

Associated Danish Ports A/S and partners

Bridge the Bridges Project

Daily Ro/Ro Trailer service between Fredericia (Denmark) and Helsingborg
(Sweden)



EAST WEST
TRANSPORT CORRIDOR II



Baltic Sea Region
Programme 2007-2013

Part-financed by the European Union
(European Regional Development Fund
and European Neighbourhood and
Partnership Instrument)

Bridge the Bridges Project

Summary

Project Bridge the Bridges is a short sea Ro/Ro project to establish a daily Ro/Ro service between the Port of Fredericia in Denmark and the Port of Helsingborg in Sweden.

The project is a service that is moving east west in parallel with the main motorway crossing Denmark to Sweden via 3 bridges, thereof the acronym, Bridge the Bridges.

The service will during the Marco Polo grant period move over 900 million ton's kilometers and still only shift 4-5 percent of the truck traffic moving east west on the motorway.

The service is targeting to shift accompanied trailer loads to unaccompanied trailer loads and offer a large savings in costs.

The sailing distance is only 220 km however due to bridge tolls on the motorway the tariff for the transfer is supported by an additional, making the short sea service in such short distance economically viable.

The market is well established and there a traditional is a free trade existing amongst the countries which has existed long before the inauguration of EU, and the countries are well integrated between each other on all levels of society, and the flow of cargo is very large.

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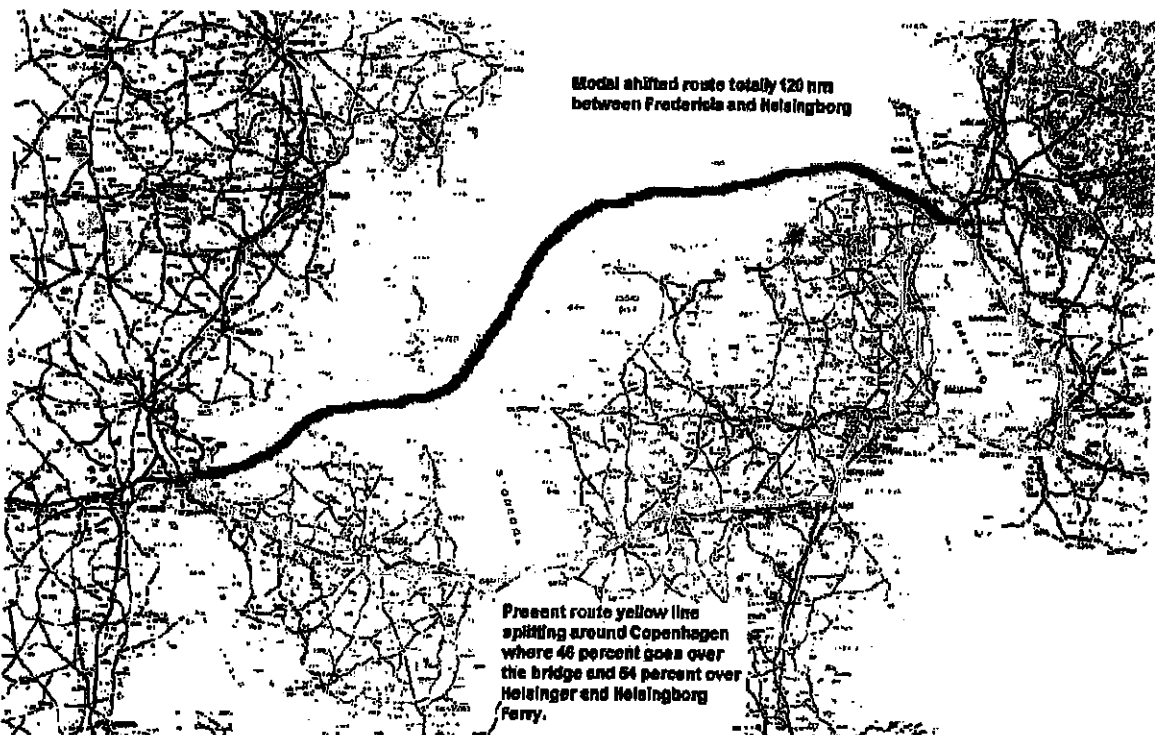
II

Main text of proposal:

History and geography

The project titled Bridge the Bridges is a project to setup a daily trailer based Ro/Ro ferry service for unaccompanied trailers between the Port of Fredericia in Denmark and the Port of Helsingborg in Sweden.

The corridor from which the Ro/Ro trailer service will generate its cargo from the highway passing from Fredericia in Jutland, over the Little Bælt Bridge to Island of Funen passing Denmark's 3rd largest city Odense, going over the Great Belt Bridge from Funen at Nyborg to land on Sealand at Korsøer following the highway to Koege where the traffic meets North/South going traffic from Femern Belt, continuing to the junction at Avedøre in Copenhagen where the traffic to Sweden can decide to go on the shorter but denser traffic route north to Sweden via the Ferries between Helsingore and Helsingborg, or take the alternative longer route following the highway over the Oeresund's Bridge to reach the highway system in Sweden in Malmoe following the route up to the highway junction in Helsingborg.



Map over the route – red line modal shifted route, yellow line the road route.

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The project idea was formed in 2006 where the partners decided there must be a viable solution to enrich the ports with more short sea cargo and the possibility to take advantage of the junctions where the ports are situated. During several occasions the partners have reexamined whether the project was feasible or not and now the time has come.

Due to among other things the financial crises there is a clearly suppressed market for Ro/Ro ships with slow steam capacity of 12-15 knots speed. Due to the fact that the costs of passing the bridges and the costs per km driven both seemed unaffected by the crises, we have spotted a window enabling us to make a sustainable launch of the project in 2010 with the smallest amount of trailers on daily basis. The timing is right because of the low threshold of costs combined with the positive support from Marco Polo in combination makes the project feasible to start, and this motivates us to make this application for Marco Polo funding.

A start now where operational costs are at its lowest seems to be a suitable time. The Service, when running, can overcome increases in costs by accommodating further cargo volumes, and developing further connections and cargo segments.

The project will start with small and relatively slow Ro/Ro ships. As the market is very big and the threshold for success is achieved only carrying a fraction of the total market, the project is calculated to be viable in a time where the trade has dropped because of the crisis.

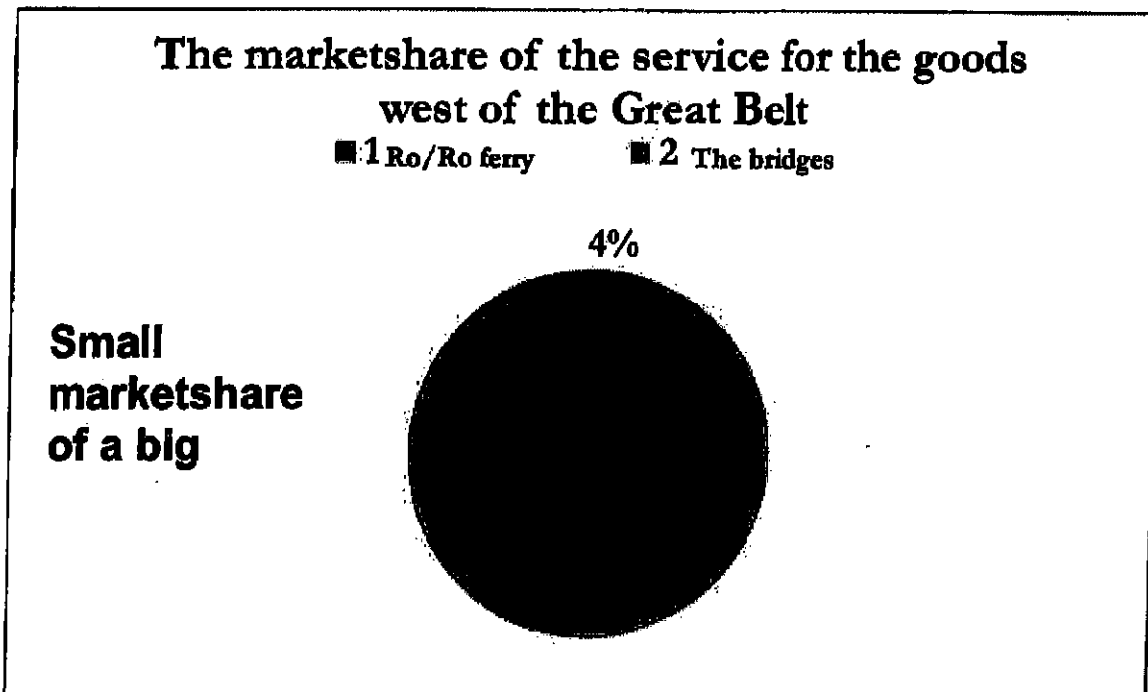


Fig. 1 market share

source Shippax

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Also from a future perspective the project looks very positive, the risk of a radical changing market is virtually non-existent, it is old and well established and the environmental benefit to the Danish and Swedish society is considerable (see II 3.1 and II 3.2 which is based on environmental models from South Danish University, one of the EU leading Institutions on these topics).

The project is based on trustworthiness granting users the possibility to become free part owners against a certain specified engagement in the project.

This form of engagement will give the user an ownership and he will be working for his "own" ferry.

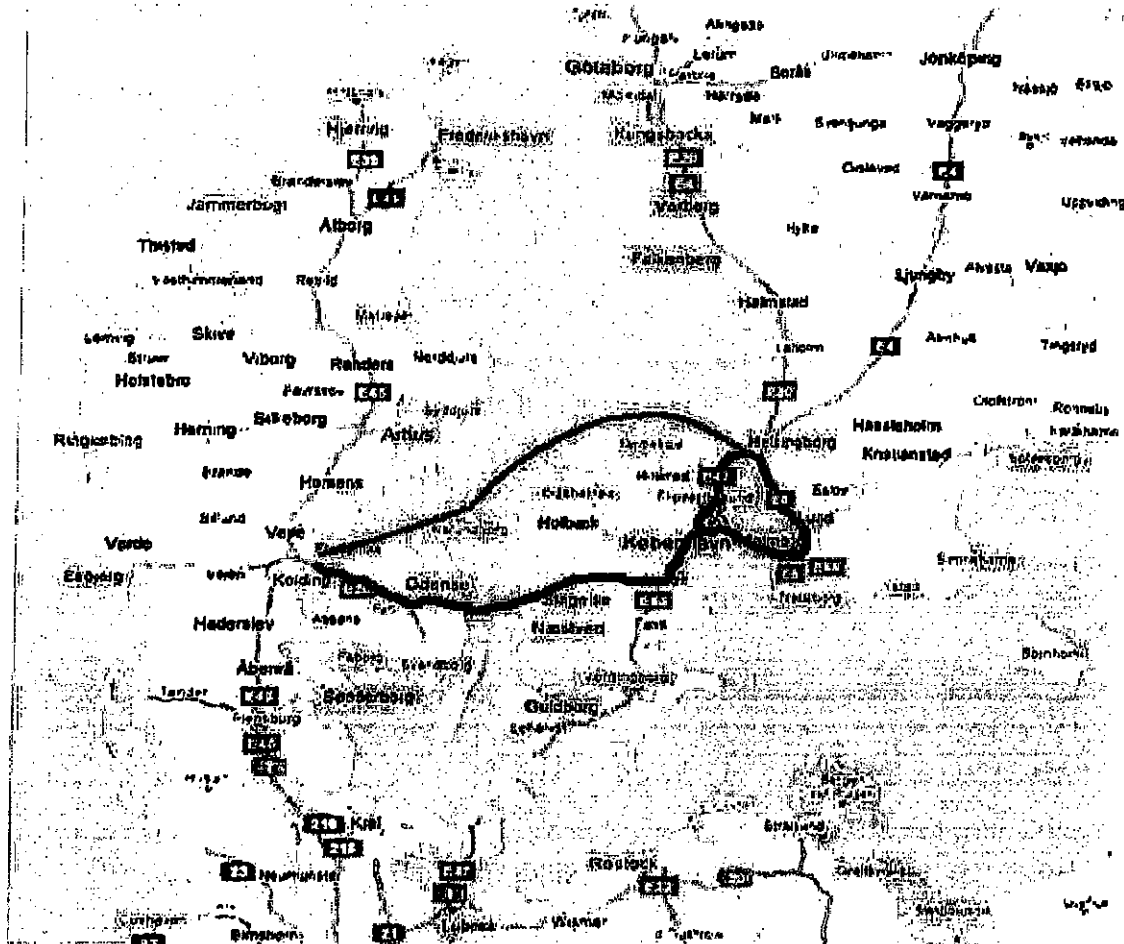
The user trustworthiness is important when starting short sea shipping lines.

Our expectations with the respect to implementation of the service will in short terms be as described below.

- 1) Two major traffic junctions are directly connected.
 - 2) We will reduce the traffic density in the Oresund's region especially around Copenhagen and Malmoe.
 - 3) Environment will benefit.
 - 4) Higher utilization rates of trucks reduced empty running related to shorter and more direction wise balanced trucking routes, as the Ro/Ro ferry will be part of the transport.
 - 5) Drivers will reach a higher degree of utilization, which is more important in the future, where a lack of drivers might become a reality once more.
 - 6) The ferry schedule is made by the users.
 - 7) Ownership with users will be a major selling point for further project sustainability as the interest for supporting a Ro/Ro ferry with shared ownership will be high.
 - 8) Competition in the corridor is the road based traffics, and the Ro/Ro ferry is dedicated to trailer based traffics and no passengers or passengers with passenger cars will transit with the Ro/Ro ferry.
 - 9) The project will shift 900 million tons km in the Marco Polo grant period.
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Project geography map:



The red lines are the existing transport corridors, and the blue line is the new Ro/Ro service.

Bridge to Bridges in Figures:

Route km via Malmoe	km 310 the long route 46 pct of cargo *)
Route km via Helsingore	km 256 the short route 54 pct of cargo *)
Min. Volume threshold with Marco Polo funding:	44 trailers each day each way
Current volume on contract and letter of intent:	56 trailers each day each way
Calculated Tons/Km shifted year one:	269.874.812 t.km.
Calculated Tons/Km shifted year two:	298.707.588 t.km.

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Calculated Tons/km shifted year three:	332.265.163 t.km
Calculated Tons/km shifted year four:	375.793.354 t.km.
Time used today basis 80 km/hrs no traffic:	3h 45m short route & 3h 45m long route
During rush hours an addition to above:	approximately 1h for both routes plus additional problems with drivers rest periods.
Transit time with the Ro/Ro ferry:	8½ -9 hours night time passing.
Estimated savings using the ferry service:	A 35% reduction in costs compared to the road solution with the lowest bridge tariff.

*) see ANNEX III 4.4

Description of the ports:

Fredericia

Associated Danish Ports A/S – ADP owns and operates three Danish ports – Fredericia, Middelfart and Nyborg. ADP was established in 2000 and is owned by the municipalities. The total cargo throughput was 14.1 mill. Ton's in 2009.

The cargo handled in ADP's ports comprises liquid bulk, dry bulk, containers, ro/ro and general cargo. The natural capture area of the port is local, regional and national.

The Port of Fredericia is located in the Triangle Region Denmark, one of the most dynamic and expanding business areas in Denmark. The port is located adjacent to the motorway junction where the north-/southbound E45 meet the east-/westbound E20. The distance to the railway junction Taulov handling the international railway traffic is approx. 5 kilometres.

The water depth is 15 metres. The port is ice-free. Access from the motorway to the port is 2 kilometres via a four-lane direct access road. The port offers railway tracks on all quays. The cargo throughput per square meter is between 7 and 8 tons compared to the Danish average of approx. 3 tons per square meter.

The port is served by more lines offering frequent liner services for unitised cargo. Three container lines (Unifeeder, CMA CGM and MSC) are offering four weekly calls for overseas feeder cargo as well as inter-European cargo. One Ro/Ro line, DFDS Tor Line offers two weekly calls for Klaipeda in Lithuania from where onward connections serve Russia and the Baltic states.

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The Port of Fredericia offers more Ro/Ro facilities with suitable ramps and terminal facilities with marshalling area, reefer connections, veterinary inspection etc. The port also offers container facilities with suitable crane equipment.

Helsingborg:

Helsingborg Hamn AB (Ltd.) was formed January 1st 1988 when the port authorities and the stevedore company merged into one company. The company is owned 100% by the city of Helsingborg, today with 250 employees whereof 20 is women.

The port consists of 4 different areas, Nordhamnen, Västhamnen, Sydhamnen and Bulkhamnen. The port covers an area of 6 km from the north to the south. Helsingborg Hamn AB had 46 427 ships calls in 2008, from where the ferries calls 44 126 times. The Turnover in goods is about 8 million tons and passenger traffics is about 11 million travelers.

The activity in the port is primarily passenger and ferry traffics, container traffics, traffics of conventional goods, bulk goods, and storage facilities, rented from the port by the local actors.

Helsingborg Hamn AB controls the running and maintenance of the port facilities. The port offers stevedoring and shore handling.

The Combi-terminal was erected in 2005 and is one of Sweden's most modern terminals. The terminal has 6 railway tracks each taking a full train. The terminal is further connected to the southern parts of the port where about 55000 containers and trallers are handled. Totally 50 full trains are handled weekly in the Combi-terminal, with prominent users such as IKEA and Boliden who have daily trains using or transiting the terminal. There is a daily train to and from Germany.

Large shore based trucks can handle containers and trallers to and from the train, as well as shift cargo between the trains weighing up to 45 tons per unit.

Nordhamnen

Oceanhamnen was build in the 1920's and was returned from the Government back to Helsingborgs City in 2008-2009. Every year about 11 million passengers and 2,5 million cars travels between Denmark and Sweden via Helsingborg. Scandlines AB has ferries that takes 1250 passengers and 238 cars, and is today, after the merger of HH-Ferries into Scandlines AB and the bankruptcy of Ace Link, the only ferry company offering service between the ports.

In the Cityhamnen in Nordhamnen you will find emergency rescue boats, coastguard, pilots and tugboats.

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Västhammen

In the Västhammen containers are handled with 5 containercranes and upto 45 tons lift capacity. The container terminal has an automatic wireless storage monitoring system integrated with the container trucks and cranes.

The largest mobile crane in Sweden is located permanently in the port.

Skåneterminalen

Helsingborg is the leading port in Scandinavia for direct imported vegetables and fruit.

Skåneterminalen is a so called multipurposeterminal, where all types of ships can be handled.

There are several buildings for storage of fruit and metals.

Helsingborgs Hamn is storage facility for the London Metal Exchange, and here is larger volumes in aluminum, copper, zink and lead stored. The crane lifting capacity is 65 tons.

Sydhamnen

Sydhamnen was established in 1962. The largest water depth is 13,5 meters and is handling bulk cargoes, cruise ships, and the Ro/Ro services TT-Lines weekly calling from Germany and SCA with their paper route to Europe and UK. About 7800 trailers are handled in Sydhamnen on TT-Lines vessels and some 3400 trailer units are handled by SCA.

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The traffic description on the route

The traffic moving between Denmark and Sweden across Oeresund is almost equally divided between the Ferries between Helsingore and Helsingborg and the Oeresund fixed link (Oeresundsbron).

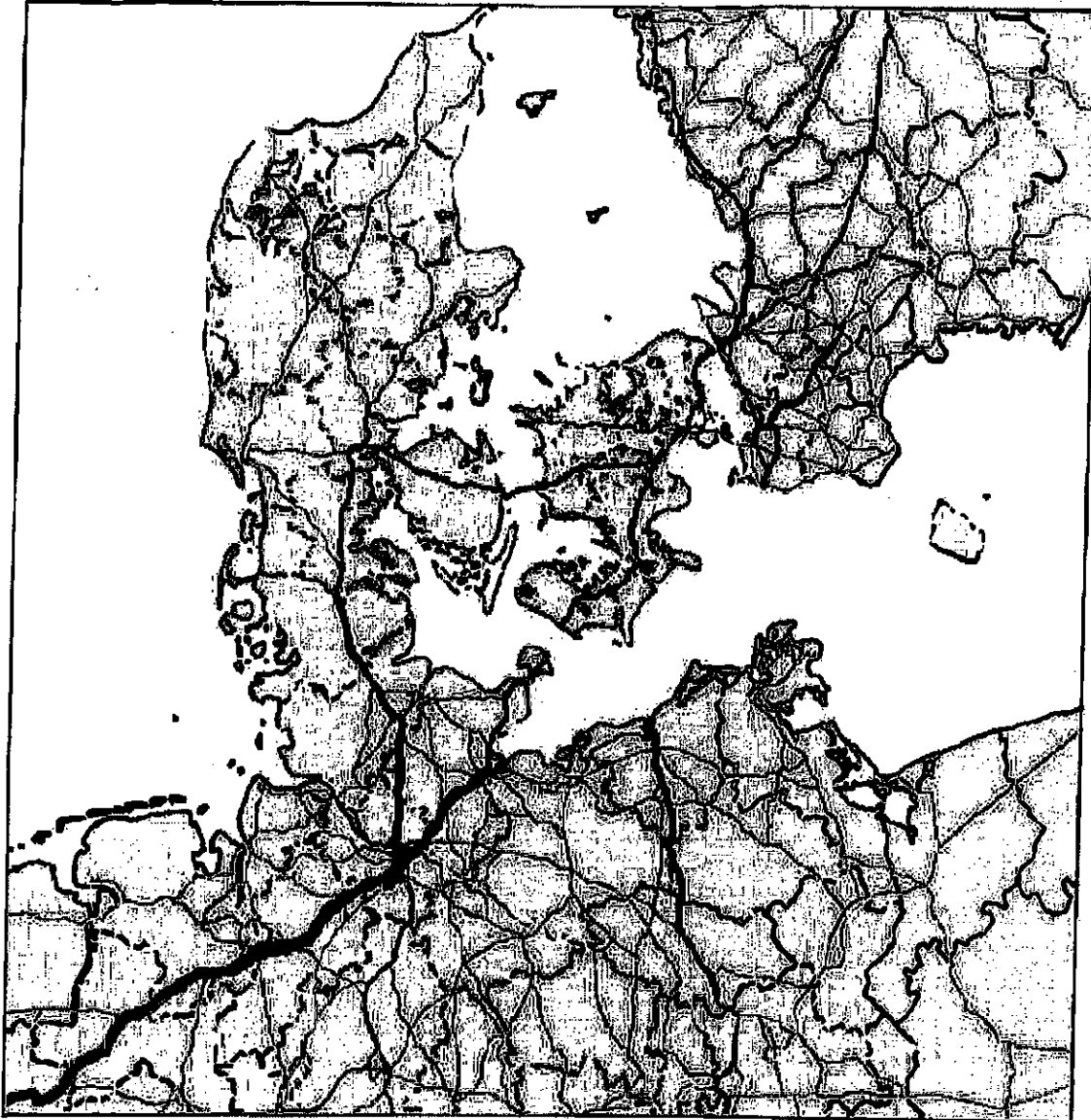
The total yearly amount of trucks and trailers passing Oeresund between Denmark and Sweden, either by the bridge from Copenhagen to Malmoe or by the ferries between Helsingore and Helsingborg, is about 674,000 (2009 shippax). Reliable data on the origin and destination of these trucks and trailers are unfortunately not easily available. However in 2005 the Danish government initiated an investigation on the future freight transport flows in Denmark. A cross-ministerial coordination group was established with the participation of the Danish Ministry of Transport and Energy, the Danish Ministry of Environment and the Danish Ministry of Economic and Business Affairs. In this context, the Danish Transport Research Institute (DTF) was asked to design a model that on the basis of economic growth could define scenarios for future freight for Denmark. Part of that work was to estimate the future transit flows passing through Denmark (Forecasting future freight flows for Denmark, Task 4, Danish Transport Research Institute 2005).

Unfortunately the investigation did not specifically focus on the traffic volumes of interest for the Bridge the Bridges Project – meaning traffic volumes both crossing the Great Belt Bridge and Oresund (by ferry or Oresund Bridge)– but it can still be used to give some qualified estimates on not only the current number of moves but also the future volumes.

Out of the 674,000 moves crossing the Oresund in 2009 some 35,000 moved can be associated with the Femarn corridor. The moves going in and out of Zeeland (thereby only crossing the Oresund) are estimated to account for some 190,000 moves leaving some 450,000 moves to cross both Oresund and the Great Belt Bridge. It is from those 450.000 moves the Bridge the Bridge Project will have its market. It is worth noticing that in order for the Bridge the Bridges Ro/Ro Service to reach 29.000 trailer moves per year it will only have to attract some 6% of the total volume.

The future potential for attracting volumes to the Ro/Ro service is however much bigger. The following figure shows the model result for the increase in transit freight volumes from the "Forecasting future freight flows for Denmark".

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The blue lines on the figure indicate decrease whereas the width of the red lines indicated the expected increase (ton/year) between 2000 and 2025.

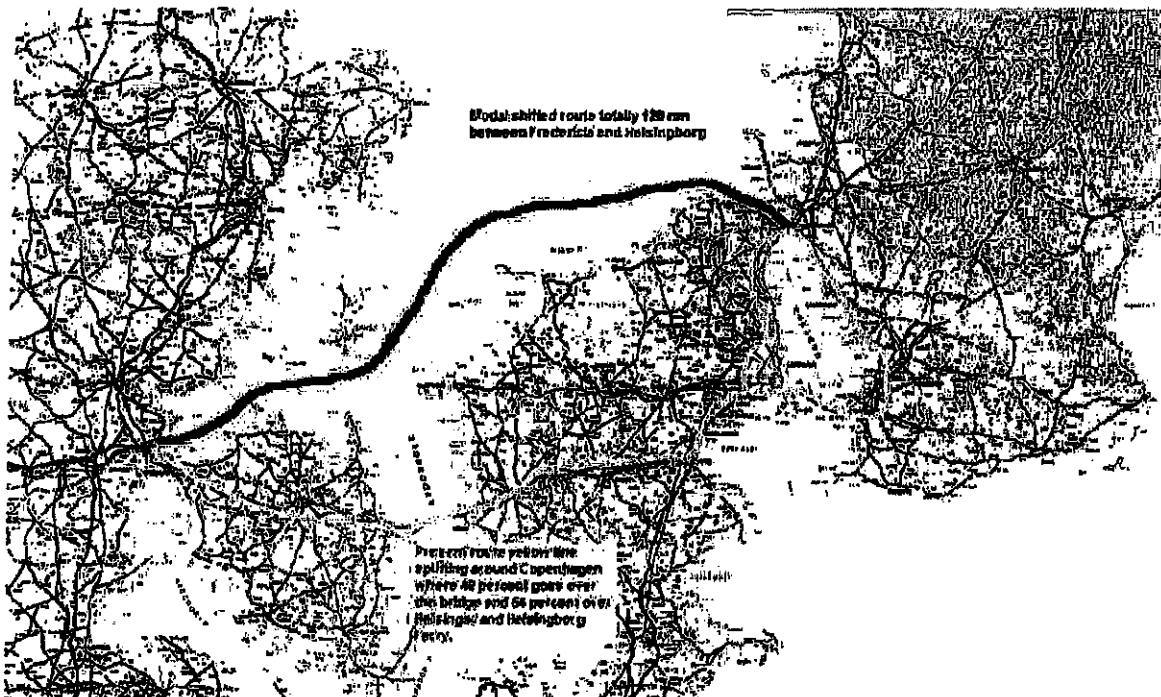
The expected increase in the Femarn corridor due to the fixed Femarn link are clearly visible but more interesting is the expected increase in the transit volumes going up through Jutland – passing Frederica and crossing both the Great Belt Bridge and Oresund. The expected increase for this transit flow is some 10-15 mill ton/year corresponding to some 500,000 – 750,000 moves/year (assuming an average payload of 20 ton). It can actually be seen that this flow is expected to cross Oresund using the Helsingore – Helsingborg connection making the Bridge the Bridges even more relevant and attractive. This means that a significant yearly increase in the potential catchment volumes for the Bridge the Bridges Ro/Ro connection can be expected within the coming 10-15 years.

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The modal shift

The Bridge the Bridges Project will shift away traffic from dense populated areas on Funen and Sealand, and will ease the transport density in major cities such as Odense, Copenhagen and Helsingore in Denmark and Malmoe in Sweden.

The Bridge the Bridges project will offer a daily service between western Denmark and Sweden to and from two of the most important traffic junctions in the two countries with respect to, rail and highway.



Picture of route where red line is the Modal Shifted Route with the Ro/Ro service in red, and the route splitting in two routes the yellow lines which the goods is following today.

Competitive pricing:

The pricing of freight on the service is for this project only looking to compete with the costs for the Road transport corridor Fredericia to Helsingborg and return.

In the corridor you have the toll station at the Great Belt Bridge where you pay toll for passing the Great Belt Bridge, that toll is usually based on volumes and rebates, however the project only include the lowest obtainable fee for transiting the bridge in the costs calculations comparing a road and Ro/Ro based solution. The toll fares are publicly announced on the homepage of the bridge (www.storebaelt.dk).

On the passing of the Oresund the two choices available are being calculated namely the Scandlines AB new schedule cooperating with HH ferries between Helsingore and

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Helsingborg, and the Oresund's Bridge (www.oresundsbron.dk). For both transit places you have a fee for the transit, and our research indicates that the lowest fee for transiting the Oresund is the Bridge, the difference in costs between the Bridge and the ferry is about the level of savings you have in Kilometers using the shortest route via Helsingoer and Helsingborg, the difference is 54 km. Again we include only the lowest fee for transit in our calculation of the actual cost, being the fare over the Oresund's Bridge (Publicly available.). The toll station on the Oresund's Bridge is situated in Sweden.

The Service and other routes:

The service is the first and only of its kind dedicated to unaccompanied trailer traffics in the corridor and is competing with road traffic only. Other ferry routes mainly serve accompanied trailers, which the new service does not, and those services are situated between 145 km and 265 km further north of the port of Helsingborg or Fredericia. (The routes in the north are primarily designed for accommodating accompanied trailer units).

The railway has very limited capacity to pass the Oresund Bridge. Already in October 2008 the news on the National TV, DR, informs that the daily trains with goods has gone up to 40 trains and the bridge capacity for goods train traffics has reached its maximum. The Ro/Ro ferry service therefore is not a competitive system to trailers on rail-cars, there is no more space for train transfers.

The Ro/Ro service will offer a departure every evening in each direction from Sunday to Saturday, with a transit time of 8.5 to 9 hours.

There will be a restricted accommodation for drivers onboard, a max. of 12. The service is envisaged to be a pure unaccompanied trailer service, unique in the corridor.

With respect to the possibility of adding services the basic schedule is based on only 6 weekly departures each direction with two Ro/Ro ships, which can be enlarged at a later stage.

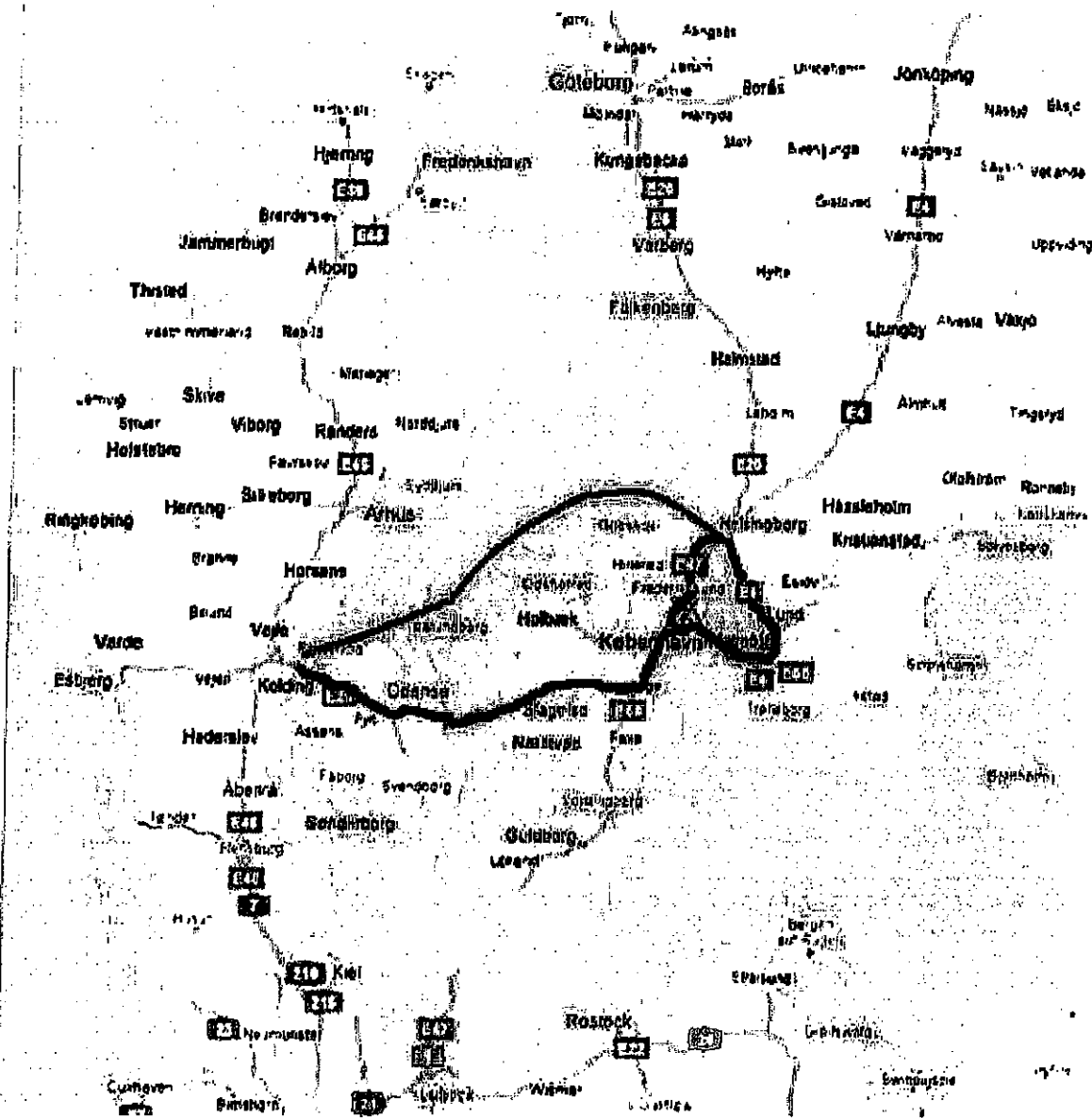
We calculate in the basis the smallest Ro/Ro ships available for charter in the market i.e. between 700 and 1200 lane meters, which are in fact the most expensive ships per trailer slot, leaving sustainable room for optimizing costs with bigger ships when the trade adapts to the service.

Dangerous goods will be accepted on the Ro/Ro service which will in turn assist the present market to cost reduce the transport which today for some types of goods has limited hours to pass on the road to Sweden.

In Helsingore and Helsingborg only nighttime departures without too many passengers onboard is allowed to transit with dangerous goods, and on the Oresund's Bridge special hours of the day is allocated for transiting Dangerous goods.

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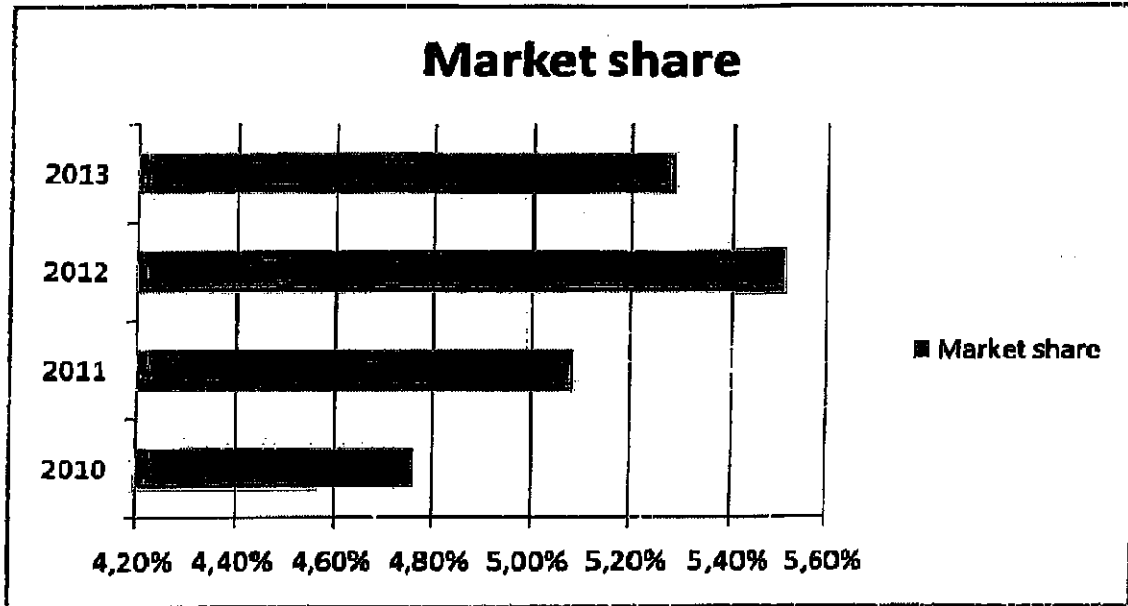
III.1 Map with old and new route



Red Line the original road route, Blue Line the Modal Shifted route.

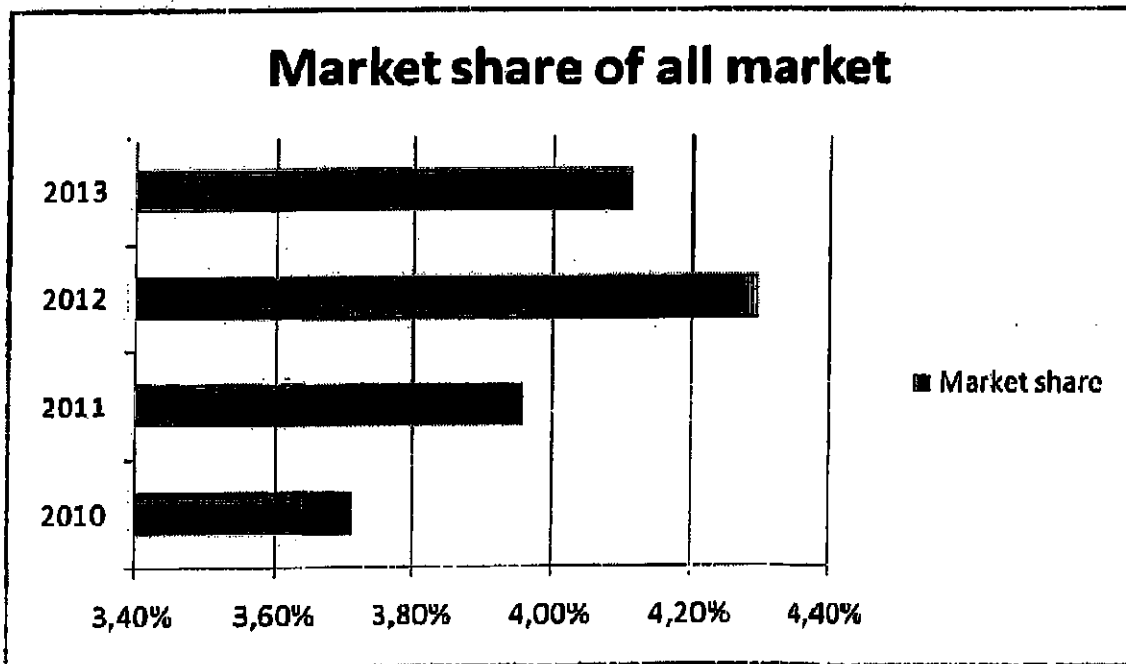
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Market share for the Ro/Ro's forecasted in budget years



Incorporating also the routes being 150km and 250 km further north of the envisaged route
The share of the route total trade between Denmark and Sweden is illustrated as follows:

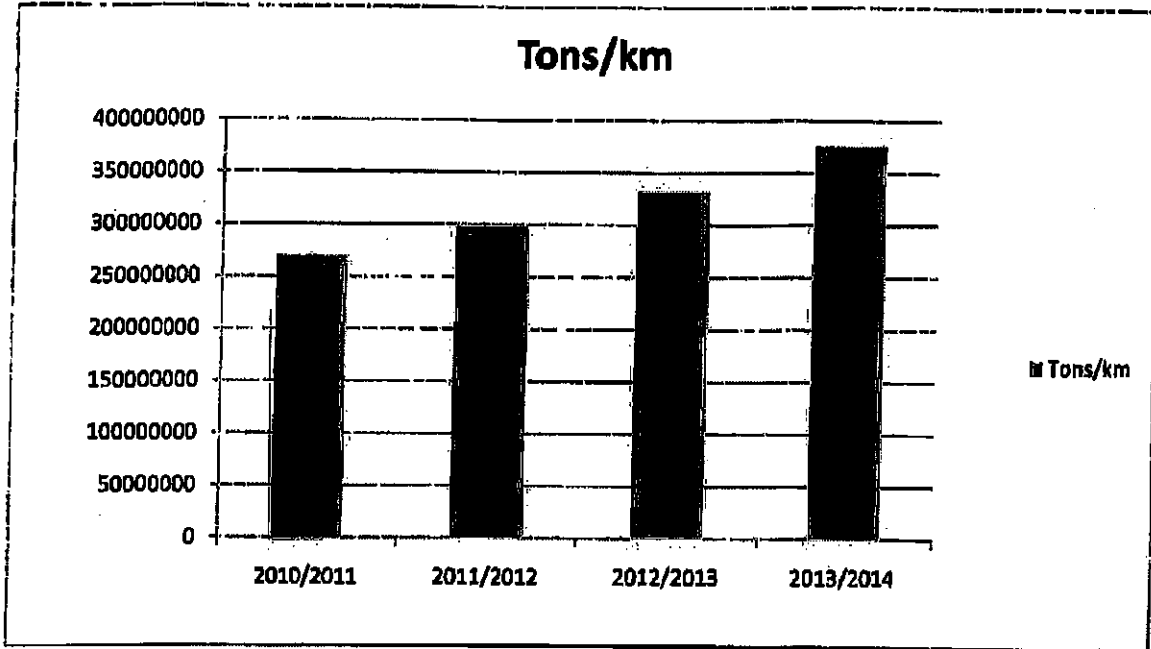
Market share for the Ro/Ro's in total of the market



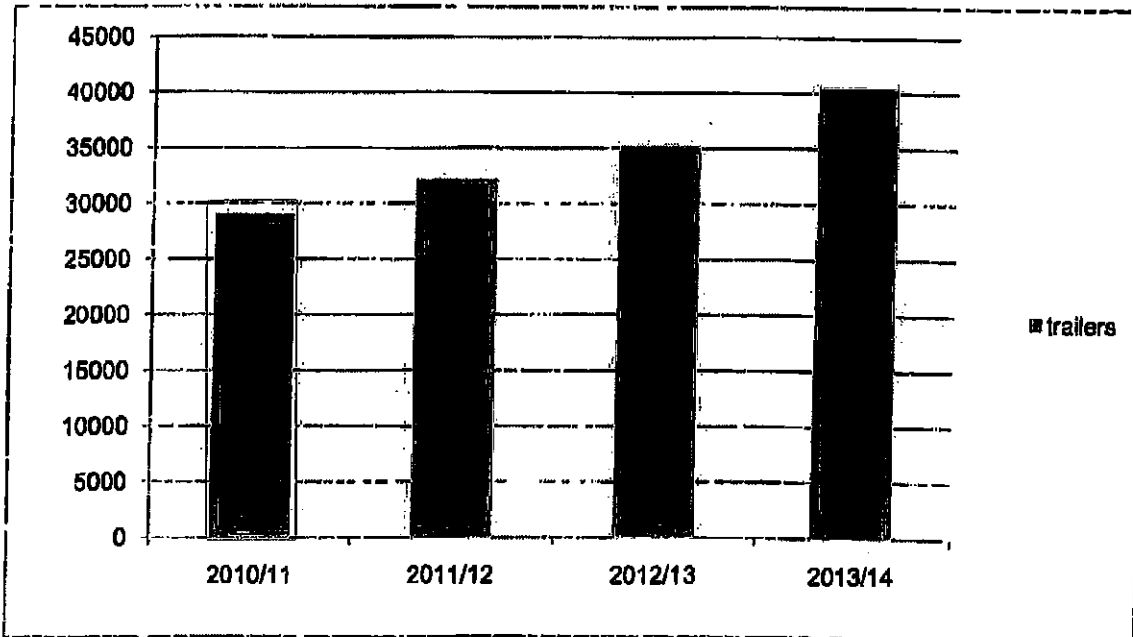
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III 3 continued...

Graphic development of tones kilometer during the action and one year after:



Graphic development of the trailers loaded during the action



Bridge the Bridges Project

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25 June 2010

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J.nr.:

Calculation of change in external cost of transport due to a Ro/Ro connection between the Port of Frederica (DK) and the Port of Helsingborg (S)

A Ro/Ro connection between the Port of Frederica in Denmark and the Port of Helsingborg not only has implications for the transport cost, it also has implication for the externalities of transport.

As the modal shift only will move traffic away from Danish part of the TEN-T (primarily E20) the calculation of external cost has been based on the Danish values for the external cost of transport.

The external cost of transport in Denmark

The external cost of transport in Denmark is updated and published on a regular basis. The latest update was in August 2009 and these values are used for the calculation of change in the external cost of transport as a consequence of a new Ro/Ro connection between the Port of Frederica and the Port of Helsingborg. The following

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table shows the external cost of transport for road transport with truck.

Truck Road transport EUR/km (central estimate 2009)					
Air pollution	Climate Change	Noise	Accidents	Congestion	Infrastructure
0.035	0.010	0.041	0.120	0.079	0.127

There exists no official Danish value for the external cost of Ro/Ro shipping. The only two ship types that are valued are a coaster and a small containership. Instead the external cost of Ro/Ro shipping has been calculated based on the fuel consumption of the Ro/Ro ship. For all types of ships there is no external cost for Noise, Accidents, Congestion and Infrastructure. It means that the external cost only consists of Climate Change (CO₂) and Air Pollution (Particles, NO_x, SO₂, CO and HC). As CO₂ has global impact the same valuation as for road transport has been used. For Air Pollution Ro/Ro transport is somehow different from road transport as air pollution has a local impact and the potential exposure at sea is quite different from the one on land. It is therefore chosen to value the air pollution at sea as the low estimate of rural air pollution from roads.

The Danish external cost for Climate Change and the different components of Air Pollution are shown below.

External cost for Ro/Ro EUR/kg (central/low estimate 2009)					
CO ₂	SO ₂	NO _x	CO	HC	Particles
0.013	2.148	1.342	0.000	0.537	18.792

The change in external cost of transport

The change in external costs due to the introduction of the Ro/Ro connection between the Port of Frederica and the Port of Helsingborg to a large extent depends on the utilisation of the Ro/Ro ship. The Ro/Ro ship only has externalities due to air pollution and climate change. Both of these externalities are directly linked to the fuel consumption and that is basically the same regardless of the payload. So the more volumes the Ro/Ro ship

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	Pollution	e Chang e				structur e	
External cost of road transport pr. trailer trip (EUR)	9.9	2.7	11.4	33.8	22.1	35.7	116
External cost of road transport for 56 trailer trips (EUR)	554.2	151.7	638.8	1,891.7	1,237.5	2,000.3	6,474

This means that the external cost of sailing the 56 trucks on the Ro/Ro ship one trip between the Ports of Frederica and Helsingborg is EUR 2,940 and the external cost of the same trip when the 56 truck uses the road is EUR 6,474. The potential saving in external cost by introducing the Bridge the Bridges project will be EUR 3,533 pr. trip.

Best regards,

Jacob Kronbak

Associate Professor, Ph.D.

Centre for Maritime Research and Innovation
