whereas 20 replied to the survey. The group consisted of EWTC II Task 3B-partners as well as experts and other Green Corridors projects. Further to this all in all 8 personal and telephone interviews with some of the above mentioned experts and project members were carried out. A list of the contact persons can be found in Annex 1 and the email survey with the 6 open questions that were asked can be found in Annex 2.

Based on the above methodology, the characteristics of the Green Corridors Concept are described in the following.

Definition in short

Green transport corridors promote the development of a ‘greener-oriented’ transport system. They endorse the EU vision towards an integrated and sustainable transport system. Green Corridors provide the most environmentally-friendly, sustainable, efficient and safest connections for freight transport in Europe.

Green corridors deliver transport solutions that are more economically, ecologically & socially viable than other (non-green) corridors. The transports within the corridors are efficient, and when possible the optimum transport mode is used. Hence a large proportion of the goods transported within the corridors often are international or other long distance transport, through intermodal transports, with use of freight trains, inland waterways, modular road trains, trucks using alternative fuels, trucks with the best Euronorm, or other efficient and more environmentally-friendly transport modes between the trans-shipment points. At the trans-shipment points, the goods will be shifted to local trucks in an efficient manner in regard to time and costs, to be distributed to the receivers.

Each Green Corridor is defined by a basis of measurable indicators, KPIs, whereby the corridor can be compared with the rest of the transport sector in Europe and over time, also compared with other Green Corridors and itself. A Green Corridor is only green if the indicators relating to the specific corridor are better than the European average and that there is a continuous improvement of these indicators over time. Indicators should be linked to the cargo volumes, environment, efficiency, economy etc. It is also important that only a limited number of measurable KPIs are chosen for each corridor, in order not to lose out on the comparability.

Green Corridors Concept in general

The aim with the Green Corridors Concept is to create freight corridors of excellence, where large and concentrated freight traffic flows between major hubs and by relatively long distances of transport can be handled in the most efficient, environmentally-friendly and business-driven manner. This implies that the corridors are more or less dedicated to excellent climate-adapted logistics solutions that are focussing on reduction of emissions, while keeping a win-win situation for society and actors in the Green Corridors. This also means that the Green Corridors are solutions customised towards the specific development conditions of the areas they cross.

The Green Corridors are based on cooperative business and solutions where all modes of transport are available and used on the mutually complementary basis, each of them performing at their paramount, according to the co-modality concept. The multimodal nodes (terminals, hubs, ports etc.) in the system play a vital part, as they are corridor entry and exit points.

By concentrating the transport flows into corridors, investments and measures can be channelized towards the corridor to ensure the high quality transport performance at all levels throughout the corridor. The green corridors should build on existing dominant transport corridors in Europe, with major trade flows and the potential for mass transportation with consolidated transports are the largest and hereby giving possibilities for economy of scale.

There is a large potential in optimisation of the logistics chain and the green corridors should be a platform to enhance development of new thinking within all parts of the chain, through for example seamless or at least compatible communication. The platform should, through demonstration projects and tests, lead the way to introduction of innovative logistics solutions. Examples hereof could be longer freight trains, EMS road vehicles on certain international test routes, new transshipment technologies etc.

Interestingly enough, there seemed to be an overall agreement amongst the respondents of this study that the Swedish Definition, with its 6 bullet points seems to found a mutual basis of understanding of the Green Corridors Concept.

Therefore, we have chosen to further describe the Definition of the Green Corridors Concept based on the Swedish Definition, which is found in the following chapters.

Sustainable logistics solutions

- with documented reductions of environmental and climate impact, high safety, high quality and strong efficiency

Sustainable logistics solutions are economically, ecologically & socially viable transport solutions. Sustainable solutions ensure the applicability of the most economical and environmentally-friendly means of transport respectively logistic systems that are available at present, also incorporating the social dimension. Continuous improvements of services and efficiency in all parts of the transport chain are strived for in the Green Corridors, while keeping the economic efficiency in mind.

The possibility to document the reductions of environmental and climate nuisance is very important, as this is how the specific “greening” of a transport service is measured. The emissions concerned are Greenhouse Gasses (GHGs), pollutants and noise. Further, the protection of environmentally sensitive areas should be addressed.

The emissions need to be quantified and measured. The measurability, through setting up Key Performance Indicators (KPIs) is the manner to prove that it is a green concept. Not all services will start at the same level of emissions and it is therefore necessary to set a threshold that fits with the level of emissions for current business standards of logistic chains – the Business As Usual level (BAU). From the BAU level the work will then be concentrated on continuously reducing the environmental and climate impact and hereby the green corridor logistics services can be measured as regards to their level of reduction compared to the BAU-level. Here the levels may deviate through Europe as the current business standard today also deviate from each other in different parts of Europe.

High safety reflects the importance of continuously working with traffic safety in the corridor.

The quality issue needs to be seen from the perspective of the customers of the logistics system. The customers have a set of conditions that should be fulfilled in the logistic chain and these are described in detail in agreements with the service providers. High quality in the transport chain means expectations on:

- **Efficiency** in the logistics chain, whereby large effort is put on maximising the utilisation of vehicles and infrastructure.
- **Punctuality** as regards to the agreed time of departure and delivery.
- **Security** in the transport chain is an important issue in order to receive the goods without damages at arrival point. There are also other issues, as for example theft from the transport vehicles and safety of the concerned drivers that should be included in all parts of the corridor.

Efficiency also relates to the fast handling of all kinds of cargo throughout the whole transport chain in the Green Corridor. All parts of the corridor should be as efficient as possible and strive for continuous improvements. This includes the infrastructure and the nodes, and all the different parts of the transport chain, where different modes and actors are included. This also implies a strong management of the corridor.

Information systems are needed, In order to follow and monitor the high quality of the transport services offered in the green corridors.

The green corridors also need to be robust and through redundancy plans be prepared for deviations in the transport chains due to different causes. There is a need for different capacity options should there be a delay or disruption somewhere in the chain, in order to maintain to the high quality and reliability.

Integrated logistics concepts

- with optimal utilisation of all transport modes, so called co-modality

Integrated logistics concepts include a long row of different services. Transport chains are not very often singular mode transports from A to B, and this has to be considered in the description of the concepts. A Green Corridor does not consist of only one mode, for example railway, as there is almost always the last mile delivery, usually made by trucks.

All transport modes are included in the Green Corridors Concept, and the different modes are used where they have the best performance in the logistic chain. Most logistics chains are door-to-door and not terminal to terminal, and the last mile delivery is also an important part of the logistics chain. Further, the territorial specificity of the corridor has to be considered and reflected in the modal choice, ie. the Alps, the Baltic Sea, whereby different modal solutions can be found.

Comodality means the optimum utilisation of each mode where they are suitable and efficient, in all parts of the transport chains and this means that all modes are important and all modes should be utilised at their best performance level.

The road transport mode is not always considered a very environmentally-adapted mode, but there is almost no transport chain without a part being on truck. Trucks have a very large market share in the European freight logistics, where the road transport mode in 2008 accounted for 72,5% market share for inland modes in EU-27⁴. The road transport mode is also working on greening, with new technical solutions, eco-driving, adapting to the latest rules and having the newest fleet of vehicles, preferably according to the Euro 4 and Euro 5 norms.

There are several efficiency racing measures for road transport, also between terminals, such as EMS, trucks using alternative fuels (liquefied biogas, hydrogen etc) with lower emissions or trucks that have a higher capacity utilisation than the average etc. Here the co-modality originates to be the more environmentally and efficient solutions between the terminals.

Harmonised regulations

- with openness for all actors

There are many different sets of regulations that will apply for green corridors and these need to be harmonised throughout the corridor. The regulations apply for both the infrastructure and the operation in different modes of transport, for example different standards for infrastructure, different regulation for how cargo should be secured, depending on transport mode, liability issues, driving and rest time for drivers to mention a few.

The rules and regulations differ from country to country and from mode to mode and this is a hindrance in optimising the logistic chains. It is necessary to create a level-playing field

⁴ Energy and Transport in Figures 2010

by harmonising regulations across both country and modal borders for fair and equal treatment.

The different regulations need to be harmonised throughout Europe and this also accounts for the follow-up of regulations. The present situation is that there are for examples different penalties for traffic violations depending on the specific Member State. Further to the penalties, the way these rules are applied is also an important issue, as there is a difference depending on Member State, which violations are seen as more critical.

There has to be a common regulative framework that applies to all users of the Green Corridors Concept that fulfil the demands. The basis is fair, open and non-discriminatory access to the green corridor and its services.

In the green corridors there should also be room for testing new and innovative concepts, whereas present regulations may be set a side for such tests or demonstration projects.

ERTMS: Example of technical harmonization of a green corridor:

The 3600 km long railway line between Stockholm and Naples, Corridor B, is one of six lines at EU level are identified as strategically important corridor for rail freight traffic.

On the lines, there is special attention to improving infrastructure, eliminating bottlenecks, streamlining procedures for running the trains and not the least to promote technical cohesiveness of deployment of the Single European train control and communication systems ERTMS.

Based on a report on Corridor B from 2005 it is expected that the number of trains on the corridor B will increase by approx. 50% in the period 2005 – 2015. For example, the expected average daily number of trains crossing the Øresund is expected to increase from 32 in 2005 to 66 in 2015. During the same period the transported volume of goods transported (measured in tons) could rise by up to 60%, among others as the trains are getting longer.

**A concentration of national and international freight traffic
- on relatively long transport routes**

The green corridors are concentrating large transport flows along a specific freight corridor in order to concentrate the efforts into the corridor. The transport flows may be long, border-crossing and international, but there will also be room for shorter transport flows, that will fit into the corridor, by using the nodes for entrance and exit.

By concentrating the transport flows into corridors, investments and measures can be channelized towards the corridor to ensure the continuous high efficiency at all levels throughout the corridor.

The green corridors should build on existing dominant transport corridors in Europe, where trade flows are largest and the potential for mass transportation with consolidated transports are the largest and thereby leading to economy of scale.

Efficient and strategically placed trans-shipment points

- as well as an adapted, supportive infrastructure

The nodes in the green corridors are vital points for the swift change between different modes of transport. These nodes – or transshipment points - need to be very efficient, both in terms of time and costs. The nodes should be strategically placed along the corridor and have sufficient capacities to enter or exit the corridor and hereby enhance the efficient shift towards more environmentally-adapted modes of transport.

Openness for all actors is a vital part of the Green Corridors Concept and the nodes have open and non-discriminatory access for all potential users and this means.

The transshipment points are intermodal, they include at least 2 transport modes – road/rail as in the inland terminals for combined transports, or road/rail/sea as in the ferry ports or dryports and facilitate the fast and efficient shift from one transport mode to another.

The efficiency in the transshipment point will also be measured, as there is a large potential for better efficiency in the transshipment between different modes of transports. This also concerns the economic aspects especially as regards transit times, where there is economy of scale in efficient transshipment points, strategically placed along the Green Corridor.

It is of great importance, that a co-modal concept is competitive not only on price but also with respect to other important parameters, as quality and transit time. Therefore in most instances, a co-modal solution is competitive when able to compete with a road based solution, with the use of efficient transshipment points.

The transshipment points will have adapted supportive infrastructure as for example ITS solutions in order to enhance the efficiency and the information flow in the logistics chain.

Elimination of existing bottlenecks of different character is a pre-requisite for the efficient operation in the Green Corridors.

A platform for development

- and demonstration of innovative logistics solutions, including information systems, collaborative models and technology

In regards to the large potential in optimisation of the transport chains and the green corridors should be a platform to enhance development of new thinking within all parts of the chain. The platform should promote demonstration projects and tests that lead the way to implementation of innovative logistics solutions.

New technologies, innovative thinking and models of collaboration could lead to a large increase in the present utilisation of the infrastructure and transport services.

Green corridors should be testbeds for:

- Innovative technologies (smarter engines, better fuels, innovative handling equipment, efficient vehicle combinations...)
- Processes (for handling, modal change, business processes, information exchange, safety and security, tracking and tracing...)
- Tools for planning, measuring and evaluating
- Service development
- Good governance and strategic management (e.g. green logistics solutions)

The definition of Green Transport Corridors

The following forms a summary of the definition.

Amongst the respondents in this investigation, there is an approval of the Swedish definition of green corridors:

“Green Corridors aim at reducing environmental and climate impact while increasing safety and efficiency. Characteristics of a green corridor include:

- 1. Sustainable logistics solutions with documented reductions of environmental and climate impact, high safety, high quality and strong efficiency,*
- 2. Integrated logistics concepts with optimal utilisation of all transport modes, so called co-modality,*
- 3. Harmonised regulations with openness for all actors,*
- 4. A concentration of national and international freight traffic on relatively long transport routes,*
- 5. Efficient and strategically placed trans-shipment points, as well as an adapted, supportive infrastructure, and*
- 6. A platform for development and demonstration of innovative logistics solutions, including information systems, collaborative models and technology.”*

Green corridors deliver transport solutions that are more economically, ecologically & socially viable than other (non-green) corridors. The transports within the corridors are efficient, and when possible the optimum transport mode is used. Hence a large proportion of the goods transported within the corridors often are international or other long distance transport, through intermodal transports, with use of freight trains, inland waterways, modular road trains, trucks using alternative fuels, trucks with the best Euronorm, or other efficient and more environmentally-friendly transport modes between the trans-shipment points. At the trans-shipment points, the goods will be shifted to local trucks in an efficient manner in regard to time and costs, to be distributed to the receivers.

Each Green Corridor is defined by a basis of measurable indicators, KPIs, whereby the corridor can be compared with the rest of the transport sector in Europe and over time, also compared with other Green Corridors and itself. A Green Corridor is only green if the indicators relating to the specific corridor are better than the European average and that there is a continuous improvement of these indicators over time. Indicators should be linked to the cargo volumes, environment, efficiency, economy etc. It is also important that only a limited number of measurable KPIs are chosen for each corridor, in order not to lose out on the comparability.

A vision for Green Transport Corridors in short

Environmental friendly transportation is high on the political agenda. In the EU White paper on transportation – ‘Roadmap to a Single European Transport Area – Towards a competitive and resource efficient transport system’ the main focus is on reducing the dependency of fossil fuels and on reducing the environmental impact from transportation.

Equivalently many green policies have been introduced in the member states. In Sweden for instance, an integrated climate and energy policy includes a goal of a fossil-fuel independent transport sector by 2030 and in Denmark ‘A green Transport Policy’ includes investments in railways, ITS and public transportation.

This paper describes a draft Vision for Green Corridors in the future, whereas there are short visions for year 2030 and 2020. In the following chapters the Vision is further described under different headlines.

Methodology

In the email survey mainly carried out to reach a draft Definition for Green Corridors, the following open question was put forward:

“What is your Vision for Green Corridors towards 2020 and 2030?”

The answers received to the above question, together with the answers from the personal interviews formed the basis for the vision and are also included in the following.

Further to this, a pre-workshop was held in Malmö on 9 March 2011 in connection with the SuperGreen Workshop. Here a session was held for discussions over Vision for Green Corridors in the future in order to get further input to the vision, as well as obstacles and barriers to reach the vision.

After a short introduction about the Vision for Green Corridors in 2030 by Mikkel Krogsgaard Niss, Danish Transport Authority, the participants were split into groups for discussions around the following 2 questions:

- How do you see Green Corridors in 2030?
- Primary obstacles and barriers

In the following chapters, the input from the different groups and the survey are included under the different headlines.

Vision for Green Corridors in 2030 and 2020

In the following the vision for 2030 is described in short terms, together with the vision for the intermediary step in 2020.

Vision for 2030 – More transport, less traffic

In 2030 a network of Green Corridors is established in Europe, where the main trade flows are concentrated. The Green Corridors network is thus contributing considerably to the overall aim of sustainability in all dimensions, through the continuous improvements of performance in all areas of the transport chain.

The Green Corridors are top of the line as regards innovative technology, efficient and sustainable logistics solutions, high quality performance and sound economy. The continuously improving high efficiency (economy and operation) in the Green Corridors are the backbone for this. The TEN-T networks form the basis for the Green Corridors network.

In 2030 the solutions tried and tested in the Green Corridors are becoming standard for freight transport. New even more sustainable logistics systems are now tested in the Green Corridors.

Eco-labelling of transport services is standard in the Green Corridors network. Standardized European regulations on the infrastructure, terminals and services of a Green Corridor are established.

A decoupling between freight transport and traffic has been achieved, with continued economic growth.

Vision for 2020 – intermediary step

In 2020 the Green Corridors are taking an integrated part of TEN-T network in Europe and part of the Core Network of TEN-T is upgraded to Green Corridors.

Europe is well on the way towards a sustainable transport system, with more openness and collaboration in the transport sector. Many previous bottlenecks, missing links and barriers in the system have been eliminated.

In 2020 a higher level of mobility has been achieved and Green Corridors are moving towards being the priority, with more actors, uniform documentation, alternative fuels and fostering of innovations.

The first eco-labelling schemes of transport solutions using Green Corridors are implemented, setting a new standard for long haul sustainable freight transport.

Description of Vision

In the following further details to the vision are described on basis of interviews and the workshop.

Geographical and Spatial Vision

Efficient freight transport in Europe is essential for the competitiveness of the European industry and the welfare of European citizens. A green focus on future transport corridors should not compromise on efficiency.

Long distance transport in Europe is presently spread widely over Europe and is not confined to spatial limited corridors but to a large extend follows the primary network of major roads, motorways, railway lines and waterways, being at sea in form of ferries or ro/ro ships, following the rivers of Europe in form of inland waterways.

Trucks have in recent years gained market shares on behalf of other more environmentally forms of transport. At the same time the capacity utilization for truck has fallen. In many member states, the capacity utilization is now as low as 50-60%.

In certain areas of Europe the environmental effects of the long-distance transports are quite dominant, for instance in form of air pollution and other environmental effects, and further in many other aspect of the society.

Presently, the main cross-border infrastructure of Europe has been formed by the more or less conscious planning of the individual nations of Europe, and by commercial and pragmatic sub-optimization. In the near future Green Corridors will be established on different parts of the TEN-T networks, developing on already existing European corridors.

A vision for the future of long distance transport in Europe holds the promise of a TEN-T core network, as a result of an optimized planning across Member State borders in Europe and with a number of Green Corridors limiting negative effects of long distance transport and with the possibility of reduced costs for establishing the necessary infrastructure, enabling the introduction of e.g. biofuels and other Greenhouse gas friendly possibilities for propulsion.

The Green Corridors will all be part of this future TEN-T core network, reaching out to all parts of Europe, and each corridor defined as spatial bands, in order also to limit the geographic and spatial demands of land use to transport in Europe and to reduce the overall negative effects of long distance transport.

In the further development the Green Corridors are well-established and a European Green Corridors network has been built up by 2030, based on the present TEN-T networks.

The spatial and territorial specificity of the different corridors call for a differentiated approach as regards to planning, modal choice etc, ie. the Baltic Sea, where Motorways of the Sea form an integrated part of the Green Corridors, together with the land-based modes. There is in some countries a conflict between passenger and freight transport on railways, and therefore separate lanes for rail freight transport should be implemented. As a consequence of this, the same safety system etc. for railways should be implemented and

harmonized railway standards in EU, as well as in the states outside EU should be introduced as a common continental regulation.

Further, each corridor holds a possibility in its geographical dimension, through strategically placed terminals and nodes, hereby offering the possibility of co-modality, optimized in accordance with the at any time given transport technology, and the economical and political framework or provision. Consequently, the vision of Green Corridors defined geographically as spatial bands, also holds a vision of facilitating the use of the most efficient, environmentally-friendly and economically viable transport technology and transport systems for all transport modes, at all times, however changing they may be. In order of making this a reality, missing links and bottlenecks should be fixed, to make green transport possible by using green infrastructure.

In this respect it also essential to build the Green Corridors Concept, in a way that secures the continuous focus on different green elements and at the same time ensures an economic viability in the corridors. Therefore a vital criterion for the future will be a coherent development, linking the environment and sound economics in the green corridors.

Primary opportunities, obstacles and barriers

By optimizing the transport in ways, where capacity can be used more efficient, environmental impact and congestion can be reduced dramatically. This can be reached by focusing on investments in strategically well-placed infrastructure (road, rail and terminals) within the corridors.

Existing infrastructure is already in place, but new investments have to be done along the corridors in order to reduce bottlenecks and missing links. This should be coordinated between the concerned nations in the relevant corridors. There is a lack of cooperation between privately and publicly owned infrastructure, which should be addressed. There is also a lack of more sustainable infrastructure and new constructions should have a too short life time. Often maintenance cost and possible innovative construction manners are omitted.

To develop a large capacity for railway transportation, investments must be made. Often investments in signals and sidings can expand the capacity adequately.

Terminals and Transport Nodes

The Green Corridors reduce the need for numerous transport terminals and offers the possibilities of co-modality within the defined spatial band of the corridor.

Depending on the nature and direction of the corridor, land-based transport is used and optimized according to the characteristics of the freight moved. Ferry connections and other waterways are used to cut distances over land, and thereby achieving an overall better economy, environmental benefits and/or energy efficiency.

Green Technology should be facilitated in all aspects of the terminals. For example are CHP or renewable technology used for on terminal heating and cooling. Equally, cooling, and in some examples during winter conditions also heating, is supplied to e.g. containers

or trailers (to avoid the use of the small insufficient engines presently used on terminals), internal insulated pipe systems as it is known for District Heating and cooling.

The Green Corridors are further planned to have terminal and transshipment facilities serving local areas or regions and which enable efficient and smooth transfer from the long-distance transports of the green corridor, to the regional short- and medium distance transport, whereas the local transport systems are serving primarily as distribution functions.

Efficient terminals for trucks, ships and rail to use the co-modality are required. Public and private partnership could help to get investments for terminals. A couple of nodes that are stable with high volume can be identified.

Primary opportunities, obstacles and barriers

Terminals within the green corridors will secure smooth transfer between the modes of transport while serving the regions around.

The large challenge is to switch from one mode of transport to another. Many terminals are run by a single operator, but the main nodes should have open access.

Logistics concepts

New logistic concepts could support the green corridors. The concept 'More freight – less traffic', where the goods are consolidated in fewer units to optimize the environmental impact of freight traffic, could be a solution where economical development consists together with a sustainable environmental development.

More focus on co-modality where a better railway structure and efficient transshipment (fast and easy) to truck for the last mile could be supported by more consolidated transport. Longer and heavier vehicles and consolidated freight on trucks is also a part of the green corridors as well as totally digitalised, intelligent IT systems. The Scandinavian shuttle is a good example where the goods are consolidated⁵.

It is necessary to have competition among operators. The different transport modes have different price levels and different challenges. Today there is a lot of sub optimization in the business. Furthermore transport companies do not negotiate/cooperate with each other about consolidating goods. Therefore continuous development to be more efficient and to cooperate needs to be assisted. This could be put in place through a freight exchange – an auctioning platform that could be helped along by the government through legal framework.

Primary opportunities, obstacles and barriers

More Freight – Less Traffic with longer and heavier vehicles and consolidated rail and truck freight will reduce transportation costs and reduce the environmental impact from

⁵ www.oresund.org/logistics/projects/completed-projects/completed-projects/scandinavian-shuttle

long distance transportation. This will be possible in green transport corridors where large amounts of goods are being transported within.

Intelligent IT systems are a hurdle. There is no common IT-language exchanging freight capacity information and furthermore there is no interest in selling capacity to the competitors. As a consequence it is difficult to develop a functional freight exchange.

Consolidation of goods along certain corridors will create new bottlenecks and education of operators is essential. Railway transports have a large image problem and the potential of rail transport for companies is not known or has not been promoted enough.

Greening

When it comes to green transport there are two important issues:

- The policies
- Governance

Green Corridors are dynamic. We will not reach a final point where we conclude that we are now having green corridors. Higher focus on sustainability is important, with more steaming and less speed, not only to reduce fuel consumption, but also to keep it efficient. The fuel price is increasing hence there are economic needs to consider less fuel consumption. Therefore the green solutions are optimal, since they turn out to be the cheaper solutions.

Efficiency gains of using greener transportation options have to be shown to the companies. It is necessary to implement a management system for indicators and measurements.

Alternative fuels are important. Infrastructure for alternative fuels (eg electricity, hydrogen, gas etc.) should be established along the corridors for environmental friendly transport with trucks. Continuous decrease of CO2 emissions per tonne-km and as much renewable energy as possible is necessary.

Primary opportunities, obstacles and barriers

The raising oil prices will support the greening of transportation. Higher oil prices will make it more relevant to consolidate the goods into fewer transportation units with overall lower fuel consumption. Equivalently the raising oil prices will make alternative fuels more feasible.

It is hard to say what clean energy sources will be available in 2030 - it is a major issue where the energy will come from. For the introduction of biogas in the transport sector, the differences in regulations and taxations between European countries could be a challenge.

Collaboration across Member States boundaries

From the work of the European Commission and a number of transport projects during the last decade it is obvious that in order to make a more efficient use of the resources of Europe, an increased collaboration across Member State boundaries is needed.

The need for collaboration is not specific for the transport sector. However, the benefits from collaboration, involving public, private, and international actors has become more and more obvious in the transport sector.

A green future for the transport of Europe involves all modes of transport and this will be facilitated by ITS-solutions in all aspects, as well as by further commercial collaboration. The primary driver may in some situations be to increase load factors, and in other to make the best use of new green technology options and efficient logistics. Regardless of the driver, the consequence will be positive to society in any aspect of the local, regional or national level.

Presently, road pricing, Maut and other economic tools to regulate the transport sector are mainly used in a manner that does not facilitate border-crossing optimization and energy efficient and environmentally-friendly transports.

The vision of enhanced collaboration across Member State boundaries in the Green corridors holds the promise of a future, that is non-discriminatory in a traditional national sense, and at the same time gives the possibility of rendering preferential treatment to all operators making use of the Green Corridors' efficient logistics, co-modal solutions. Further the Green Corridors will supply infrastructure of green technology for e.g. biofuels for propulsions, and e.g. CHP and heat pumps for the supply of heat and cooling for terminal equipment, containers, trailers etc. during the time spent at the terminal.

Eco-Labeling could be achieved as part of the non-primary benefits to operators making use of a substantial part of the "Green" options of the Green Corridors. Such a border-crossing endeavour could enhance all other aspects and promote green transports in Europe and give the transport buyers a possibility to make green choices and to bring such choices' to benefit them in the market competition. If major transport buyers display a similar behaviour as they did in the case of transport quality certification, an Eco-Labeling combined and integrated with the Green Corridor concept could prove to be an important non-discriminatory driver for the use of the Green Corridors.

Harmonised regulations

Harmonization in the business sector, as well as in the legal/governmental sector should be reached. Often differences in regulations, makes it difficult to make efficient cross-border transportation. There are many different regulations in the EU-member countries. Taxation, safety, railway (ERTMS, safety etc.) and competition rules differ, and makes it difficult to make efficient transportation.

Regulations could have great importance. For instance road trains could be used in the corridors, and the long vehicles (EMS) should be allowed in the corridors (maybe restricted to certain timeslots). This could also be an important tool for pushing for train transportation, when having reached the critical volume for a train.

Example of border-crossing trials with EMS

Modular haulage is one way to improve the performance of road based transports by reducing the number of traffic km, when at the same time increasing the number of tonnes-km. This is done by a combination of larger trucks with more capacity in combination with high capacity utilization. It is difficult to calculate the exact reduction in vehicle-km for services carried out by modular units compared with similar services based on semitrailer combinations. But it is possible to reduce the numbers of km with up to 20% and at the same time reduce the energy consumption and emissions with 10-15%.

Denmark is an advocate for border-crossing trials with modular road trains on the route between Sweden and Benelux. Several reports, including the report "Effects of adapting The Rules on weights and dimensions of heavy commercial vehicles as established within Directive 96/53/EC" from 2009 suggest significant environmental and operational economic gains by driving modular road trains.

Primary opportunities, obstacles and barriers

Harmonized rules for transportation within the corridors could facilitate efficient cross-border transportation.

Crossing of borders, especially the Russian borders but also the internal EU borders, is still a challenge today as there are differences in regulations. Differences in taxation, driving regulation and railway safety rules are all hurdles for green transport. Harmonization of the regulations is crucial for the green corridors. In 2030, these differences are defeated and a better internal market for transport in the green corridors have emerged

Safety

The possibilities to build in aspects of traffic safety and overall aspects of safety for the goods and the operators' staff in relation to criminal activities will be considerable easier in a transport corridor concept. This is not a specific aspect to the Green Corridor, but if defined as spatial bands, the control of criminal activities becomes considerable easier than in the present situation, with an extremely wide-spread long-distance transport in a geographical sense.

Community Benefits

By optimizing the performance of multimodal logistic chains, Green transport Corridors can reduce emissions of greenhouse gasses, reduce the costs of transportation and thereby create the growth to make new jobs.

In the future planning it would be possible to even have special national and EU programmes for the development of the local- and regional communities “housing” in the Green Corridors, increasing the sustainability in the true Brundtland sense of a development to be economically, socially and environmentally sustainable, and to use the infrastructure and facilities of the Green Corridor to create and support social and economical development and to create new jobs.

KPIs - facilitating corridor management and governance

As an integrated part of the development, a set of generally recognised un-bureaucratic Key Performance Indicators surveys the function and efficiency of the Green Corridor, in order to facilitate a qualified interaction based on relevant and correct data on the performance of the corridor, between the political and commercial actors related to a Green Corridor. Government and management of the corridors are more soft issues than hard issues. The Öresund/Fehmarn consortium could be used as coordinator for the south Sweden/Danish/German connection.

Such KPI's are important elements in the future development of the Green Corridors Concept. The development should probably encompass the following issues⁶:

- Efficiency – related to the comparison of total and absolute transport costs in different corridors;
- Service quality - encompassing elements like transport time, reliability, ICT applications, frequency, cargo security and cargo safety;
- Environmental sustainability - related to the emissions of greenhouse gasses and other pollutants, calculated for different modalities and corridors per tonne and km or possibly tonne-km;
- Infrastructural sufficiency - measured in relation to congestion and bottlenecks, and
- Social issues - related to corridor land use, safety and noise

By transforming these issues into specific and measurable KPIs development it will be possible to compare and develop new corridors into sustainable, green units with improved economic and environmental performance.

⁶ Based on the elements from the Super Green project, D2. Oct 2010

Primary opportunities, obstacles and barriers

KPI's gives the possibility to follow up and act on development within the corridors. On the other hand, using KPI's automatically focuses on the measurable elements, and hence not on the whole. Consequently social factors and environmental factors could be downgraded in the corridors.

The vision for green corridors

The vision for green corridors is that a system of green corridors is so interesting for the stakeholders that they want to invest in them themselves. Development must be incremental, a continuous process. The green corridor concept should be exported from a few corridors to the entire TEN-T core network. At the same time the TEN-T should be more streamlined to fewer corridors and other programmes should be pushed towards the Green Corridors Concept, for instance the Marco Polo programme, regional programmes, and the FP7 programme.

The green corridors should be safe, secure and punctual. The service level should be better than what existing logistics operations could offer. The concept should be accepted by the market. One suggestion could be to offer lower rates for customers using the green corridors.

Green transport corridors should be special corridors, where it is possible to consolidate the goods in large and environmentally friendlier transportation units. This will make transportation more efficient with lower costs and less impact on the environment.

The Way Ahead for Green Corridors

In order to reach the vision for 2030, there are different interesting areas to focus on in the future work. In the following some of the focus areas are briefly presented.

- Development of Green Corridors along large concentrations of freight flows, with collaboration between different actors. With the large freight flows in the Green Corridors, economy of scale can be reached, while keeping the high efficiency in all parts of the transport chain.
- Efficiency (economy and operation) in all parts of the sustainable transport chain is vital for the future freight transports, with higher loading factor through better utilisation of vehicles and other technical measures, while also keeping the economic sustainability in focus.
- Efficient shift between modes towards more sustainable transports, with strategic nodes throughout the Green Corridors for the smoothest shift between modes and for entry and exit of the corridor.
- More environmentally friendly transports are needed in order to reach the EU-goal of 20/20/20, or even higher goals for the Green Corridors, taking into account implementation of innovative technologies (ie. biofuels, new engine types etc) and thinking (collaboration, information systems etc) in the logistics chain.
- Development and implementation of suitable KPIs in the different Green Corridors, for comparison of transport chains and to facilitate corridor management, as well as for governance of the Green Corridors.
- Harmonisation of rules and regulations for fair, open and non-discriminatory access to all parts of the transport chain in the Green Corridors, taking into account fair competitiveness between transport modes and Member States.
- Continuously develop, demonstrate and implement innovative logistics solutions in order to achieve the sustainability goals.

Annex 1 – List of contacted persons, definition and vision

Experts and other Green Corridors projects

DK -Scandria		Per Homann Jespersen
PL -TransBaltic	Maritime Institute in Gdansk	Urszula Kowalczyk
Brenner Corridor Platform		Simon Lochmann
Corridor A (Rotterdam-Genoa)		Stefan Wendel
DE	Hamburg-Harburg Technical University	Professor Heike Flämig
DE	Ministry of transport in Mecklenburg-Vorpommern	Karl Schmude
DK	DTU	Seniorforsker Ole Kveiborg
DK	Region Sjælland	Leif Gjesing
EcoMobility		Jesper König
EcoMobility		Sten Wandel
LT	Suggestions through Competence Center for Intermodal Transport and Logistics (CCITL) in Vilnius	Professor Ramunas Palsaitis
SuperGreen	Laboratory for Maritime Transport, National Technical University of Athens	Prof. Harilaos N. Psaraftis
SuperGreen	Laboratory for Maritime Transport, National Technical University of Athens	George Panagakos
TransBaltic	Project Manager	Wiktor Szydarowski
DK -Scandria		Sandrina Lohse
SE	Näringsdepartementet	Jerker Sjögren
SE	Trafikverket (GC Secretariat)	Kontorchef Kenneth Wählberg
SE	Trafikverket (GC Secretariat)	Annelie Nylander
SE	Trafikverket (GC Secretariat)	Rikard Engström
SE	Vinnova	Inger Gustafsson
SE	Vinnova(GC Secretariat)	Eva Schelin
SE	Port of Gothenburg	Arvid Guthed
SE	Conlogic	Magnus Swahn
SE	TransportGruppen (Logistikforum)	Stefan Back
European Commission	Former Policy Officer Green Corridors	Rein Juriado
European Commission	Head of Unit, Logistics	Pawel Stelmaszczyk

EWTC II, Task 3B partners

Region Blekinge	Mathias Roos
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Region Skåne	Mats Petersson
Trafikverket	Karin Nilsson
Trafikverket	Leif Ringhagen
Netport	Gunnar Fastén
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KSRC	Vytautas Paulauskas
KSSA	Kristina Gontier
LitRail	Sasys Zurba
LitRoad	Gintaras Cilcius
Port Sassnitz	Patrick Schwabe
Wismar Uni	Gunnar Prause
Ministry, M-V	Karl Schmude
IT-Initiative M-V	Andreas Müller
Mun. Fredericia	Troels Lemonius
Port Fredericia	Jens Peter Peters
Vejdirektoratet	Jens Pedersen,
Danish Technical University	Jens Clausen
Trafikstyrelsen	Mikkel Krogsgaard Niss
Glubokoe Council of Deputies	Alexander Kolbasich
Region Blekinge	Bengt Gustafsson

Annex 2 – Email survey, definition and vision

Dear Green Corridor expert,

Tetraplan, with Incentive Partners as subcontractor, has received the assignment to create a draft definition and vision for the Green Corridor concept for the Interreg-project East West Transport Corridor, through its partner Trafikstyrelsen (Danish Transport Authority). This is a part of the work to create a Green Corridor Manual and the Deliverables should be finalised already by the beginning of March.

In this respect, we would very much appreciate your help in giving your input. We have prepared a small number of questions, to which we hope that you will respond freely. Please be as free of mind as possible.

The basis for our work will be the Swedish definition of Green Corridors, as this seems to be the closest to an existing definition that we have found. You will find it in the enclosed document, where we have also listed the questions that we would like you to answer.

We will need your answers already by 16 February, in order for us to collect the answers for the following work of compiling into a draft definition and vision. We are looking at the EU-level, as well as specifically for the EWTC.

We very much appreciate your efforts in this work and rely on your timely answers by 16/2.

Please also note that we will make follow-ups of these email queries via telephone interviews within the coming weeks, in order to get closer to a draft definition and vision.

Please don't hesitate to contact us, should you have any queries.

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Best regards,

Preben Thisgaard

On behalf of the Project Team

Questions for a Definition and Vision for Green Corridors Concept

There are many views to what Green Corridors are. There is no clear and more detailed definition, and that is what we now are working towards. Basis for our work is the Swedish definition:

Green Corridors aim at reducing environmental and climate impact while increasing safety and efficiency. Characteristics of a green corridor include:

- *Sustainable logistics solutions with documented reductions of environmental and climate impact, high safety, high quality and strong efficiency,*
- *Integrated logistics concepts with optimal utilisation of all transport modes, so called co-modality,*
- *Harmonised regulations with openness for all actors,*
- *A concentration of national and international freight traffic on relatively long transport routes,*
- *Efficient and strategically placed trans-shipment points, as well as an adapted, supportive infrastructure, and*
- *A platform for development and demonstration of innovative logistics solutions, including information systems, collaborative models and technology.*

For inspiration and further information about the Green Corridors work in Sweden, please have a look through this link:

http://www.trafikverket.se/PageFiles/42690/green_corridors_54b68536.pdf

Based on the above 6 points, we would like you to give us your ideas on the definition. Therefore, we would very much appreciate your input as regards the following issues.

1. What would be sustainable solutions and how would you define sustainable?
2. What should a Green Corridor include? (Infrastructure, service, rules etc.)
3. What would define a Green Corridor compared to other Corridors? How can Corridors be compared?
4. What kind of innovative ideas would you like to see in Green Corridors? Within which areas?
5. Any other specific issues that you would like to point out for the Definition?
6. What is your Vision for Green Corridors towards 2020 and 2030?

Annex 3 – Participant lists

- Green Corridor Pre-workshop on March 9

Name	Company	Country
Annelie Nylander	Trafikverket	Sweden
Atle Minsaas	MARINTEK	Norway
Bengt Gustafsson	Region Blekinge	Sweden
Christian HEINRICH	TSB Innovationsagentur Berlin GmbH	Germany
Christoph Pienkoß	German Association for Housing, Urban and Spatial Development	Germany
Evelina Hansson Malm	Region Skåne	Sweden
George Panagakos	National Technical University of Athens	Greece
Gunnar Fastén	NetPort.Karlshamn	Sverige
Harilaos N. Psaraftis	National Technical University of Athens	Greece
Helena Kyster-Hansen	Tetraplan A/S	Denmark
Horst Sauer	Joint Spatial Planning Department Berlin - Brandenburg	Germany
Ignacy Chrzanowski	The West Pomeranian Business School	Poland
Istvan Pakozdi	VPE Kft.	Hungary
Jan Boyesen	Øresund Logistics	Denmark
Jesper König	Øresund Logistics	Sweden
Jesper Samson	Roskilde University	Denmark
Jukka Siren	Ramboll Finland	Finland
Karl Schmude	Ministry for Transport, Building and Reg. Dev. Mecklenburg-Vorpommern	Germany
Kenneth Wählberg	Trafikverket	Sweden
Kerstin Belin	Øresund Logistics	Sweden
Leif Gjesing Hansen	Region Zealand	Denmark
Lene Rasmussen	Øresund Logistics	Sweden



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