

The Bothnian Extension of The Scandinavian- Mediterranean Core Network Corridor

Summary of European Added Values



**BOTHN | IAN
CORR | IDOR**

Title of report:

The Bothnian Extension of the Scandinavian-Mediterranean Core Network Corridor - Summary of European Added Values.

Issued by:

Intresseföreningen Norrtåg and the Bothnian Corridor regional collaboration.

**Contact:**

Joakim Berglund, project manager, The Bothnian Corridor

Phone: +46 70-239 54 60

E-mail: joakim.berglund@bothnianscorridor.com

Web: www.bothnianscorridor.com/en/

Author:

Gustav Malmqvist, MIDEK AB

Phone: +46 70-663 04 42

E-mail: gustav@midek.se



Norrtåg Intresseförening is a political association, founded in 2001, between the five northernmost regions of Sweden. In this association local and regional authorities collaborate on the development of railways in northern Sweden. Norrtåg Intresseförening initiated the establishment of Norrtåg AB which is the company responsible for the regional commuter trains in the northern half of Sweden.

Norrtåg Intresseförening is co-ordinating the Bothnian Corridor regional collaboration since 2007, which involves the local and regional authorities but also collaboration with transport stakeholders, companies and industry associations.

Table of Contents

1	Introduction.....	4
1.1	Proposal for extension of the Scand-Med Corridor	4
1.2	Aim of this report.....	4
2	Background of the Bothnian Corridor	5
3	Geography of the Bothnian Corridor	6
4	Bothnian Corridor and Scand-Med CNC goals.....	7
5	Current status of the Bothnian Corridor	8
5.1	The multimodal dimension of the Bothnian Corridor	8
5.2	Railways.....	9
5.3	ERTMS.....	11
5.4	Roads.....	11
5.5	Alternative fuels.....	12
5.6	Ports.....	13
5.7	Rail-road terminals	14
5.8	Airports	15
6	Development of the Bothnian Corridor	16
6.1	Summary of ongoing development.....	16
6.2	Priority projects	16
7	Pre-identified sections in the extended Scand-Med CNC.....	18
8	Conclusions	19

1 Introduction

1.1 Proposal for extension of the Scand-Med Corridor

The Swedish Government has in March 2018 proposed to the European Commission that the TEN-T Scandinavian-Mediterranean Core Network Corridor should be extended to the north with the so called Bothnian Corridor, to the border to Finland in Haparanda and to the Norwegian border at the Malmbanan Line. In the proposal is also included an extension to the east from Stockholm to Oslo.¹

At the same time the government of Finland proposed to the commission that the North Sea Baltic Corridor should be extended from Helsinki to the border to Sweden in Torneå. This means that these two core network corridors will be aligned at the border crossing point of Haparanda/Torneå.

The proposed extensions of the core network corridors are logical since much of the current cargo flows in the corridors are generated in northern Scandinavia, and the export industries in this area generates a huge European added value with importance for growth and prosperity of the whole European Union. The extensions are strongly supported by the industry and regional authorities in both Sweden and Finland. Considerable amounts of the goods generated in these regions are transported to central and southern Europe, via the Bothnian Corridor and further south in either of the Core Network Corridors. South of Sweden and Finland are included in the Scandinavian-Mediterranean Corridor and the Helsinki region is also connected to the North Sea-Baltic Corridor.

1.2 Aim of this report

This summary of the European added values of the Bothnian Corridor (BC) aims for presenting the current status of the corridor and its contribution to the goals of the Scandinavian-Mediterranean CNC, which is continuously monitored by the corridor coordinator. The current status of the BC, ongoing and planned development, are described and compared with some of the performance KPI's of the third corridor work plan for the Scan-Med CNC. Facts and figures in the report refer to studies made in the ongoing Bothnian Corridor collaboration since more than ten years and to studies from completed and ongoing EU projects funded by ERDF, Interreg and TEN-T/CEF, statistical sources such as Eurostat and SCB and information from the Swedish Transport Administration.

The report is intended to provide the most essential information for the preparation for the inclusion of the Bothnian Corridor into the Scandinavian-Mediterranean Corridor, and for the drafting of updated CEF and TEN-T regulations.

¹ Letter to the European Commission, from Swedish Government, Ministry of Enterprise and Innovation 21 March 2018

2 Background of the Bothnian Corridor

Since more than 20 years, politicians, regional stakeholders, industry and national authorities have collaborated for improving the transport infrastructure along the so called **Bothnian Corridor** for enabling the ongoing industrial growth in northern Scandinavia. The Bothnian Corridor has been acknowledged in both Sweden and Finland as the core north-south railway infrastructure at both sides of the Bothnian Gulf. In recent years the emphasis of the collaboration has been more and more on the development of the most environmentally friendly modes of transports such as railway and ports, but also on increasing the availability of alternative fuels for road transports.

For many years the focus of the Bothnian Corridor has been the development of the railway infrastructure, even though the corridor involves all modes of transport. The heavy industries in northern Sweden depend on functional transport systems in the corridor, with all modes of transport: railways, roads, sea transports and air.

Table 1: Socioeconomic indicators of the Scan-Med CNC and the Bothnian extension of the Corridor ^{2 3}

2013	Inhabitants	Employment	GDP/GRP (M €)	GRP/Cap
EU 28	506,682,935	215,443,000	13,518,112	
Scan-Med Corridor regions (NUTS 3)	76,687,130	36,173,000	2,697,799	35,179 €
	15.1%	16.8%	20.0%	
Bothnian Extension (NUTS 3, 6 regions) % of EU 28	1,652,378	779,500	67,627	40,927 €
	0.33%	0.36%	0.50%	

Even if regions at the Bothnian Corridor are less densely populated than many regions along the southern Scand-Med CNC, they contribute to 0.5 % of the GDP in EU 28 due to the many heavy industries, which is also shown by the much higher GDP per capita.

The railways in the Bothnian corridor are critical for industries in the mining, steel, copper and forestry sectors. More than 90 % of the iron ore produced in Europe comes from the mines in the Norrbotten and large parts of this production are transported to the port of Narvik in Norway or to the port of Luleå. Other parts of the iron ore are used for the steel production at SSAB in Luleå. From this production an amount as large as the steel content of the Eiffel tower is transported every day!



² The table is an extended version of the one used in the Scand-Med 3rd Corridor plan draft version Dec. 2017.

³ Figures for Bothnian Extension comprises the NUTS 3 regions of Uppsala, Dalarna, Gävleborg, Västerbotten, Västerbotten and Norrbotten. Sources: Inhabitants from SCB 01/11/2013 , Employment from SCB Q4/2013, GDP from Eurostat 2013

3 Geography of the Bothnian Corridor

The Bothnian Corridor at the Swedish side, covers more than 2/3 of Sweden, from Stockholm and Örebro up to the border to Finland in Haparanda/Torneå and the border to Norway in the west, in practice to the port of Narvik. The estimated length of the railway parts of the Bothnian extension is 1,917 km to be added to the current Scand-Med length in Sweden of 1,462 km and the total Scand-Med CNC length of 9,373 km.

The railway infrastructure in the Bothnian Corridor comprises several main railway stretches with various standards. The newest sections are the Bothnia Line and the Haparanda Line. The North Bothnia Line is planned to be built between 2018-2030. For the East Coast Line and Malmbanan Line there are continuous work for increased capacity, but both need double track, due to capacity constraints.



Main sections in the Bothnian Corridor railway infrastructure.
Green=Completed, Blue: Complementary development, Red: Major improvements planned

Even though the infrastructure of the Bothnian Corridor and the extension of the Scand-Med CNC is at the east coast, the catchment area for the corridor is considerably larger. The inland region of Jämtland-Härjedalen has a vast amount of natural resources and is one of the most prosperous tourist regions in Sweden. Through this region are also the Mittbanan Line, which is the connection between the Bothnian Corridor and the Trondheim area in Norway.

4 Bothnian Corridor and Scand-Med CNC goals

The TEN-T regulation defines the infrastructure requirements for the core network (EU/1315/2013 article 39) which for the CNC's are monitored by the corridor coordinators. For this a number of key performance indicators are used which are reported in the yearly corridor work plans. In this section we have as far as possible drafted the current status for the most common KPI's for the Bothnian Corridor extension of the Scand-Med CNC.

Table 2: Performance of the Scand-Med CNC and the Bothnian Corridor ⁴

Mode	Generic supply-side KPI	Unit	Scand-Med status 2017	Bothnian Corridor
Rail network	ERTMS implementation		n.a.	Sundsvall-Umeå 320 km Boden-Haparanda 155 km In total 24.2 % of BC Extension
	Track gauge 1435mm ("isolated" network with 1,524mm gauge exempted)	%	94.5-100	100
	Electrification	%	96	100
	Line speed (≥100km/h)	%	93	76
	Axle load (≥22.5t)	%	94	100
	Train length (≥740m)	%	66	all newly built meeting stations but standard max train length still 630 m
Road network	Express road/ motorway	%	99.1	> 75
	Availability of clean fuels	CNG LNG H2 ECP	2.242 7 63 36.987	< 20 0 ⁵ 2 >300 (road E4)
Airport	Availability of at least one terminal open to all operators in a non-discriminatory way	%	100	100
	Connection to rail ("main airports")	%	68-100	25 (2 of 8)
	Availability of clean fuels	%	0	in planning
Seaport	Connection to inland waterway CEMT class IV	%	50	0
	Availability of clean fuels	%	24	in planning
	Connection to rail	%	83	100
	Availability of at least one freight terminal open to all operators in a non-discriminatory way and application of transparent charges	%	100	100
	Facilities for ship generated waste	%	100	100 ⁶
Rail Road Terminals (RRT)	Capability for intermodal (unitised) transshipment	%	71-100	100
	Availability of at least one freight terminal open to all operators	%	75-100	100
	Electrified train terminal accessibility	%	36	> 50
	740m train terminal accessibility	%	14	~ 10

⁴ The table is an extend version of a table in the Scan-Med 3rd corridor work plan

⁵ 16 new LNG fuelling stations will be implemented in 2018-19 by Gasum AB along the Swedish Scan-Med corridor, including in all the NUTS 3 regions included in Bothnian Corridor.

⁶ In most ports along the Bothnian Corridor mobile transports of waste to destruction are used

Whereas the standard of the main roads along the corridor (E4 and E10) are in general high, with only few exceptions, the railway infrastructure has several severe bottlenecks and missing links. Historically, the railways in northern Sweden were built away from the coast line for security reasons in case of war, while today the industries in need of the railways and the main cities are located along the coast of the Bothnian Gulf.

5 Current status of the Bothnian Corridor

Since 2014 the Bothnian Corridor at both sides of the Bothnian Gulf is included in the TEN-T Core Network, and in the CEF Annex I.3 Other Sections on the Core Network, because of its importance for the industry in northern Sweden and Finland and for the rest of Europe.

There are continuous developments of the Bothnian Corridor, for all modes of transports, and there have been a number of TEN-T and CEF funded studies and investments, e.g. for railway planning and investments in ERTMS at several of the lines. In addition, there have been numerous planning, development and investments projects of with co-funding from European Regional Development Fund and Interreg programmes. Some of these projects have included collaboration with Norway and Finland and other EU member states.

5.1 The multimodal dimension of the Bothnian Corridor

Even though the core backbone of the Bothnian Corridor is the railway infrastructure the multimodality and linkage between different modes of transport is extremely important, which is illustrated with a few examples:

- In some areas raw material from forests and mines have to be transported by trucks to a rail-road terminal, to a port or to an industry, because of the absence of railways and that the transports start in remote forestry or mining areas.
- In some cases, truck transports even of heavy goods at longer distances is chosen because the intermodal infrastructure is not sufficient, too expensive or time consuming to use. This is the case at the border-crossing in Haparanda and Torneå where investments are needed for handling the difference between track gauges.
- The ports in the Bothnian Gulf are all extremely important for large amounts of outbound and inbound cargo that is more efficiently and environmentally friendly transported by sea. For the many wood, paper and pulp industries it is common practice to use a combination of rail and sea transport for the export products.
- The ports are all but Luleå comprehensive ports with volumes between 1-3 Million tonnes per year. They are all important especially for the out-shipping of export goods from the industries and for avoiding congestion at the single-track railways in the northernmost part of the Bothnian Corridor. The ports should therefore be considered as an integrated essential part of the Bothnian extension of the Scand-Med Corridor.
- The ferry connection between the ports of Umeå and Vaasa is of essential importance for the Bothnian extension since this will be an interconnection between the Scand-Med CNC and the North Sea-Baltic CNC. The cargo volumes are increasing at this route and are expected to increase further with a new LNG ferry in 2021.

There is a modal imbalance in the Bothnian corridor in the north-south direction in the sense that train and sea transports are used for the heavy cargo produced in the region, while for the consumption goods mostly trucks are used. This results in a situation where train sets and ships are not fully utilised in the north-bound direction and trucks are empty or half empty in the southbound direction. This situation is seriously affecting both the cost-efficiency and the environmental impact of the transports in the corridor.

5.2 Railways

Malmbanan Line

Malmbanan is an almost 500 km long railway in Sweden, which has the heaviest and largest amount of cargo transports. Iron ore from the mines in Kiruna/Gällivare area is transported both to the out-shipping port of Narvik in Norway and to the port of Luleå. New iron ore deposits have been discovered and the mines' production will increase considerably. The yearly iron ore volumes are about 15 M tonnes Kiruna-Narvik and about 7 M tonnes between Kiruna-Luleå. In addition, other cargo trains are using the line including daily Norwegian trains between Narvik and Oslo with fish as the main cargo. The cargo transports at Malmbanan represents as much as 40 % of all the railway cargo in Sweden. Improvements are made of the line with new longer meeting tracks and higher bearing strength of the tracks to 32.5 tonnes axle load. In the long term double track is needed for the whole stretch of the line.



LKAB - Iron ore train. Photo: G. Rúnar Guðmundsson

Haparanda Line

The first part, Boden-Kalix, of this 160 km long railway, has been upgraded and modernized and between the cities of Kalix and Haparanda, at the border to Finland, a new high-speed railway was built. The new Haparanda line was built with co-funding from the TEN-T programme (Actions 2007-SE-g2402-P and 2010-SE-g2216-P). The line was reopened in 2012 and is equipped with ERTMS and the European standard for meeting stations and speed limits. The line would be important for cross-border transports between Finland/Russia and Sweden/Norway but is at the moment underutilized because of limitations in the current terminal in Haparanda. The cargo has to be lifted from one train to another, wagon bogies be

shifted, or the axle widths be changed, but the terminal is not fully designed and equipped for this. This is a major bottleneck and planning for reconstruction of the terminal is ongoing. The functionality of this cross-border section is also dependant on the electrification of an 18 km long section at the Finnish side between Kemi and Haparanda.

North Bothnia Line

The North Bothnia Line is a 270 km new railway that has been planned since more than 15 years and the Swedish government has decided to start the construction in the fall of 2018. The line will connect the cities of Luleå-Skellefteå-Umeå and be an important link for passenger traffic as well as heavy cargo transports from northern Sweden and Finland to central Europe. The train traffic between Umeå and Luleå is currently using a very old and worn down inland railway, with limitations in speed, train weight and speed. With the new line train weight can be increased from 1,000 tones to 1,600 tonnes each and train length and speed will follow the European standard for the core network. The old line will continue to be used when the new line is built in order to increase the total capacity. The construction of the full length of the North Bothnia Line is estimated to 10 years at the cost of 3 Billion €.

Bothnia Line and Ådalen Line

The Bothnia Line is a new 185 km railway, opened in 2013 between Umeå and Kramfors. Including the connecting Ådalen Line to Härnösand and Sundsvall the total length of this stretch of the corridor is 360 km. The Bothnia Line is built for high speed trains up to 250 km/h and is all other respects following the European standards. The Bothnia Line was one of the first implementation of ERTMS in Europe which was done with co-funding from TEN-T. The line is important for commuting and there are twelve passenger trains per day in each direction.



Norrtåg-8 daily commuter trains in each direction at the Bothnia Line

The connecting Ådalen line is a renovated old, curvy, line with speed limitation most commonly to 70 km/h. This is a limitation for both the commuter trains and cargo trains. A new Ådalen Line between Sundsvall and Härnösand is included in the planning for the new East Coast Line, which together with all other measures in the Bothnian Corridor would make it complete regarding the TEN-T requirements for speed, axle load and train length. When the North Botnia Line is built and when the East Coast Line is double track, the travel time from Luleå to Stockholm will be cut by half, from 11 to 5,5 hours.

East Coast Line

The East Coast Line is a 270 km long railway Gävle-Sundsvall/Härnösand, which is the heaviest congested single-track railway in Sweden. This is because many heavy cargo transports with slower speed compete with faster commuter and long-distance passenger trains. Therefore, a new East Coast Line with double track is planned, and measures have started for reconstruction of some parts of the line to double track. The planning of these parts has been co-funded from TEN-T. The extension of the East-Coast Line between Gävle-Härnösand is estimated to lower the commuting time by as much as 2.5 hours between Stockholm and the north of Sweden, and the benefits for the regional growth and the environmental impacts have been proven in several studies.

5.3 ERTMS

The first implementation of ERTMS in Sweden was made in the Bothnian Corridor. This means that the at the Ådalen Line, Bothnia Line and Haparanda Line ERTMS are fully implemented. Next in turn for implementation is the Malmbanan Line, which needs a coordination with the implementation in Norway. At Malmbanan Line the benefits would be that it is possible to add more iron ore train and optimize their frequency. Even though double track is envisioned in the for the whole stretch in the long run, it is not clear how this will be technically solved at the mountainous Norwegian side of the border. The implementation of ERTMS has not been technically unproblematic. Even though it is now fully functional there are continuous upgrades in the technical specifications of the track-side equipment. This in turn requires the on-board installations to be upgraded to a high cost, which make freight train operators reluctant to start using ERTMS as long as they can choose the old inland railway instead of the new Bothnia Line.

5.4 Roads

Road E4

E4 is the main core network road in Sweden in south-north direction, which runs all the way from Helsingborg in the south to Haparanda in the north. From Helsingborg up to Gävle there is an uninterrupted high-speed motorway with minimum four lanes. North of Gävle with few exceptions up to Umeå the most common standard is meeting free 2+1 lane highway. There are some stretches that needs upgrading. For example, in Örnsköldsvik the road needs to be located outside the city centre and between Umeå and Skellefteå there are about 70 km traditional road in need separate lanes. From Skellefteå up to Haparanda the standard is with few exceptions either 4-lane motorways or meeting free 2+1 way.

Road E10

The road E10 between Luleå and Kiruna and up to Narvik is in general traditional 2-lane way, in need of upgrading to 2+1 highway, which is planned for some sections in the new national transport plan 2018-29.

5.5 Alternative fuels

Sweden aims for the implementation of the Directive for Alternative Fuels Infrastructure (2014/94/EU) even though much remains for the full realisation of its goals. Specific for the alternative fuels is that the government and national authorities can only relate to the EU goals and adapt and adjust national incentives for stimulating the wished development of the infrastructure. The alternative fuels infrastructures are either developed and expanded by regional and local authorities or by the alternative fuels market actors.

Specific goals have been set by the EU for the alternative fuels infrastructure along the CNC, such as:

- A sufficient number of CNG fuelling stations, at least one per 600 CNG vehicles
- 150 Km between CNG fuelling stations in the corridor and 400 km between LNG stations,
- A sufficient density of charging point for electric vehicles.

In general, there are more fuelling stations for CNG in the south of Sweden. In the northern part of Sweden there are less than 10 CNG stations. Several regional and local initiative have initiated the implementation in the north, such as the implementation of biogas buses in the cities of Gävle, Skellefteå and Boden, which in turn stimulates other neighbouring cities. New CNG stations were built in Sundsvall, Härnösand and Skellefteå in 2015-16 with support from TEN-T (Action 2013-SE-92044-S).



The Biogas station in Härnösand opened in 2016 – co-funded by TEN-T programme.

What regards LNG stations there are only six stations in Sweden, all in the south. In 2018 and 2019 Gasum Sweden will build 16 new LNG station of which three in northern Sweden, at the Bothnian Corridor.

5.6 Ports

The ports in northern Sweden is an integral part of the Bothnian Corridor, all with uttermost importance for the export industries. There are ongoing developments in many of the ports. The TEN-T core port of Luleå will be developed for allowing larger ships. The draught will increase from 10.7 to 15 metres and the port will be able to receive ships up to 300 metres.

In the port of Umeå the railway connection has been improved and there will be development for improved container handling. In the port of Sundsvall, a new logistics park will be developed and the railway connection improved. In the port of Gävle a new container terminal has been built and the railway connection is being improved.

Of special importance is the ferry line between Umeå and Vaasa, which will connect the Scand-Med CNC with the North Sea Baltic CNC. A new environmentally friendly LNG ferry is being ordered and is planned to be in regular traffic in 2021. The planning of this was co-funded by TEN-T (Action 2012-EU-21013-M).



TABLE 3: TEN-T PORTS IN THE BOTHNIAN CORRIDOR ⁷

<i>PORT</i>	<i>BULK KTONNES</i>	<i>OIL KTONNES</i>	<i>CONTAINER TEU</i>
GÄVLE	3 922	1896	209 550
LULEÅ (CORE)	7 308	261	-
SUNDSVALL	1 290	618	45 916
UMEÅ	1 319	312	29 334

⁷ Statistics from the Swedish Port Association, 2017

TABLE 4: NON-TEN-T PORTS IN THE BOTHNIAN CORRIDOR ⁸

<i>PORT</i>	<i>BULK KTONNES</i>	<i>OIL KTONNES</i>	<i>CONTAINER TEU</i>
HUSUM	1 677	17	78
PITEÅ	1 506	382	18 517
SKELLEFTEÅ	1 619	104	-
SÖDERHAMN	847	-	-
ÖRNSKÖLDSVIK	731	-	-

5.7 Rail-road terminals

The Bothnian Corridor aligns to the current Scand-Med CNC in at the core network rail-road terminal area in Örebro and in practice also at the core network rail-road in Rosersberg, north of Stockholm. In Bothnian Corridor there are about ten large RR terminals of which 4 is co-located with ports. Recent development for improved intermodality in the Bothnian Corridor are the new Nordic Logistic Center in Umeå and the ongoing construction of Sundsvall Logistic Park. For most of the terminals close to ports the hinterland connections by rail are being improved.



The Logistic Park in Sundsvall – with intermodal RRR terminal will be integrated with the port.

⁸ Statistics from the Swedish Port Association, 2017

In addition to the open rail-road terminals the forest industries have their own timber terminals often in connection to the large saw-mills and paper mills. These are essential for guaranteeing a seamless stream of raw materials for the production.



Timber terminals are necessary for the production of wooden products, paper and paper pulp

5.8 Airports

Due to long distances the airports in northern Sweden are very important. Most of the regular lines connects to Arlanda airport, but there are also direct connections with Gothenburg, Helsinki and other destinations in Finland. From several of the airports there are also charter flights to Spain, Turkey and other destinations. In addition to the airports aligned to the Bothnian Corridor there are several TEN-T inland airports in Östersund, Sveg, Lycksele, Vilhelmina, Arvidsjaur and Pajala. There are also a number of non-TEN-T airports with equal importance for the inhabitants and the industry.

In Sweden there are only 10 airports that are owned and operated by the state. Of these three are located at the Bothnian Corridor, Kiruna, Luleå and Umeå airports. All other airports are owned and operated by the municipalities.

TABLE 5: TEN-T AIRPORTS IN THE BOTHNIAN CORRIDOR ⁹

<i>Airport</i>	<i>Passengers 2017</i>
Gällivare	26 769
Kiruna	282 144
Luleå	1 203 141
Skellefteå	421 649
Sundsvall	289 709
Umeå	1 052 824

6 Development of the Bothnian Corridor

6.1 Summary of ongoing development

As shown in the previous status overview there are continuous and ongoing work with improvements of the infrastructure in northern Sweden. The Swedish Transport Administration continues to improve the roads and all the highways will have separated lanes in so called 2+1 roads. The ports are with few exceptions owned by the municipalities and there are ongoing large investments in the ports of Luleå, Umeå, Sundsvall and Gävle. What regards the implementation of alternative fuels in the corridor there is a state of shared responsibilities between market actors and local and regional authorities, and the government has merely the important role of setting the right incentives through tax regulations. The most important development of the corridor is the railway infrastructure, which is long term and expensive, but extremely important for the industry, for regional growth and for the environment.

6.2 Priority projects

The most important railway projects are already included in the CEF regulation Annex I.3 Other sections on the Core Network. They are included in the named stretches Luleå-Kiruna-NO border, Luleå- Oulu (Finland), Sundsvall-Luleå and Stockholm-Gävle-Sundsvall.

Malmbanan

As mentioned Malmbanan is the railway in Sweden with the heaviest transports due to the transports of iron ore from Kiruna and Gällivare to the ports of Narvik and Luleå. In addition, there are regular Norwegian cargo trains. About one third of the meeting stations does not fulfil the TEN-T standard of 740 metres. A number of these will be rebuilt and extended for allowing longer trains and more efficient traffic in the planning period 2018-2029. The cost of

⁹ Statistics from Swedavia

extending all of the meeting stations is estimated to 100 M €. In addition, investments will be made in increasing the bearing strength of the railway, and in partial double track at selected sections. Today, half of the line allows for 32.5 tonnes axel load meaning that these trains are the among the heaviest in Europe. In the long run double track is needed for the whole stretch of the line. ERTMS will be implemented at Malmbanan starting in 2018 to an estimated cost of 270 M€. An agreement has been made with Norway on implementation of ERTMS at the section between Riksgränsen and the port of Narvik, which should be finalized in 2023. The planning of the investments in Malmbanan is co-funded by the CEF programme (Action 2014-SE-TM-0059-S).

Haparanda Line and cross-border section Haparanda/Torneå

The Haparanda Line was reopened in 2013 and half of the line is new with very high standard. Works have started with new stations for starting commuter trains in 2019. The utilisation of the line for freight transports is currently very low due to constraints in the cross-border terminal in Haparanda, few ERTMS adapted cargo engines, and the fact that a railway section of 20 km at the Finnish side is not electrified. Investments is needed both at the Finnish and Swedish side of the border and in more efficient reloading facilities in the terminal, and modern equipment for changing axle width or change of train bogies. Several studies have been made for the investments, which is planned to be made with the support of the CEF programme. As this is the only railway connection between Finland and Sweden and the rest of EU, it is of special importance. It has also potential to be an essential link for railway transports from northern Norway and Sweden towards Russia and China.

North Bothnia Line

Start of construction of the first part of the North Bothnia Line, north of Umeå, is planned to late 2018. The railway planning between Umeå and Skellefteå is ongoing with support from the CEF programme (Action 2014-SE-TM-0497-S). The building of this 120 km section is planned to be completed before 2029, and the remaining section between Skellefteå and Luleå after 2029. The actual need of the whole 270 km North Bothnia Line is in practice more urgent for the industry since heavy cargo transports now is dependent on an old worn down inland railway. The cost of the complete North Bothnia Line is estimated to 3 Billion €.

The New East Coast Line

It is well acknowledged that the East Coast Line is the railway in Sweden with most congestion due to frequent traffic with a mix of freight trains, commuter trains and long-distance passenger trains. The short-term solution is to build more and extended meeting stations on the current single track. The cost of the new East Coast Line is estimated to be in the interval of 2.5-4 Billion €, depending on the design and localisation of the new double track. As a short-term solution for some of the congestion problems, investments will be made in extended meeting stations south of Sundsvall and in Gävle. The current investments have been planned with the support of the TEN-T programme (Actions 2011-SE-93035-S, 2011-SE-93045-P and 2013-SE-91030-S).

7 Pre-identified sections in the extended Scand-Med CNC

As in the current CEF Regulation, it is foreseen that pre-identified sections would be listed for each core network corridor in annex to the regulation. For the northern extension of the Scand-Med CNC, the most important pre-identified sections would be:

Malmbanan

Section: Luleå – Kiruna - Riksgränsen (NO border)
Content: Railway, studies and works
Motives: Cross border, development to double track

Haparanda-Tornio

Section: Haparanda-Tornio (priority needed also at Finnish side in North-Sea Baltic CNC)
Content: Railway, studies and works
Motives: Cross border, development to double track

North Bothnia Line:

Section: Umeå – Luleå
Content: Railway, studies and works
Motives: Bottleneck, new railway link in the Scand-Med CNC

East Coast Line

Section: Gävle – Sundsvall/Härnösand
Content: Railway, studies and works
Motives: Bottleneck in the corridor, development to double track



8 Conclusions

As shown in this report the development of the Bothnian Corridor is ongoing since many years especially for the need of the large export industries in northern Sweden that generates regional growth and considerable European values. Two of the largest saw-mills in Sweden, are located in Sundsvall and Bollstabruk, directly at the Bothnian Corridor. The SCA paper pulp mill in Östrand, north of Sundsvall is currently making the largest industrial investment in Sweden ever (8 billion SEK) that will double its production from 400,000 to 950,000 tonnes yearly. The largest steel factory in Sweden is located in Luleå, from which steel to the amount of one Eiffel tower is transported each day in the Bothnian corridor, to the sheet mill in Borlänge. To and from Skellefteå, where one of the largest copper mills in Europe is located, more than 700,000 tonnes are transported each year, in the Bothnian Corridor. In Kiruna and Gällivare 90 % of all iron ore in Europe is produced that are shipped from Narvik and Luleå.

In addition, the railways in the Bothnian Corridor extend the quality of life for the people living in the northern Sweden by increasing the possibilities of environmentally friendly commuting by trains, widening the market for jobs and business.

The Bothnian Corridor is a logical extension of the Scandinavian-Mediterranean Core Network Corridor.





www.bothnianscorridor.com/en/



REGION VÄSTERBOTTEN



Region Västernorrland



Region Gävleborg



Region Örebro län



BOTHNIAN
CORRIDOR



NORRBOTNIABANAN