

Structuring and Analysis of the East-West-Corridor via Skåne-Blekinge

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East West TC

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0. Summary

This study is focussed on the potential modal split effects of road user charges (truck/train/ship) along an east-west corridor via the Skåne-Blekinge region, northern Europe (northern Germany and Poland) as well as in the southern Baltic Sea corridor.

Based on the existing trade along the defined east-west corridor, simulations of the distribution of the freight transports between truck-, train- and sea transports have been made.

The simulated changes have been carried out for three separated corridors (southern Sweden, northern Continental Europe as well as in the southern Baltic Sea corridor) within the overall defined East West Transport Corridor.

The impact of an introduced road user charge shows a reduction of approximately -10% for truck transports and an increase of 5% for train transports in the Skåne-Blekinge corridor. At the same time there is an indication of increased truck and sea transports in the northern Germany-Poland corridor and in the southern Baltic Sea corridor.

The changes measured in tonkm in the scenario with introduced road user charges for truck transports in the Skåne-Blekinge corridor, are estimated to be reduced by approximately -15% whereas the train transports are estimated to increase by 7%.

1. Introduction and study purpose

Background

This report is a complementary study to the earlier study of potential modal split effects in Sweden as an effect of the introduction of

road user charges for trucks on the Swedish road network (Effects of road user charges for heavy goods vehicles and the potential to influence modal split, see <http://www.sir-c.se/Swedish.asp>).

The study has been carried out by Dr. Matts Lundin, Tyréns Temaplan Stockholm. The study has been commissioned by Lars Örnfeldt, the Swedish Road Administration.

Purpose

This complementary study is focussed on the potential modal split effects of road user charges (truck/train/ship) along an east-west corridor via the Skåne-Blekinge region, northern Europe (northern Germany and Poland) as well as in the southern Baltic Sea corridor.

Methodology

The model

The project has been carried out by using a freight flow simulation model, EFM-STAN.

With the freight flow simulation model EFM, the effects of new nodes (e.g. a port) or links (e.g. a shipping service) or changes in costs can be simulated. If such new services or infrastructures or cost changes are added to the system of existing trade and transport relations, the recent status would be perturbed by the change and a new cost optimised traffic distribution would be the result. The changes of transport freight flows in the network can be provided in tonnes/year for links and nodes, the modal shift effects in tonkm/year (transport work).

STAN (Strategic Transportation Analysis) is an interactive-graphic transportation planning software, especially designed for national or regional strategic analysis and planning of multi-modal freight transportation. A European freight model (EFM) has been

implemented within the STAN software environment. The model is focussed on freight transports and can manage domestic and export/import flows between defined regions in Europe. The model also handles flows to the rest of the world. Different databases are used in the system to make simulations of freight flows on networks for several types of modes.

Transport demand

Based on the existing trade along the defined East West Transport Corridor, see appendix 1, simulations of the distribution of the freight transports between truck-, train- and sea transports have been made. The transport demand for the trade along the corridor can be divided into two parts:

1. Transport demand between

- a) Region East (Latvia, Lithuania, Russia, Belarus, Ukraine, northern Poland)
- b) Region West (UK, Denmark, northern Germany),
i.e. transit flows through southern Sweden.

2. Transport demand between southern Sweden¹ and region East and Region West, respectively, i.e. Swedish export/import.

In the study the domestic freight flows have not been included.

2. Scenarios, analysis and results

The simulated changes in the route- and modal split distribution between truck-, train- and sea transports along the East West Transport Corridor are measured as changes in the transport work (tonkm) in southern Sweden. In addition changes in modal split have been estimated in terms of changes of tonnes/year on representative links. These registered changes have been carried out for all three corridors (southern Sweden, northern

¹ Skåne and Blekinge

Continental Europe as well as in the southern Baltic Sea corridor).

The changes are compared between the existing situation (without road user charges, **scenario 1**) and a scenario with road user charges² introduced (**scenario 2**) on the Swedish road network for truck transports (according to the SIKÅ/VTU proposal i.e. +50% of operative distance dependant cost in relation to existing level. At the same time the Euro vignette time dependant cost has been excluded). In addition a scenario with double fee level (**scenario 3**) has also been studied.

In table 1 below, the simulated changes in tonnes/year on selected links, see appendix 3-6, are shown for the three defined east-west corridors in this study. The impact of an introduced road user charge (scenario 2), shows a reduction of approximately -10% for truck transports and an increase by 5% for train transports in Skåne/Blekinge. At the same time there is an indication of increased truck and sea transports in the northern German/Poland corridor and in the southern Baltic Sea corridor.

In the scenario with double road user charges (scenario 3), these simulated changes are further increased.

² Corresponding to Base Scenario 1 in the study "Effects of road user charges for heavy goods vehicles and the potential to influence modal-split, SIR-C"

Table 1 Tonnes/year on selected links in different corridors – changes in index values

Scenario	Tonnes/year on selected links				
	Skåne/Blekinge		Northern Germany/Poland		Southern Baltic Sea
	Truck	Train	Truck	Train	Ship
Scenario 1 – actual situation	100	100	100	100	100
Scenario 2 – base scenario (road user charge: +50% operative distance dependant cost)	91	105	101	-	101
Scenario 3 – double road user charge	81	106	102	-	102

In table 2 below, the simulated changes in tonnes km/year within the region Skåne-Blekinge are shown. The changes measured in tonnes km in this region include some freight flows also partly outside Skåne-Blekinge, mainly via the Stockholm region, see appendix 2. Some parts of these flows might be potential flows for the East-West corridor via Skåne-Blekinge when the road user charge is implemented.

The changes measured in tonnes km include changes both in tonnes and distances, which implies that the changes in tonnes km are higher compared with the changes in tonnes.

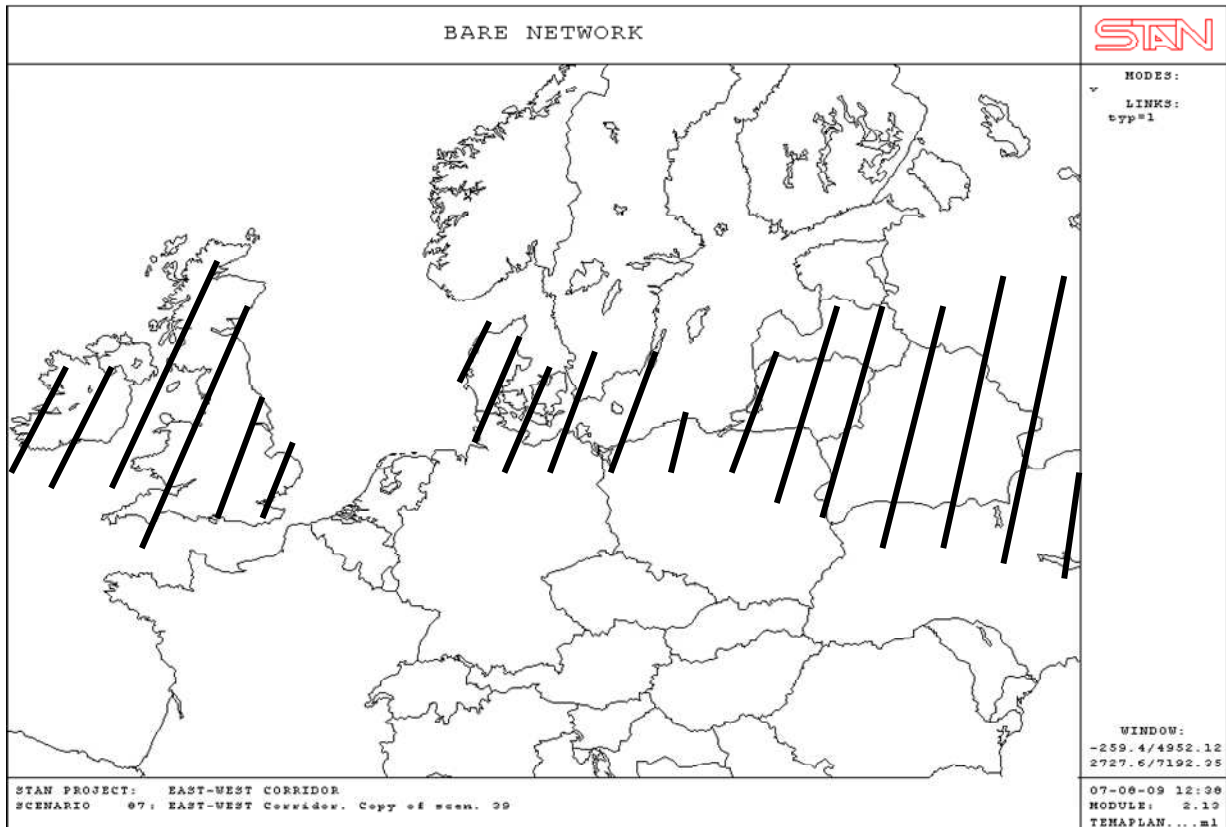
The changes measured in tonnes km in scenario 2 for truck transports are estimated to approximately -15% whereas the train transports are estimated to increase by 7%. In the scenario with double road user charges, the changes are further increased.

Table 2 Tonnes km/year in Skåne/Blekinge – changes in index values

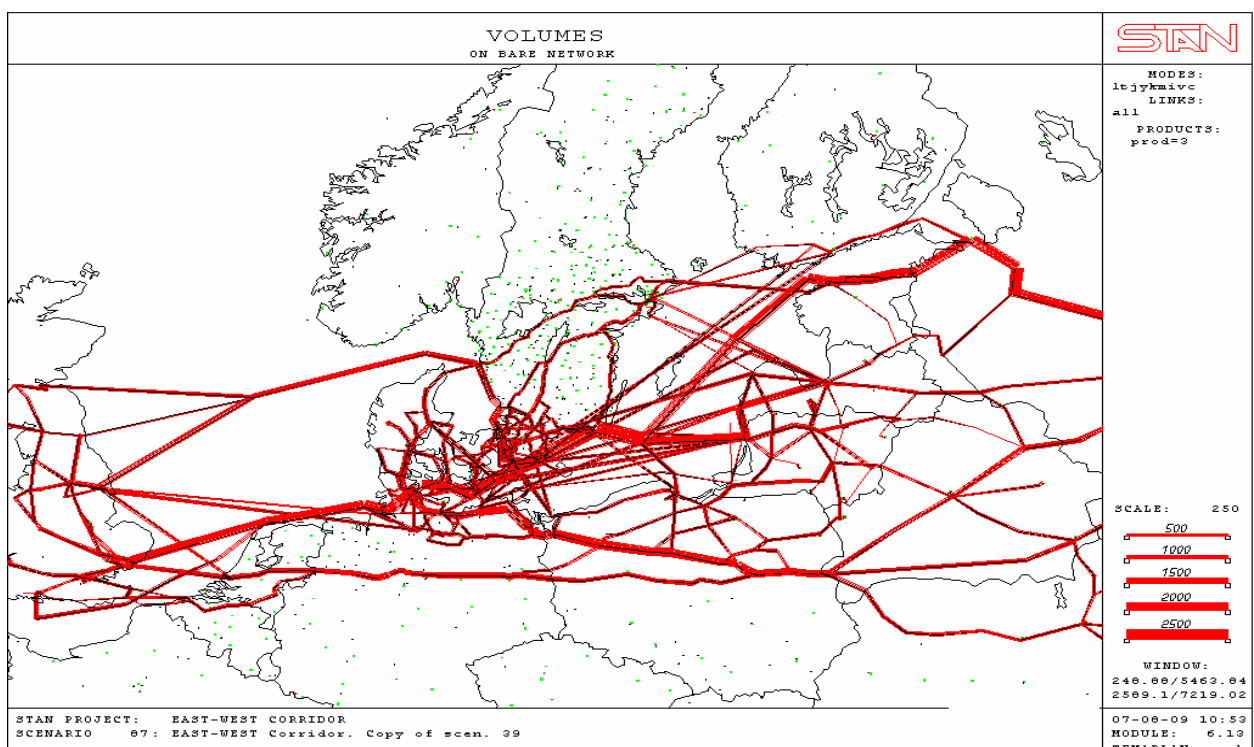
Scenario	Tonnes km in Skåne/Blekinge	
	Truck	Train
Scenario 1 – actual situation	100	100
Scenario 2 – base scenario (road user charge: +50% operative distance dependant cost)	85	107
Scenario 3 – double road user charge	75	112

Appendices

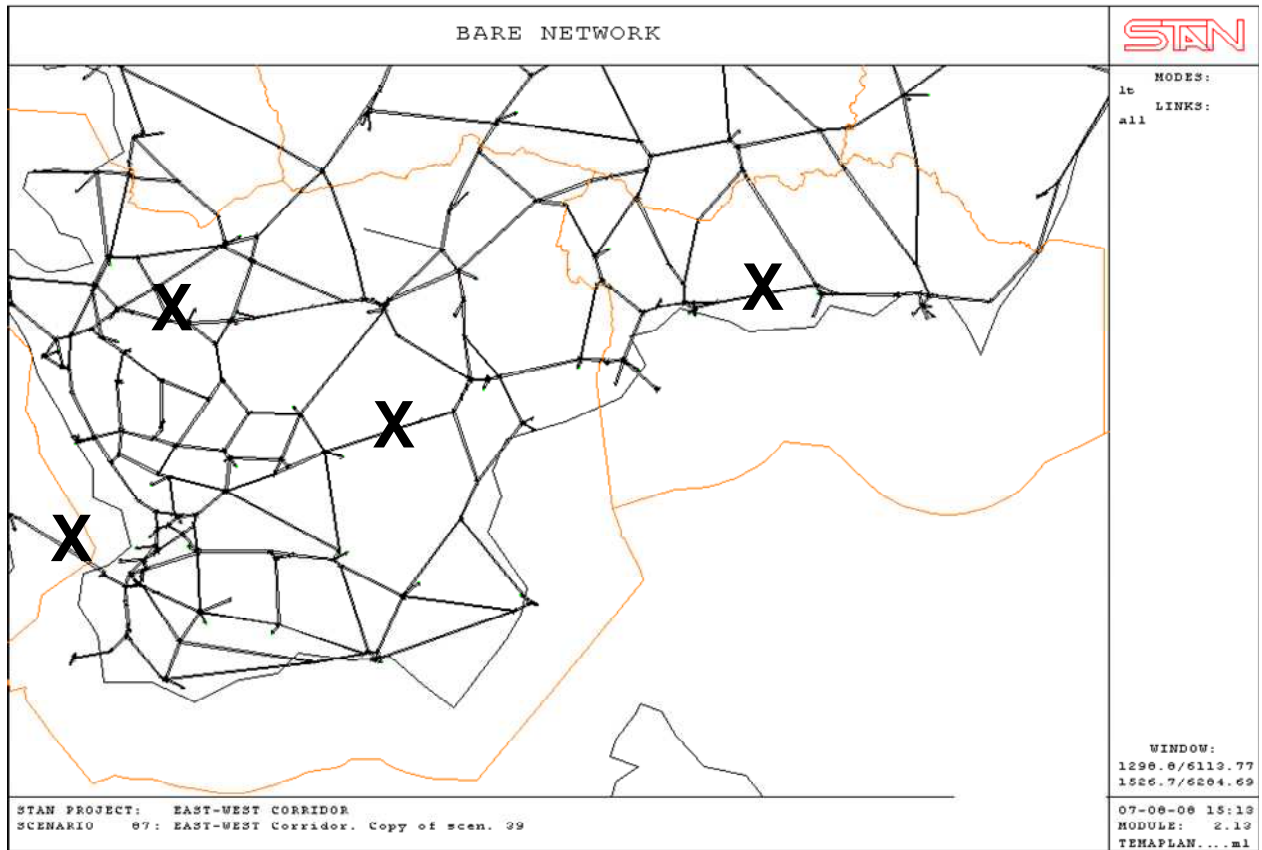
Appendix 1 Defined East-West trade regions



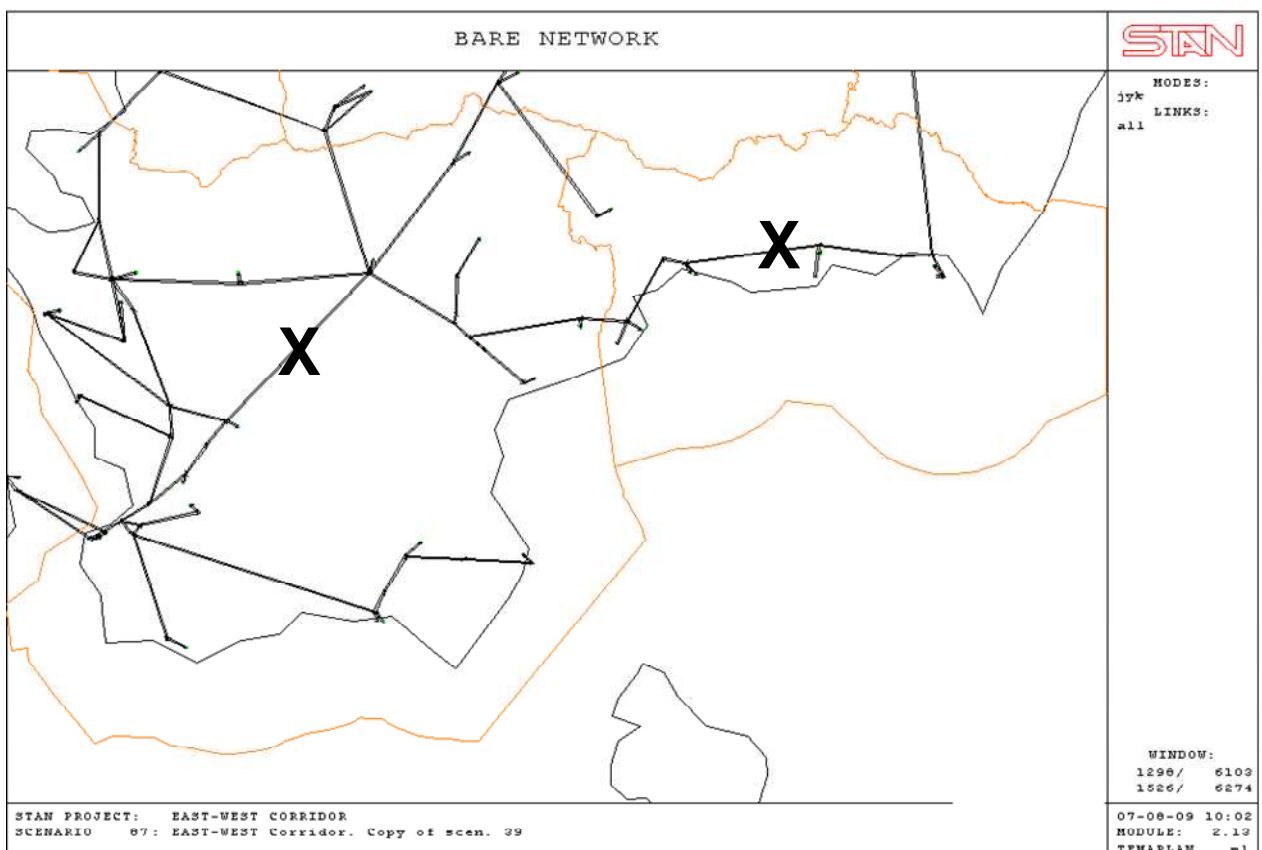
Appendix 2 Simulated East-West freight flows



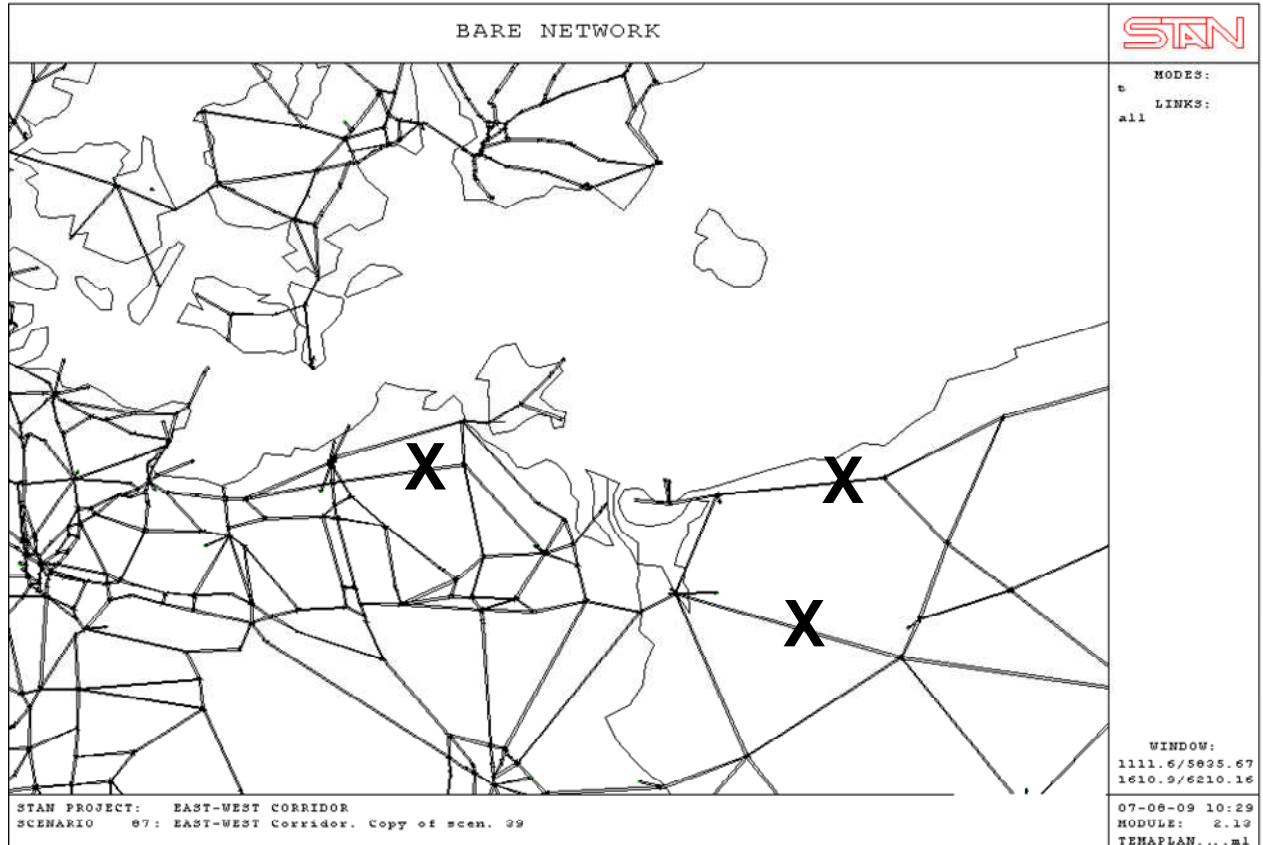
Appendix 3 Selected road links in Skåne/Blekinge



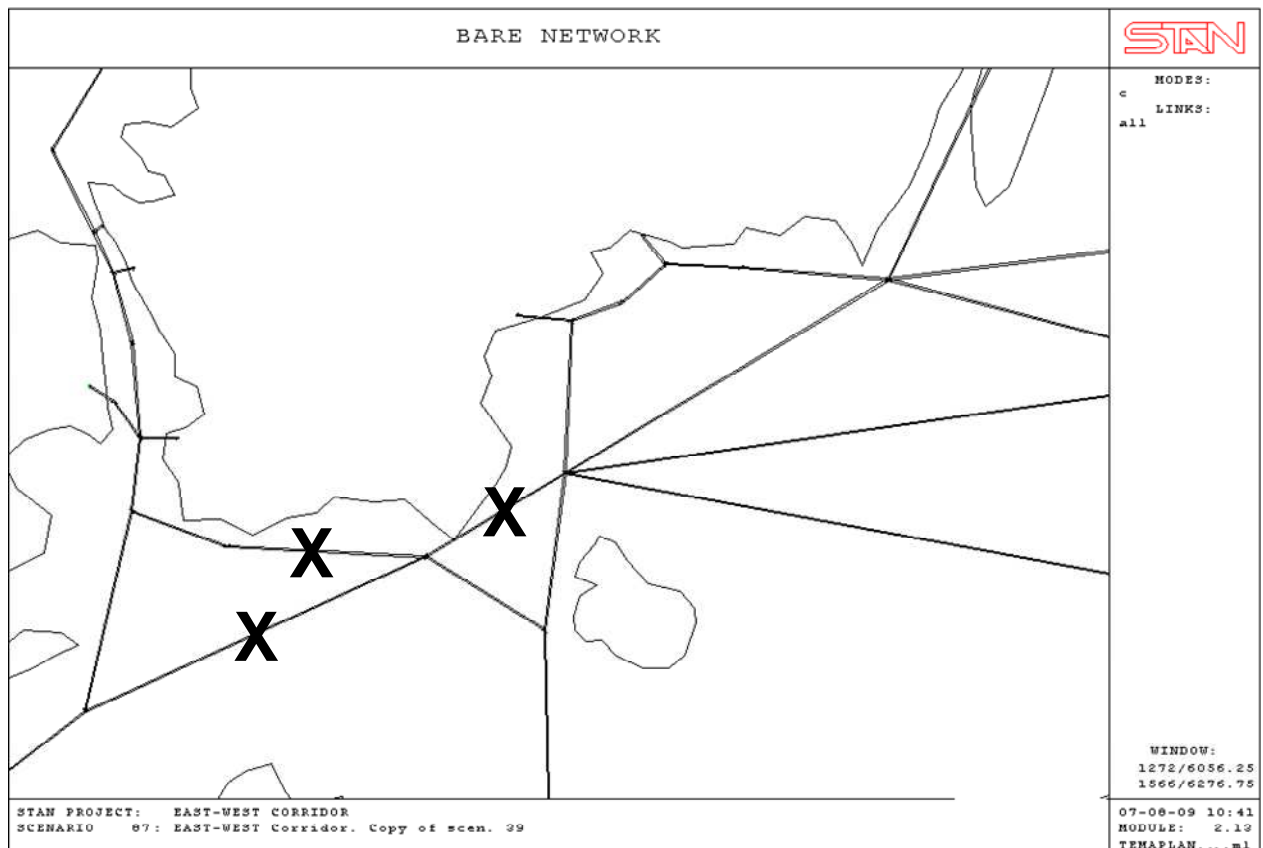
Appendix 4 Selected rail links in Skåne/Blekinge



Appendix 5 Selected road links in northern Germany/Poland



Appendix 6 Selected short sea links in southern Baltic Sea







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Aerotech Telub	Municipality of Ronneby
Baltic State Fishing Fleet Academy	Port of Esbjerg
Blekinge Institute of Technology	Port of Karlshamn
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