NEW NORTH

proxion
MEMBER OF WSP

Interreg
Aurora

Co-funded by the European Union

Current Status of Changes in Railway Freight Transport

Katja Ojala, Aino Lanamo, Aapo Halminen, Kaisa-Liisa Tikka and Laura Kankaanpää

Final Report, 2nd of October, 2024

Image: Jimmy Bystedt

LAPIN LIITTO · KAINUUN LIITTO · Länsstyrelsen Västerbotten · Länsstyrelsen Norrbotten · Nordland FYLKESKOMMUNE · POHJOIS-KARJALA Maakuntaliitto · Troms fylkeskommune Romssa fylkkasuohkan Tromssan fylkinkomuuni · Finnmark fylkeskommune Finnmárkku fylkkagielda Finnmarkun fylkinkomuuni · KVARKENRÅDET MERENKURKUN NEUVOSTO · POHJOIS-POHJANMAA COUNCIL OF OULU REGION

Forewords

The changes of the early 2020's have drastically highlighted the geopolitical importance of the northern areas of Finland, Sweden and Norway. A new kind of focus has been placed on transport, logistics and security of supply to, from and within these areas. In September 2023, the regions of Lapland, North Karelia, Kainuu, and North Ostrobothnia in Finland, the Kvarken Council and the Västerbotten and Norrbotten regions in Sweden, and the Troms, Nordland, and Finnmark regions in Norway joined forced to develop the northern region and its transportation system in project called *New North – Transport, Logistics, and Security of Supply* project. The project received a significant funding from the European Union's Interreg Aurora program.

The New North project is focusing on the development of the transportation and logistics system in the northern region. The goal is also to address the realization of future investment potential in the northern region and the opportunities presented by advancements in transportation and logistics technology.

The project is divided into four work packages and this study has been the first study of work package 4 *Green transport corridors*. This study has aimed to understand the current status of changes in railway freight transport taking into account the potential investments planned for the area and their impact on rail freight.

The study was done between May and September in 2024.

2nd of October 2024.

Mikko Tervo
Regional council of Lapland
Project Manager
New North –project

Jyrki Suorsa
Regional council of North Karelia
Responsible person
WP4: Green transport corridors

Sanna Nikola-Määttä and **Sanna Schroderus**
Regional council of Kainuu
Responsible persons
The current status of changes in railway freight transport - project

13.9.2024

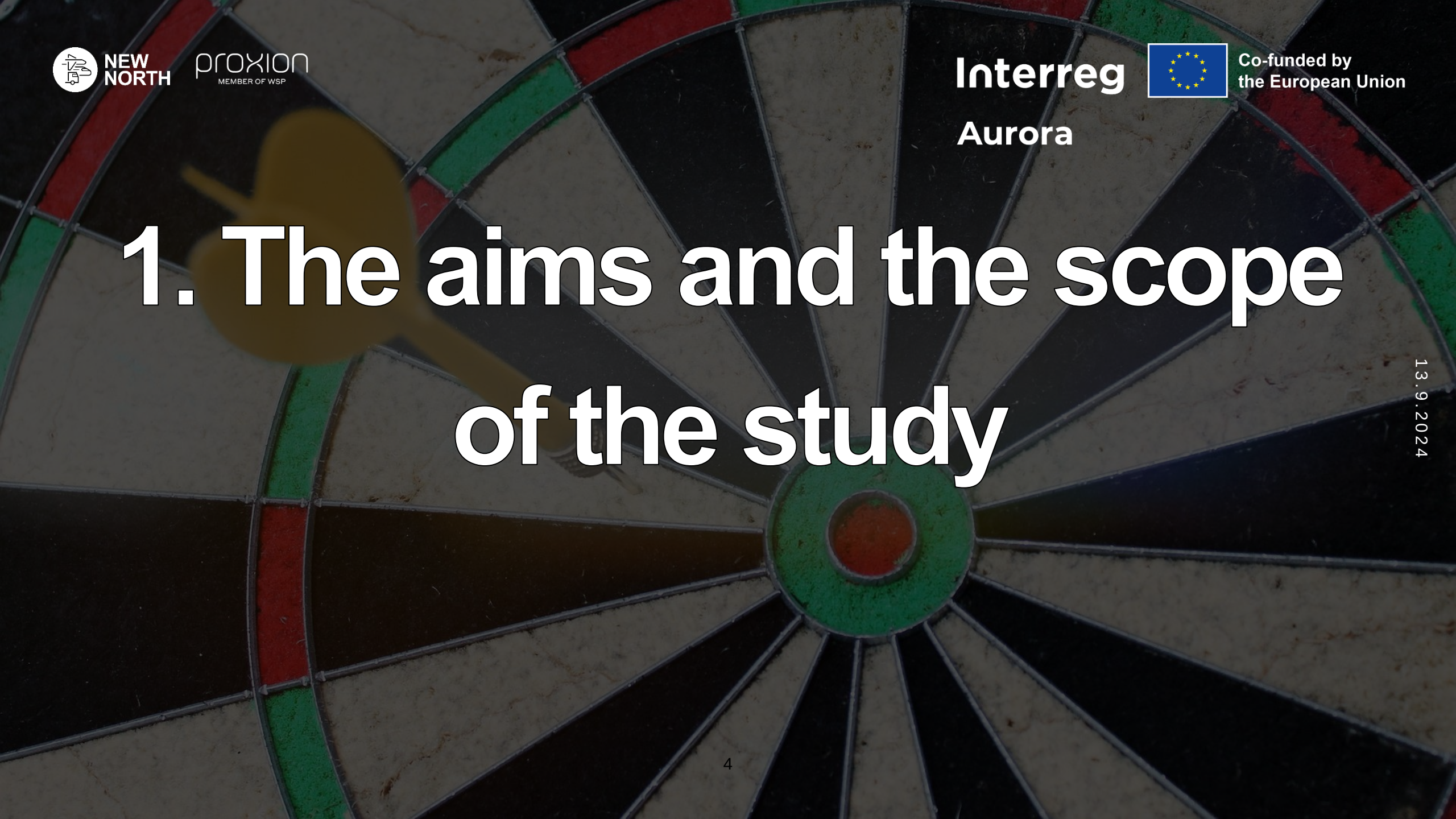
Image: Lapin materiaalipankki / Petri Teppo

Interreg Aurora

Co-funded by the European Union

Table of content

13.9.2024



NEW NORTH

proxion
MEMBER OF WSP

Interreg
Aurora

Co-funded by
the European Union

1. The aims and the scope of the study

13.9.2024

The aims and the scope of the study

This study, *Current Status of Changes in Railway Freight Transport*, is the first study of the work package 4 (Green transport corridors) in the *New North – Transport, Logistics, and Security of Supply project* which is a part of Interreg Aurora program co-funded by European Union.

The overall goal of the New North project is to address the realization of future investment potential in the northern region and the opportunities presented by advancements in transportation and logistics technology. The work package 4 focuses on the green transport corridors in which rail network and rail freight is in a crucial role.

The aim of this study has been to create an illustrative material of possible future development of railway traffic in the New North project area and analyse impact of these outlooks on railway capacity. The purpose for these findings is mainly to serve as a starting information for the following project and analysis within the New North project.

In this study the information related to current freight rail traffic and rail capacity is collected together and presented in a compatible manner. Also the information in relation to possible future investments in the area was collected. After collection, it was analysed whether these investment have any potential to create new incoming and/or outgoing rail freight flows and what is the expected timeline. Based on these potential flows for 2030 and 2050 outlooks for the freight rail traffic were presented. It was also analysed how the current railway network capacity would function in these outlooks.

However, this study did not include further analysis of the adequacy of the railway capacity, development needs or analysis of new connections as these were identified to be the focus of the following studies in the work package 4 within the New North project.

The security of supply point of views have also not been considered in this study as they are separately studied in the work package 2 Security of supply and co-operation.

NEW NORTH

proxion
MEMBER OF WSP

Interreg
Aurora

Co-funded by the European Union

2. The current status of rail freight and rail network

13.9.2024

Image: Aapo Halminen

Rail cargo commodities in the New North area currently

The rail transportation in the New North area is mainly used by forest, steel and mining industries (see pictures 1 and 2). The commodities vary between the countries, as the natural resources of each country are different. This also leads to a different yearly tonnes transported. However, rail cargo is a very important transport mode in each country, as the distances are long.

The role of the forest industry is significant, especially on the Finnish side. Most important destinations for timber (raw wood) are Kemi pulp mill, Äänekoski pulp mill, Uimaharju pulp mill and several mills in South-Eastern Finland. There are also smaller production sites e.g. in Pietarsaari and Oulu.

In Sweden, remarkable forest industry areas are e.g. in Obbola (Umeå), Husum, Domsjö (Örnsköldsvik), Dynäs (Kramfors), Östrand (Timrå), Ortviken (Sundsvall), Piteå and Kalix.

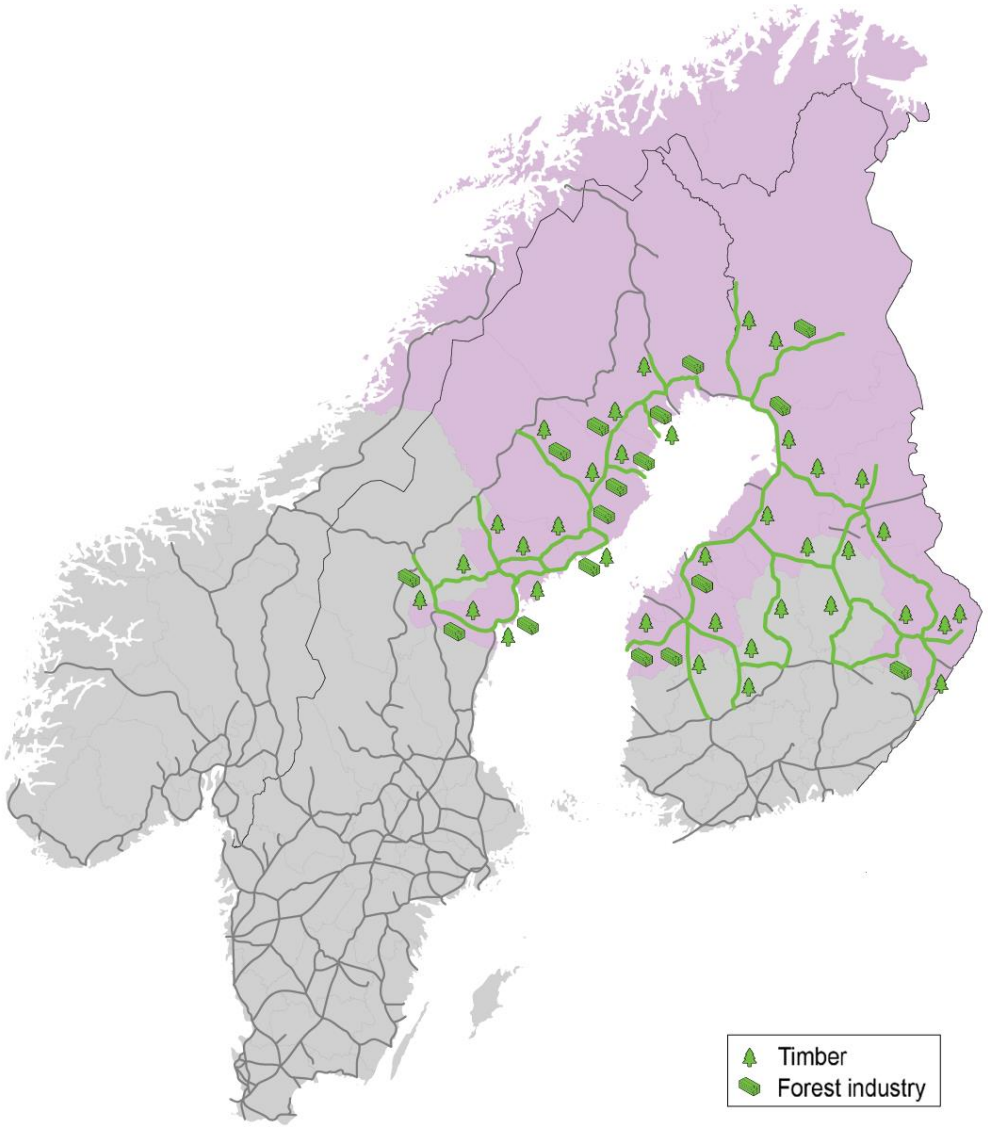
Forest industry products (pulp, cardboard, laminated wood, paper etc.) are transported to ports from the industry areas. Important destinations include e.g. Helsinki, Kotka, Gothenburg and Piteå ports.

Mining contributes most to the railway transport tonnes in the project area: iron ore transports from Kiruna & Gällivare to ports of Narvik and Luleå through so-called Malmbanan have highest volumes. There is also a steel mill in Luleå and copper smelter and battery industry (using mining products) near Skellefteå port.

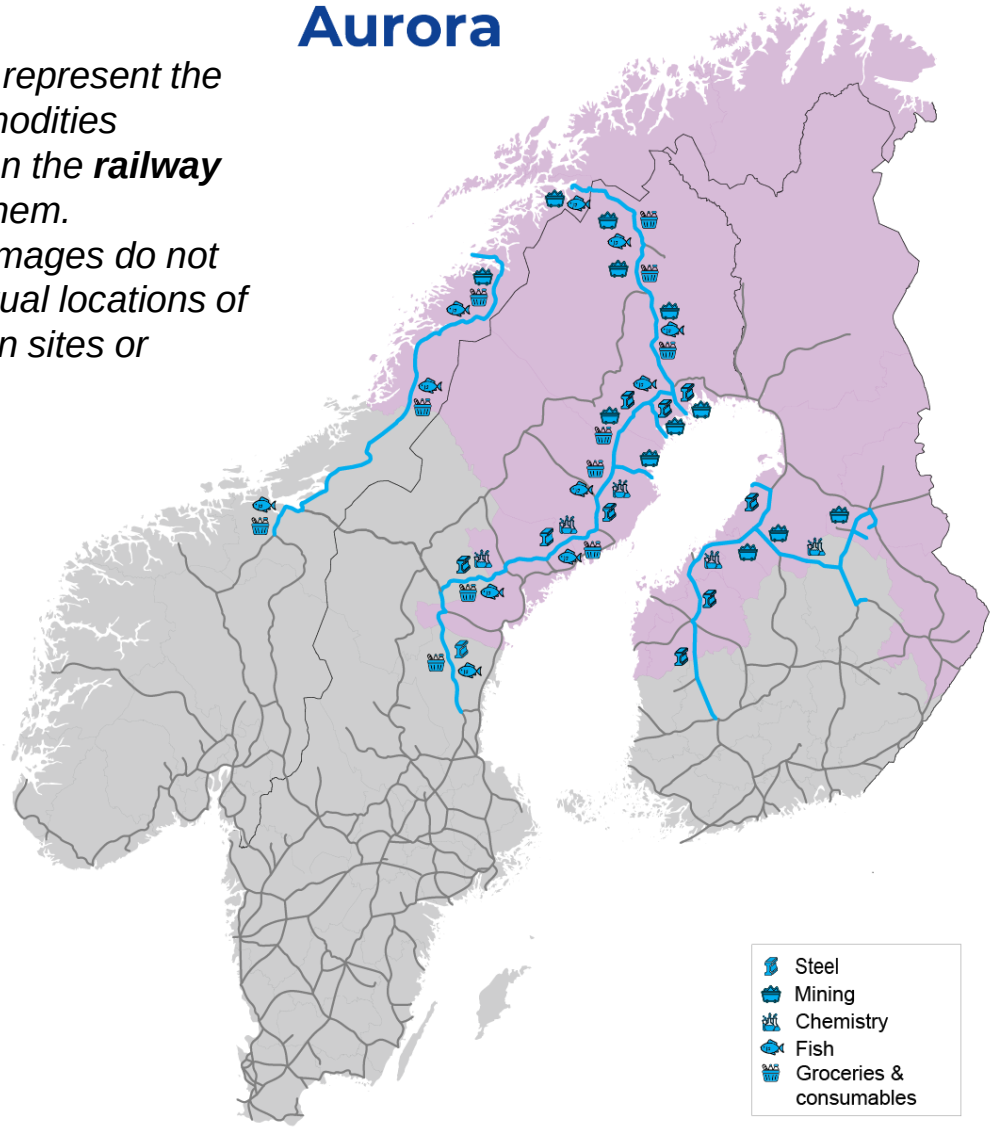
In Norway, transportations of especially fish, groceries & consumables are most significant after mining products. Fish and fish products are transported by mainly road first from the multiple fisheries and fish industry areas in Finnmark, Troms and Nordland to the ports and rail logistic hubs located in Norway and transported further via both Malmbanan and Nordlandsbanen towards southern Norway and Sweden.

In the Finnish side important transportations include chemicals (battery chemicals, nickel, zinc, uranium) from Sotkamo to ports of Kokkola and Kotka, steel from Raahe to Hämeenlinna and chemicals (fertilizers and its ingredients) to and from Siilinjärvi.

*The symbols represent the current commodities transported on the **railway line** next to them. (commodity images do not represent actual locations of the production sites or plants)*



Picture 1. Timber and forest industry products transported as rail cargo in the New North area rail corridors currently.



Picture 2. Steel, mining, chemistry, fish and groceries and consumables transported as rail cargo in the New North area rail corridors currently.

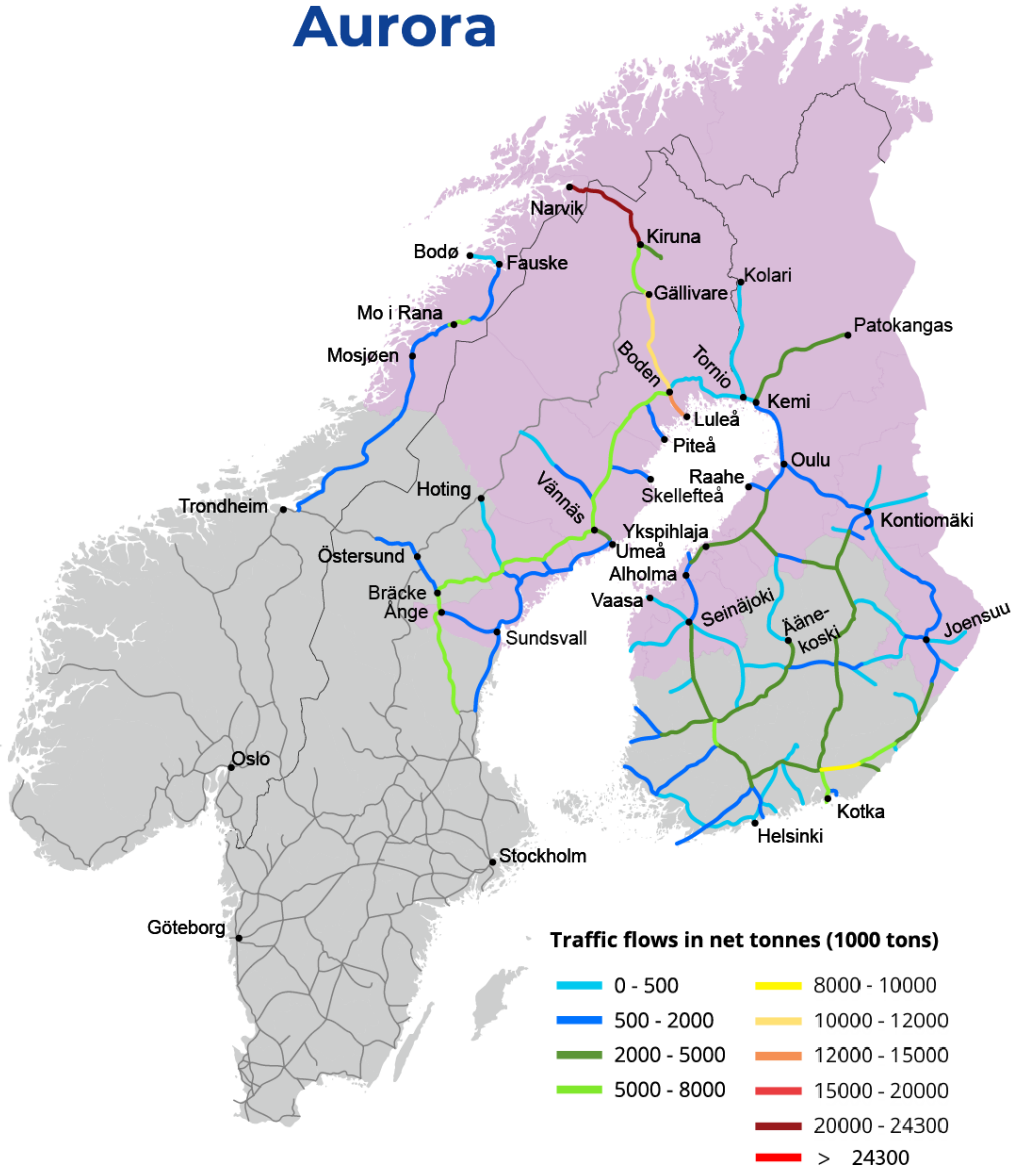
Rail traffic flows in the New North area currently

The Current Situation

The heaviest rail cargo in the New North area is the transportation of iron ore between Kiruna and Narvik port as seen in the picture 3. These iron ore trains can weight up to 8 600 tonnes per train. Also the rest of the Malmbanan is under heavy utilization as well as the corridor from Boden to Bräcke and further south. This corridor is a vital route to steel product transportations between Luleå and Borlänge.

In Finland, commodities are timber and forest industry products, and these trains are lighter in tonnes compared to iron ore and steel trains. Average full train weights 2 000 tonnes (with locomotive) which reflects on the net tonne numbers when comparing Finland to Sweden and Norway. Traffic flows in Finland on the project area are therefore more moderate.

In Finland links from north to south have heaviest loads, though Iisalmi–Ylivieska has also moderately high flows due to processing plant in Sotkamo and fertilizer factory in Siilinjärvi.



Picture 3. Net tonnes of rail transportation in the New North area.

Changes after the war in Ukraine

After the war in Ukraine flamed in 2022, European Union set constraints to several Russia originated commodities and companies that were involved with the rail transportations in transit through Finland. This had a had major impact on net tonnes transported by rail in the project area. Comparing the year 2021 to 2023, net tonnes at the corridor Kontiomäki–Oulu declined 84 %, net tonnes at the corridor Oulu–Ykspihlaja decreased between 43 % and 77 %, and to Raahe 52 %. Overall in Finland, rail cargo volumes decreased 20 % between years 2021 to 2023.

Also timber import from Russia to Finland stopped in 2022, and that has lead the forest industry companies search new timber volumes domestically and from countries around Baltic Sea. This has increased the net tonnes in some corridor sections e.g. between Kontiomäki and Joensuu and from Joensuu towards south.

In Sweden and Norway, rail traffic flows were also impacted due energy prices and overall cost of living climbed, and the global economy was trembling. The impact was not as dramatic as in Finland, as the Russian transports hasn't traditionally had a big role in Sweden and Norway rail cargo flows.

Recent changes

In Norway, The collapse of the Randklev bridge in Gudbrandsdalen in the summer of 2023 significantly reduced the capacity of rail transport north-south in Norway. There was a significant decrease, about 25% less goods on the Nordlandsbanen. The goods were moved to trucks, and much of this was transported by truck through Sweden and Finland. From the summer of 2024, a new bridge was in place, and an increase is expected moving forward.

Rail capacity in the New North area currently

Describing railway capacity is not straightforward as the different commodities have different kind of needs for the transportation. Besides that passenger trains use the same tracks as cargo trains and as they are time-sensitive, they are often prioritized.

If looking at the 24-hour window in general at the New North area, most of the rail corridors have available capacity. However, as majority of the cargo trains need to arrive at the ports, mills or production sites within a few hours window, it is not sufficient to look at the 24-hour window capacity. Mainly timber trains are not that time-critical as the mills have usually large stock of timber at the production site.

In picture 4, the capacity is assessed based on the busiest 2-hour window per rail corridor. Capacity is mostly full on Malmbanan (Narvik–Kiruna–Luleå), Nordlandbanan (Bodo–Trondheim) and between Boden and Vännäs. Besides both southern Sweden and southern Finland have corridors where the capacity is mostly full.

Whether a new train would fit the busiest 2-hour window is something that needs to be analysed on case-by-case basis. This means that the picture 4 is more indicative of the situation rather than the hard truth. A lot of factors need to be taken into account when doing the assessment. These include for example the type of the new train, the time sensitivity of both the new and the current transportations and the total route of the new train.

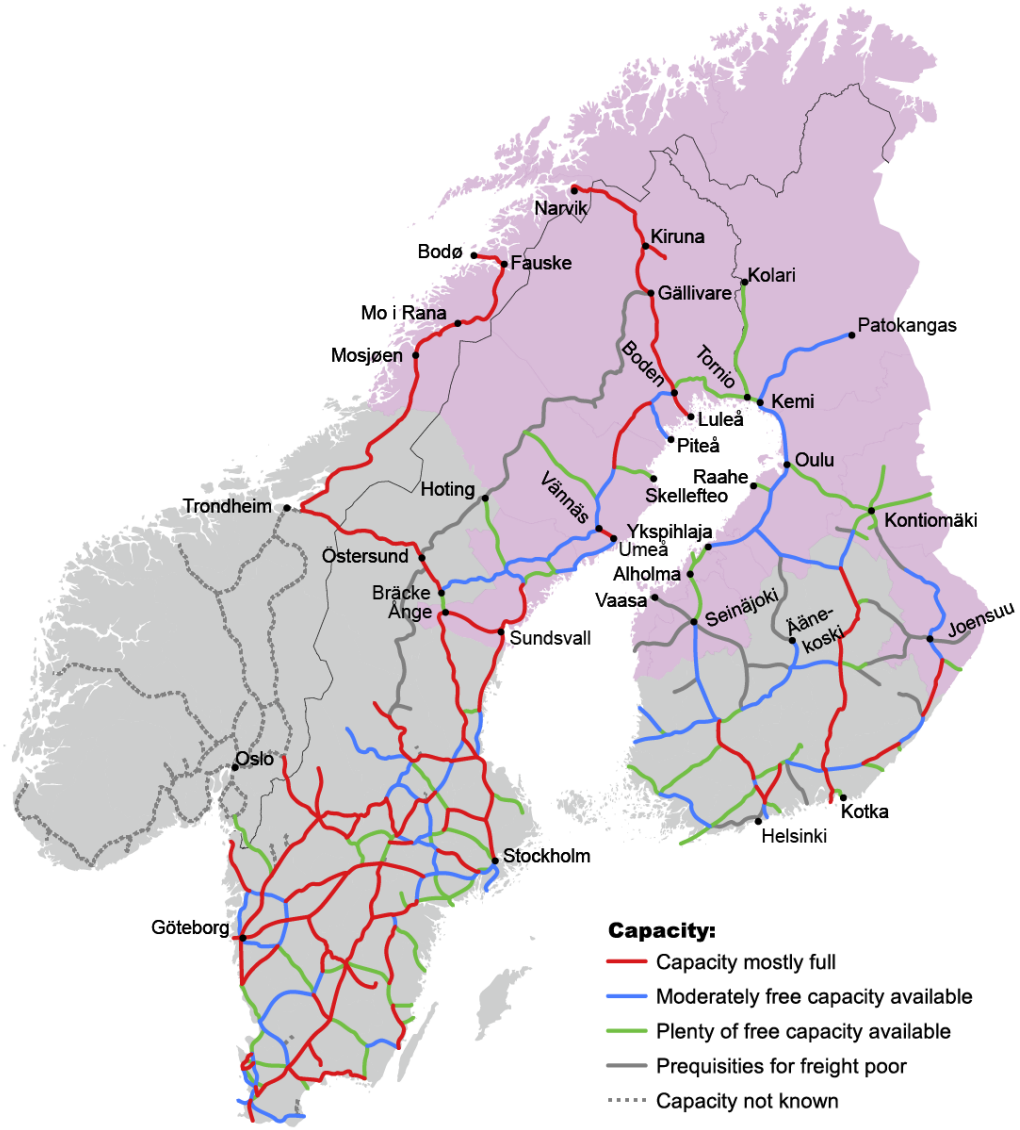
The most significant capacity deficit on the New North area is on Malmbanan (Narvik–Kiruna–Luleå). Also Nordlandbanan in Norway is facing its current capacity limits.

In Finland, railway lines on the New North area have moderately or plenty of free capacity available even during the busiest 2-hour window (see picture 4). However, north–south links are under heavy utilisation, especially the so called Savonrata, where the capacity is mostly full between Iisalmi and Kouvola. Also the link from Kouvola to Kotka port is mainly full during the busiest hours.

In Finland some lines have capacity in theory, but condition of the track is so poor that the prequisities for freight transportations are not sufficient. This is the case on some links for example from Joensuu towards Iisalmi and Kontiomäki. That applies also to northern sections of Inlandsbanan in Sweden (see picture 4).

Differences in the track width between Finland and Sweden cause another limitation towards capacity utilization. Currently the only possibility of rail transportation between Finland and Sweden goes through Tornio and Haparanda. Transportations need to be changing gauge which increases the costs quite a lot, and capacity for the change is currently very limited. However, Finnish and Swedish national Transport Infrastructure Agencies have started joint operation of developing the Haparanda–Tornio railway infrastructure in general, and electrifying the rail connection between Haparanda and Tornio will be ready at the end of 2024.

Sweden and Norway have the same track width between themselves.



Picture 4. Capacity of the rail network based on the busiest 2 hour windows on each line.

3. The role of the rail freight in the transport system

Image: Aapo Halminen

The role of the rail freight in the transport system

As a transportation mode, train is the most economical method when the cargo is relatively low in value but large in volume (e.g. timber and iron ore) and the transportations are regular. Also, when value is higher (e.g.combined transports), but the distance between origin and destination is very long and the cargo is time-critical, rail transportation is a competitive option.

While the heaviest ore trains in Malmbanan can carry 6 800 tonnes of iron ore in 68 wagons, in Finland the common timber trains can carry approximately 1 300 tonnes of timber in 27 wagons. Good example for the benefits using rail transportation when volumes are large is the new Kemi pulp mill: the mill receives 9 full timber trains daily and if the same amount is converted to truckloads, it would require nearly 250 truck-loads daily.

Rail transportations are currently used either as traditional transportations or as combined transportation.

Traditional rail freight

Traditional rail freight can be divided into three different types:

1. Between two factories
2. Between factory and port
3. From forest to factory

Factory ↔ factory

The intermediate goods are transported between factories. Transports often have high volumes and are very time-sensitive. Goods can include metals, minerals, chemicals etc. Sometimes multiple products can be combined into a single train. In Sweden, e.g. SSAB is transporting steel products between its factories in Borlänge & Luleå.

Factory ↔ port

The ingredients of an industrial process are transported to factories and the final products are transported to ports. Transports often have high volumes and

are time-sensitive. Goods can include steel, ore, chemicals, pulp, paper, wood products, etc. For example Narvik port receives 10–12 ore trains per day from the mines and processing plants from Northern Sweden.

Forest → factory

Timber is transported from loading sites to sawmills, pulp mills or cardboard and paper mills. Transports are high volume, low value and non-time-sensitive. The timber is first collected from the harvesting areas by trucks and transported to the rail-loading sites and then loaded again to the trains which transports them to the mills located further. For example Pesiökylä timber terminal in Finland receives truckloads of timber which is stored at the terminal, and then loaded in regular trains which delivers the timber to the pulp mills in Kemi and Uimaharju and carton mill in Varkaus further south. In Finland there has been plans to develop the timber terminal network to be able to handle a car length of up to 30.

Combined transports

Transport of goods where lorry, trailer or shipping container uses both road and railway during it's journey are called combined transports.

This railway transport mode can be used to transport basically any goods that can be packed in standard shipping containers, trailers or lorries, provided that suitable wagons are available. It is commonly chosen, if distances are long and the cargo is time sensitive (e.g. fish transports). This gives a single importer or exporter an access to the fast train transportation without time-consuming loading or unloading operations at the train cargo terminals. Lifting a container from the rail car is much faster than first unloading a single rail car in to rail terminal warehouse premises, and loading it again to a container.

Key bottlenecks for combined transports, especially in Finland include insufficient terminals and a lack of suitable rolling stock. For example, in Sweden and Norway there is well developed terminal network for combined transports, and therefore this transport mode is more popular.

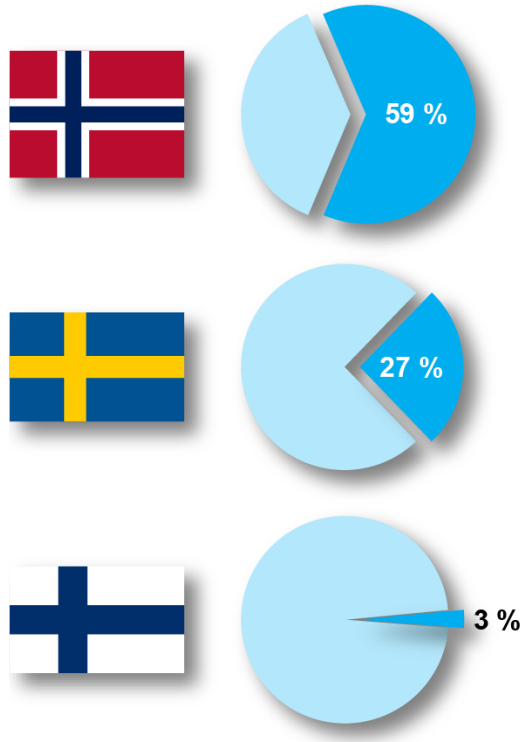
In Finland there is only three suitable terminals in the whole country, and suitable rolling stock is very limited (see picture 6). At the moment, none of the Finnish rail operators are offering any regular combined transport service. There has been one operator which has interest for opening the service, but it has not yet realized.

In Sweden and Norway the terminal network is very large. Terminals are located at the major ports, and near the largest cities (see picture 6)

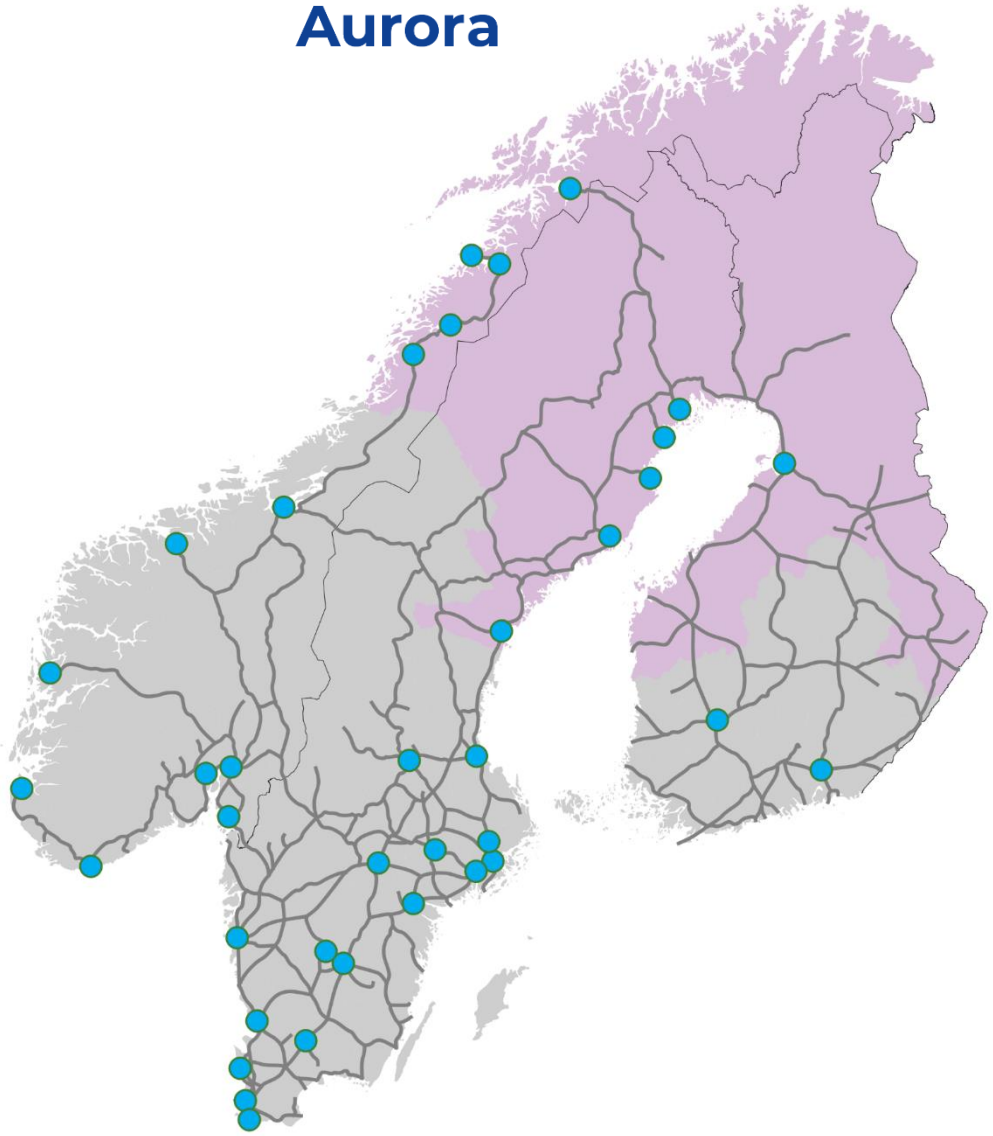
In Norway, Narvik, Mosjoen, Fauske Bodo and Mo i Rana are the most remarkable hubs for the combined transport in the project area.

In Sweden Sunsvall, Umeå, Skellefteå, Piteå and Luleå have suitable terminals for combined transports.

In Finland, only Oulu is suitable for handling combined transports in the project area.



Picture 5. Share of combined transports in railways (tkm) in Finland, Sweden and Norway.



Picture 6. Combined transports terminals in Finland, Sweden and Norway.

NEW NORTH

proxion
MEMBER OF WSP

Interreg
Aurora

Co-funded by the European Union

4. Rail freigt related future investments on the area

13.9.2024

Image: Estromiz / Wikimedia Commons

Rail freight related future investments on the area

As one of the goals for this project was to define economic outlooks and analyse their possible impact on railway flows, and list of possible future investments in the New North area was collected during the project. From that, the investments that could potentially generate rail cargo flows, were selected for the further analysis.

The potential cargo flow could be either inbound material (raw materials etc.) and/or the outbound flow (final products). The industries that most potentially have freight potential in the New North area are mining, forestry, steel and chemical industries. Besides these, there are lot of different investment plans for energy industry (e.g. solar-, hydro- and wind power related), but the building materials and components for the new energy plants are mostly potential for road transports. Also for many potential investments detected from different industries it was already mentioned that the main transportation mode was planned to be some other than railway, usually road transport.

In the analysis only the investments that could generate *new* cargo flows were taken into consideration. Some of the area's mining industry investments are aiming to sustain the current production for the future, so those "replacement" investments are not included in the analysis, even though those are remarkable investments for the area.

The sources for potential investments that might generate rail transportations were:

- Lapland Chamber of Commerce: Study of investment potential of the North (2023)
- West Coast Chamber of Commerces in Finland: The future od investment and transport in the Western industrial zone (2023)
- Geological Surveys of Finland GTK: Mining investments in Finland
- Confederation of Finnish Industries: Green transition investments in Finland

Besides these publicly available studies, the steering and reference group member from Finland, Sweden and Norway provided information about possible investments on their area.

For the analysis of the time line of the investments realisation potential, Finland's Environmental administration's environmental impact assessments were analysed. More detailed information about the possible investments and whether they would generate rail transportation, were collected from official website of the companies and articles and news reports about the investments. Also reports and studies made by Swedish, Norwegian and Finnish Transport Administrations were utilised when analysing the possibilities for rail usage.

In Norway, several large investments in existing facilities in the Northern Norway were detected, and the latest ones related to, for example, seafood. As they are located outside the railway network and need truck transport to terminals, they are expected to eventually and in the long run generate new rail transportations as combined transports towards Oslo from the New North area. After discussions with Norwegian colleagues from Finnmarks Fylkeskommune and Norwegian Transport Agency, we decided not to further investigate these investments like we did for Sweden and Finland. Additional cargo tonnes for rail can't be calculated the same way and are not as predictable as for example forest industry investments. Besides, the Norwegian National Transport plan 2025-2036 predicts quite heavy increase in the rail cargo in Norway within the next 12 years, so it has been assumed for this study that these investments have already been taken into account in the official forecast for the year 2030. Therefore also no additional investments from Norway have been included in the possible outlooks for 2030 or 2050 (see later in the report).

For Sweden, 5 possible investments that could generate rail transportations, were identified (see table 1). The investments are either mining or industrial investments planned to happen within the next few years and they will generate rail cargo mainly within northern Sweden. As their realisation looks quite certain, these investments have been included in the forecast for 2030 and therefore no additional investments from Sweden are included in the possible outlooks or 2030 or 2050 (see later in the report).

Table 1. Possible investments in Sweden that might generate rail transportations. The investments have been included in the forecast for 2030*.

Industry	Region	Name	Transported goods	Scheduled prodution start	Inbound material (tonnes per year) and estimated direction	Outbound material (tonnes per year) and estimated direction	Estimated number of trains
Industrial	Norrbotten	Stegra, Boden	Steel coils	2026		5 000 000 Boden - Luleå	24 trains / day
Industrial	Norrbotten	SSAB&LKAB&Vattenfall, Gällivare	Sponge iron	2026-2028		1 350 000 Gällivare - Luleå	4 trains / day
Mining	Norrbotten	LKAB: Kiruna	Minerals, iron	2026-2050		Potential increased amounts after recent new mineral source findings	not adviced
Mining	Norrbotten	LKAB: Kiruna	Iron ore	2026		Potential increased amounts, Kiruna - Boden	not adviced
Mining	Norrbotten	Kaunis Ore, mine expansion, Pajala	Iron ore	2027		4 000 000 Pitkäjärvi-Narvik	8 trains / day
Industrial	Norrbotten	SSAB, Luleå	Steel	2028	1 350 000		

For Finland, several industrial and mining investments and one energy investment were identified to possible generate rail transportations (see table 2). Majority of these investments would generate rail transportations within the New North area of Finland.

These investments are not included in the official forecasts of rail cargo published by Traficom. Therefore these possible investments are the only investments included in the outlooks of 2030 and 2050 that are not included in the forecast for 2030. This means that the outlooks only take into account investments in Finland.

* Forecast 2030 for Sweden is a combination of the current situation, official forecast for 2045 and the investments in table 2 (see later in report).

Table 2. Possible investments in Finland that might generate rail transportations. The investments are the additional investments that are taken into consideration in the outlooks for 2030 and 2050.

Industry	Region	Name	Transported goods	Scheduled production start	Inbound material (tonnes per year) and estimated direction	Outbound material (tonnes per year and estimated direction	Estimated number of trains*
Mining	Lapland	Sakatti, Sodankylä	Ore	2032		250 000 Rovaniemi - Kemi	6 trains per day
Mining	Lapland	Sokli, Savukoski	Ore	2030		2 000 000 Rovaniemi-Kemi	4-8 trains per day
Mining	Lapland	Hannukainen,Kolari	Ore	2028		2 000 000 Kolari - Kemi	4-8 trains per day
Mining	Kainuu	Otanmäki, Kajaani	Minerals	2026		157 500 Kajaani - Raahe	1 train / day
Industrial	Kainuu	KaiCell Fibers, Paltamo	Pulp	2026-2030		600 000 Paltamo - Oulu	2-3 trains / day
Industrial	Lapland	Vataset Oy, Kemijärvi	Bioproducts	2025 (postponed)		700 000 Kemijärvi - Kemi	1-2 trains / day
Industrial	Pohjois-Pohjanmaa	Stora Enso, Oulu	Carton	Q1/2025	260 000 Kontiomäki - Oulu, Patokangas -Oulu, Ylivieska direction - Oulu		1-2 trains / day
Industrial	Keski-Pohjanmaa	Flexens Kokkola	Green ammonia & hydrogen	2027		30 000 Kokkola - Siilinjärvi	0-1 trains / month
Industrial	Keski-Pohjanmaa	Umicore Kokkola, pCAM	Battery materials	2025	100 000 Sotkamo-Kokkola		3 trains / week
Industrial	Pohjois-Karjala	Andritz & Suomen Säätöenergia, Nurmes	Green methanol	2026		80 000 Nurmes - Joensuu (and further)	1 trains / week
Industrial	Pohjanmaa	FREYR, Vaasa	Battery materials		Amounts not adviced but estimated some flow from Sotkamo - Vaasa		
Industrial	Pohjanmaa	Epsilon Advanced, Vaasa	Battery materials	2025-2026	21 000-102 500 Sotkamo - Vaasa		0-3 trains / week
Energy	Kainuu	Suomen Säätöenergia Oy, Paltamo	Biometanol	2028		224 000 Paltamo-Oulu	1 train / day

5. Rail freight forecast 2030 and outlooks for 2030 an 2050

Image: Mikko J. Putkonen

Methodology for creating the forecasts and outlooks

Forecast 2030

The forecast of rail traffic flows was created the following way:

- For Finland, the official forecast published by Traficom was taken as it is.
- For Norway, the official forecast published in the National Transport Plan 2025–2036 was proportioned for the year 2030.
- For Sweden, the forecast was created based on the official forecast published by Trafikverket for the year 2045 and the investments within the coming years (see table 2) were included.

For Sweden's coming investments, the impact on traffic flows was calculated based on the current situation of ore transportation (net tonnes per train maximum 6 800 tons). For other commodities it was assumed that one full train means 1 300 net tons. Also estimates and information from Swedish Transportation Administration's studies were used when creating the forecast situation for 2030.

Capacity for the forecasted situation in 2030 was analysed similarly as it was for the current status: traffic flows were converted into number of trains. Taking into account the direction of the trains, these cargo flows very placed on top of current capacity of each railway corridor in busiest 2-hour window.

Most of the area's rail corridors have available capacity if looking at the 24-hour window. This would then indicate that these investments don't have an effect on the capacity situation. However, as the investments are mainly industrial investments, we can assume that they would operate on somewhat strict schedule when arriving at the at the ports, mills or production sites and therefore using the 24-hour window capacity would not provide the accurate picture.

For example, forest industry product deliveries to the ports are very time-critical, since they have strict unloading windows at the ports in order to catch the intended ship. Also steel product and some chemical deliveries have a

certain unloading schedule, and if this schedule is missed, the worst case scenario is that the whole production line needs to be shut down.

When analysing the capacity, it needs to be remembered that the passenger trains are highly time-sensitive, and they are usually prioritized over freight trains. As they are high in numbers in corridors within the New North area, they are reserving a lot of capacity. Fulfilling the needs of both passenger and freight traffic is not always easy and sometimes only capacity left for the freight trains is far from desired times. Therefore the busiest 2 hour window was selected for the basis of the analysis.

However, like explained before, all new trains need to be analysed on case-by-case basis and it is definitely possible that some of the potential investments would be able to fit their rail transportation within the more quiet hours – thus not needing extra capacity from the links.

The analysis expects that the busiest 2 hours remain more or less the same in the future.

No forecast for 2050 has been produced in this project as no official forecast from Sweden and Norway are available for 2050 and the official forecast for Finland has no differences at the New North area in comparison to the 2030 official forecast.

Outlooks 2030 and 2050

As stated before, only investments in Finland are part of the outlooks as the identified investments in Sweden and Norway are part of the forecast for 2030. Due to this, the assumption that one full train means 1 300 net tons is used in the traffic flow analysis.

For Sweden, the information and changes in the official forecast for the year 2045 have been taking as the basis for the 2050 outlook. The Swedish forecast for 2045 also includes Norway.

Capacity is analysed the exact same way as for the forecast of 2030.

Forecast for 2030

Finland

According to the official forecast for 2030, most of the changes compared to current status in Finland are caused by shifting timber transports and most remarkable increase of tonnes and capacity are in corridors Patokangas–Kemi and Iisalmi–Kontiomäki.

The timber forecast have been received by controversiality, as forest industry has scaled down and ceasing imports from Russia has not increased domestic transports as forecasted. Capacity decrease is predicted to corridors Iisalmi–Ylivieska, Alholma–Seinäjoki and Lieksa–Eno in the official forecast.

Sweden

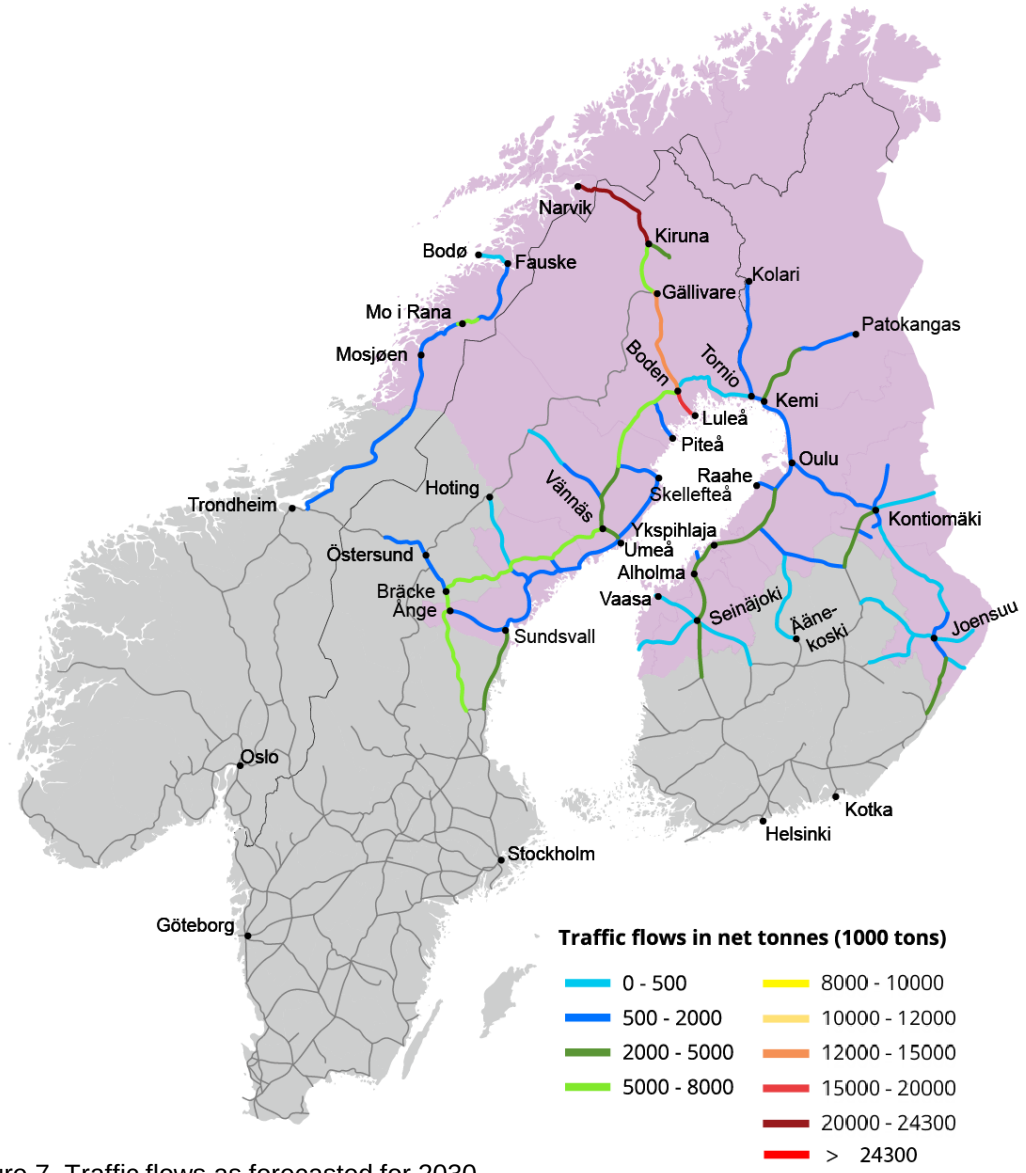
In Sweden, there was not official forecast available for 2030, so the information from the official forecast for 2045 and the investments happening within the next few years (see table 2) have been combined.

The results show high increase in tonnes and capacity utilization for Malmbanan and Boden–Luleå corridor.

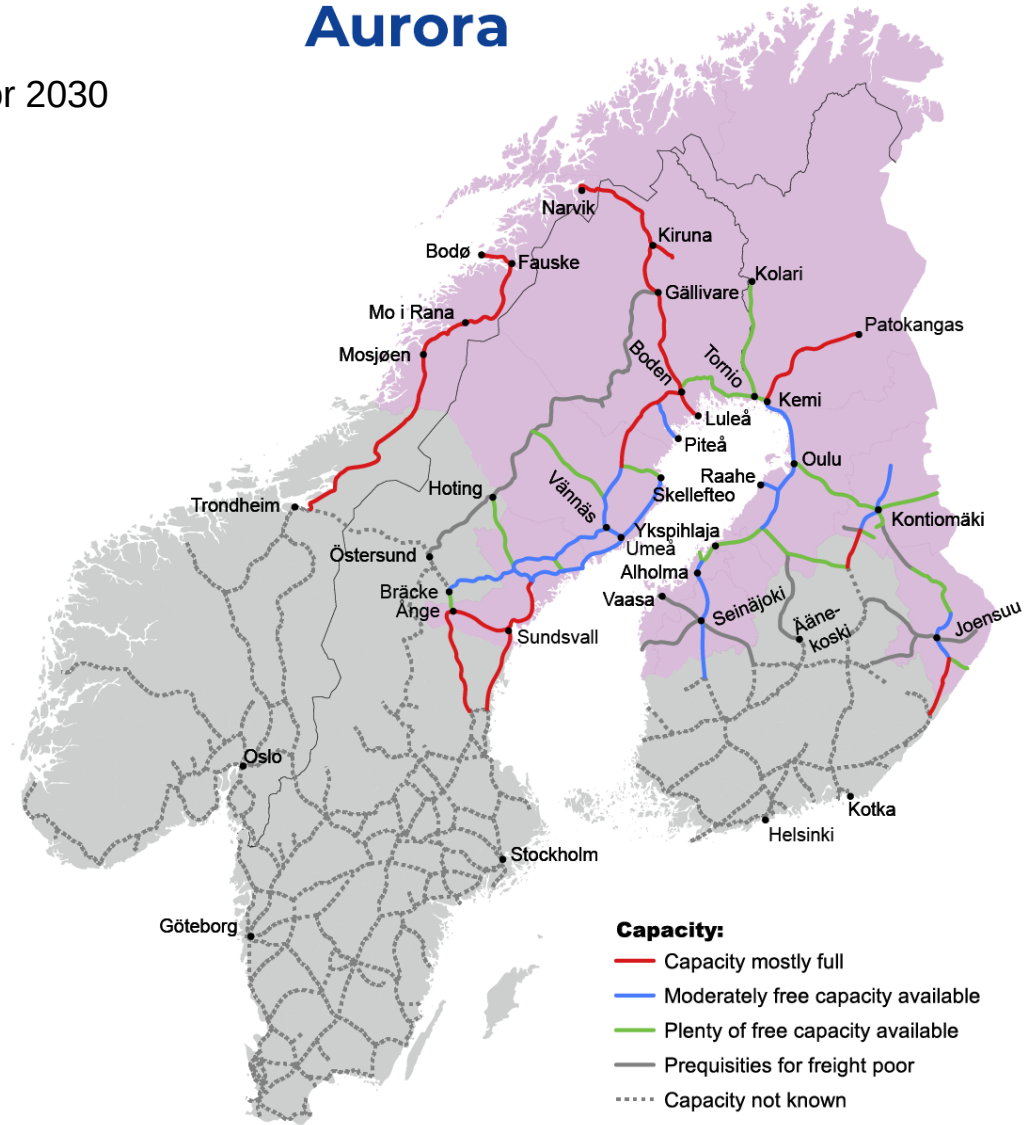
Norway

In Norway, ore transports to Narvik will have some increase, due to confirmed investments in Kiruna area (Kaunis Ore, LKAB). Combined transports are expected to increase moderately in Ofotbanan after new crossing tracks and extensions. In Nordlandbanan, after investments for new crossing tracks capacity increase for combined transports is expected and the capacity will be less stressed. Also new European rail traffic management system ERTMS will be introduced to Nordlandsbanan, which is expected to ease the capacity and make more slots for combined transports.

Forecast for 2030



Picture 7. Traffic flows as forecasted for 2030



Picture 8. Capacity situation for the forecasted traffic flows in 2030

Outlooks for 2030 and 2050

Outlook 2030

As potential investments that are not included in the forecasts were identified only for Finland, the changes in outlook for 2030 also occur only in Finland. A somewhat significant increase of tonnes and capacity utilisation in the corridors Patokangas–Kemi, Sotkamo–Iisalmi and Vaasa–Seinäjoki happens (see pictures 9 and 10).

Outlook 2050

The outlook 2050 has some differences compared to the outlook for 2030.

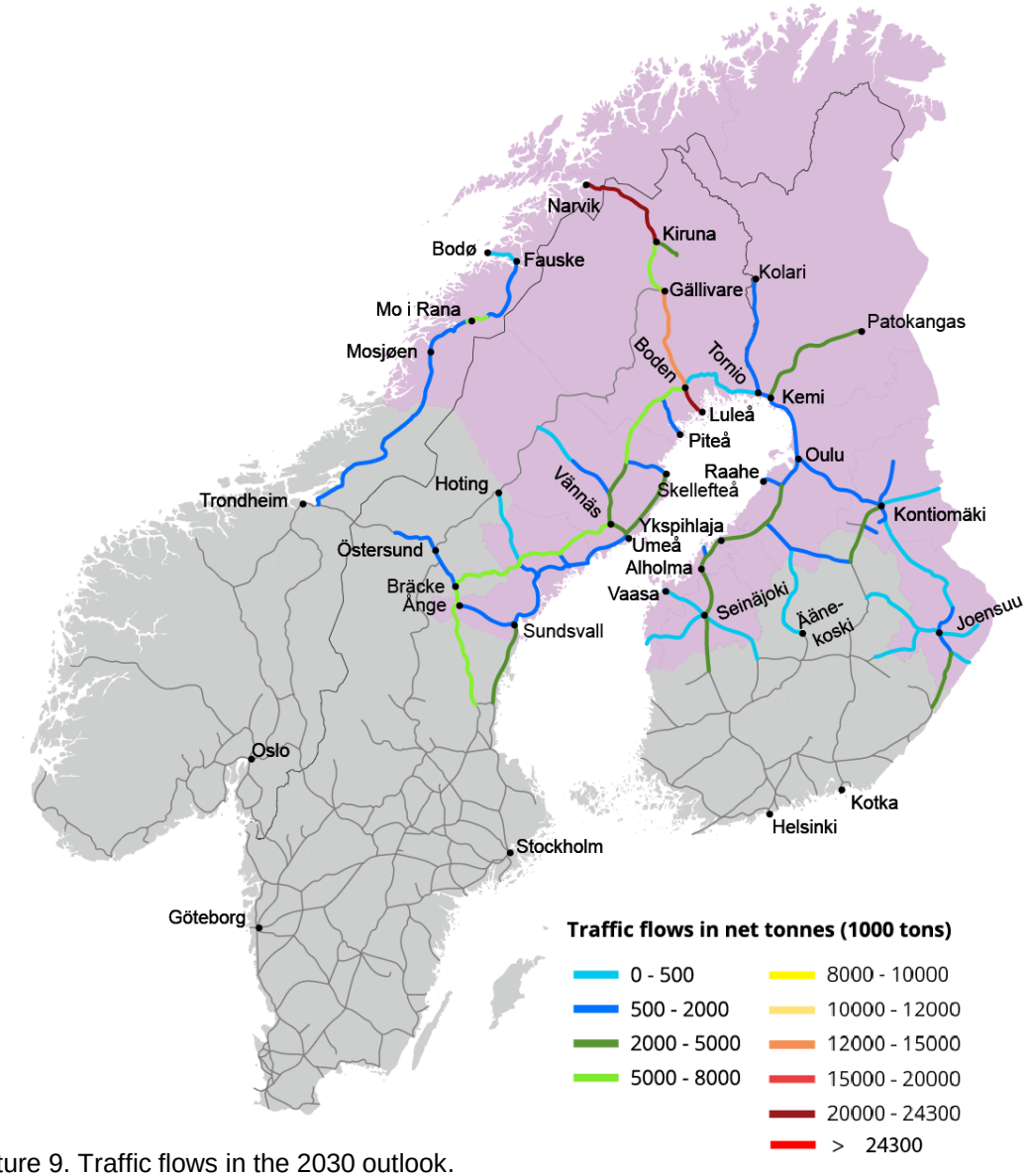
In Finland, mine in Hannukainen will increase the cargo tonnes in Tornio–Kolari line and mines in Sokli and Sakatti will increase transports between Kemi and Rovaniemi. Capacity of those lines is facing more pressure.

In Sweden the most remarkable shift in the rail cargo flows are caused by the new corridor ”Norrbotniabanan” (Luleå–Piteå–Skellefteå–Umeå) alongside the coast. Big part of train cargo flows have been shifted from the Boden–Vännäs line to Norrbotniabanan which will be ready by 2050.

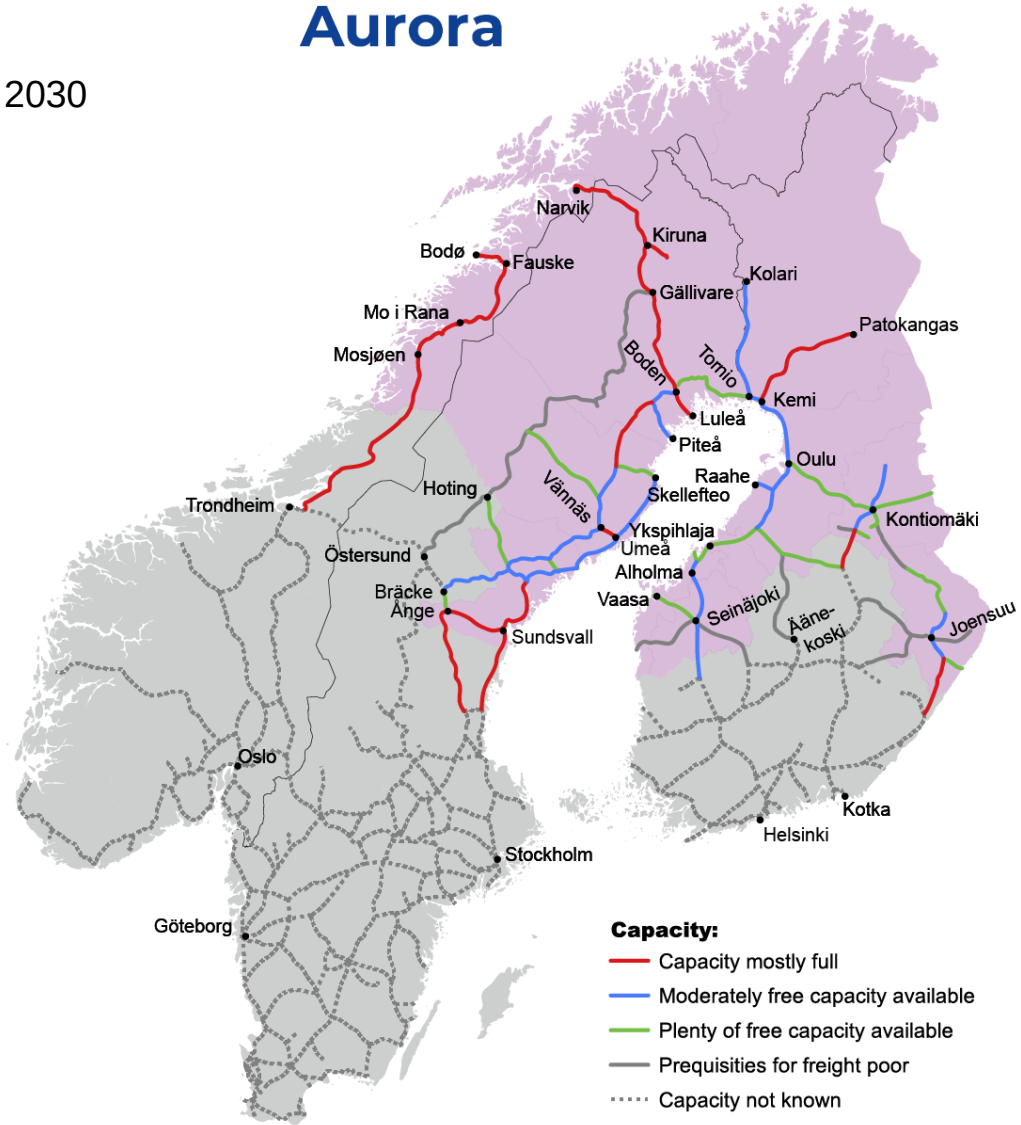
In Norway, the transports of iron ore between Kiruna and Narvik are still expected to increase, as the worldwide demand for fossil free iron grows and new mineral resources are expected to be mined. Combined transports continue to increase moderately in Nordlandsbanan, due further investments to infrastructure and demand for climate-free transports.

The changes in the outlook 2050 compared to outlook 2030 are in Finland based on the potential investments but in Sweden and Norway they are based on the changes according to official forecast for the year 2045 by Trafikverket.

Outlook for 2030

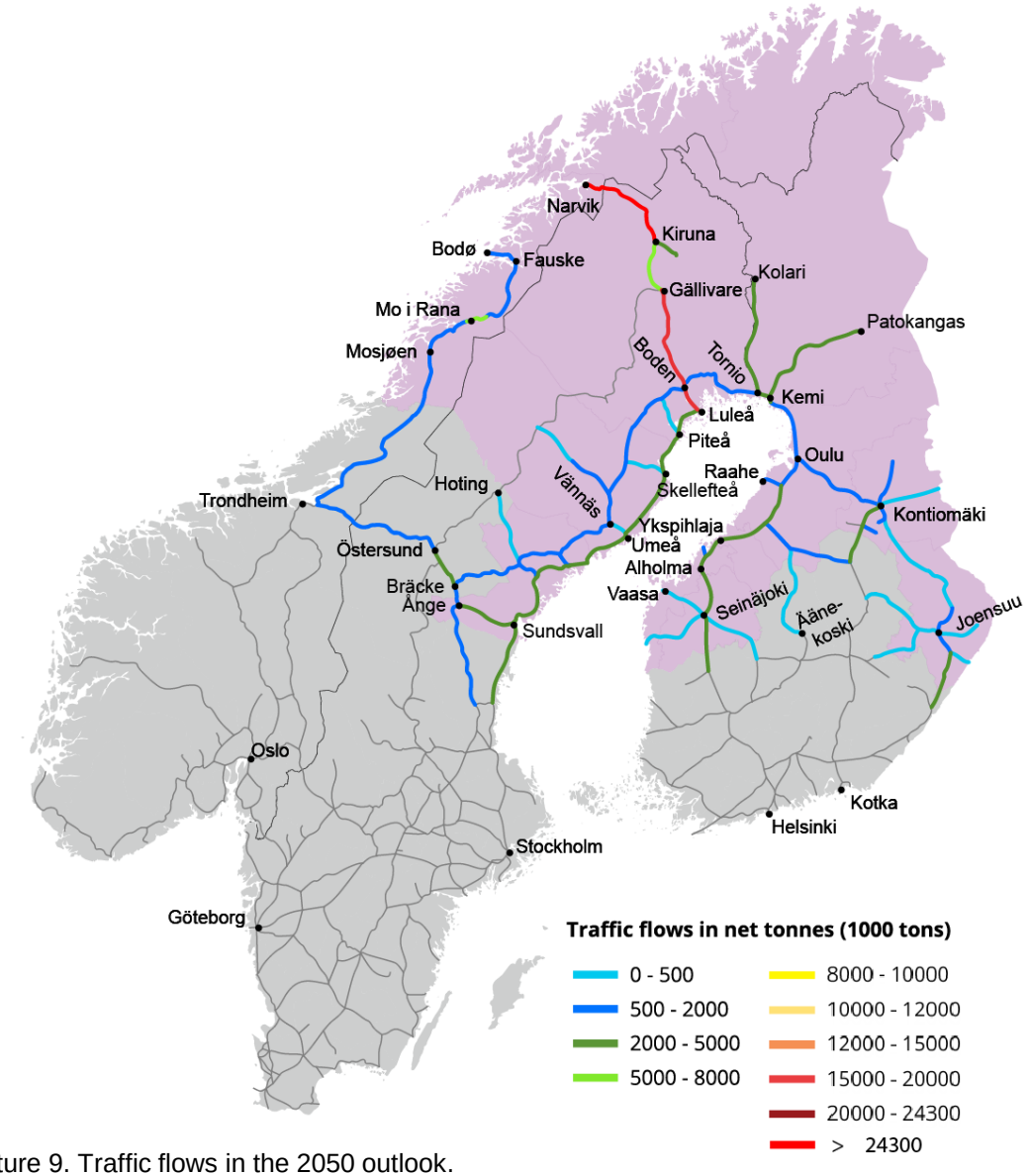


Picture 9. Traffic flows in the 2030 outlook.

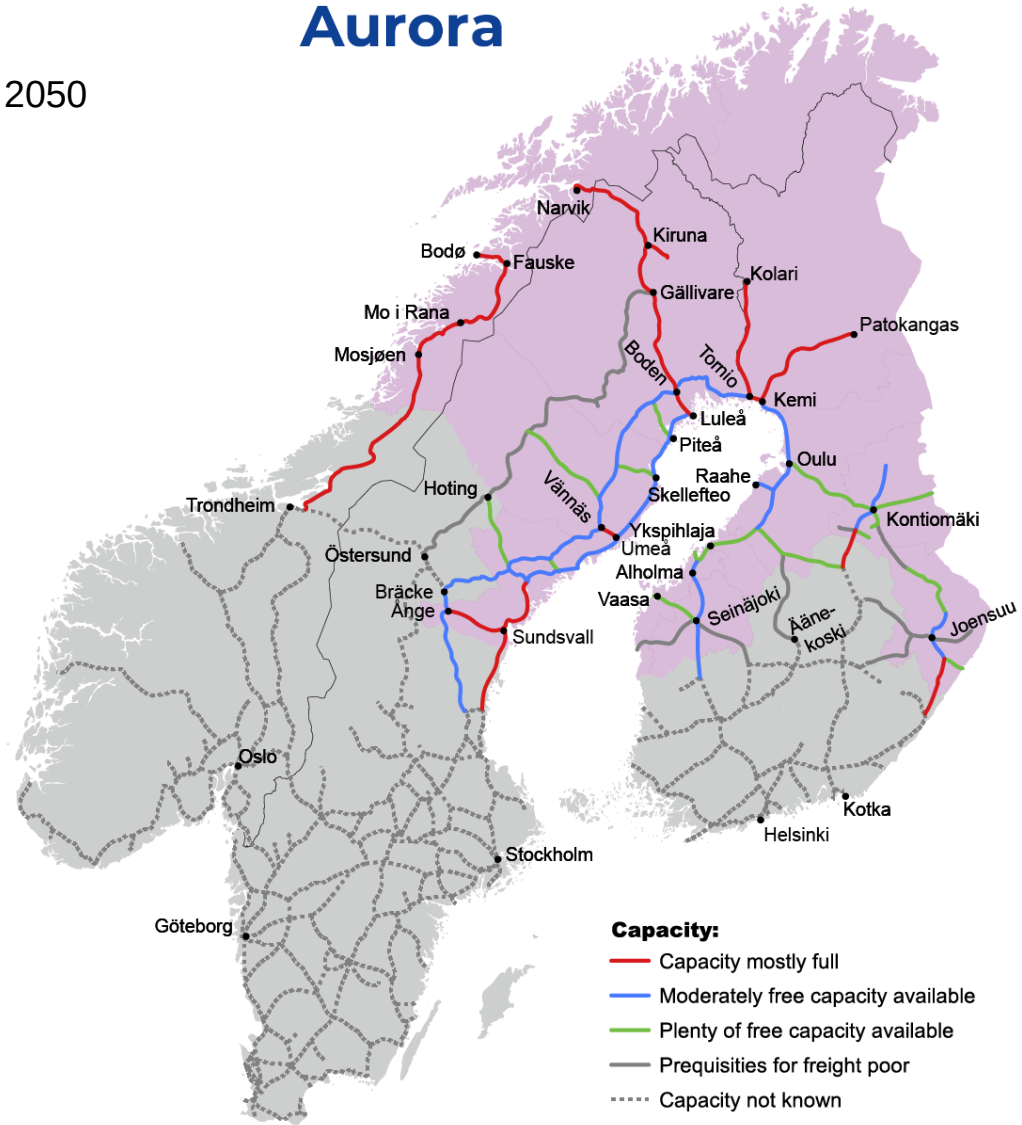


Picture 10. Capacity situation for the outlook in 2030

Outlook for 2050



Picture 9. Traffic flows in the 2050 outlook.



Picture 10. Capacity situation for the outlook in 2030

NEW NORTH

proxion
MEMBER OF WSP

Interreg
Aurora

Co-funded by the European Union

6. Conclusions and suggestions for next steps

13.9.2024

Image: Jimmy Bystedt

Conclusions

Current situation of commodity flows and capacity

The rail transportation in the New North area is mainly used by forest, steel and mining industries. Currently the highest cargo volumes in the project area are in Malmbanan from Luleå to Narvik due to strong mining industry.

Forest industry is strong in Sweden and Finland and chemicals are transported moderately by rail in all three countries. In Sweden steel is very significant commodity between steel factories in Luleå and Borlänge and in Finland, mineral products, nickel and zinc are also transported by rail but the amounts are moderate. Norway has the biggest share of combined transports (groceries, consumables, fish), but part of the transportations are also transported through Swedish rail corridors.

Most of the rail corridors have available capacity in the area, if looking at the 24-hour window. However, as majority of the cargo trains have a schedule, a busiest 2-hour window analysis shows that the capacity is mostly full on Malmbanan (Narvik–Kiruna–Luleå), Nordlandbanan (Bodo–Trondheim) and between Boden and Vännäs. Besides both southern Sweden and southern Finland have corridors where the capacity is mostly full.

Forecast for 2030

By 2030 timber transportations in Finland is forecasted to increase creating pressure on capacity between Kemi and Patokangas. In Sweden and Norway iron ore transports are estimated to grow in Malmbanan, which will be facing high pressure on capacity.

Outlook for 2030

The realisation of potential investment’s in Finland by 2030 would create a somewhat significant increase of tonnes and capacity utilisation in the corridors Patokangas–Kemi, Sotkamo–Iisalmi and Vaasa–Seinäjoki.

Outlook for 2050

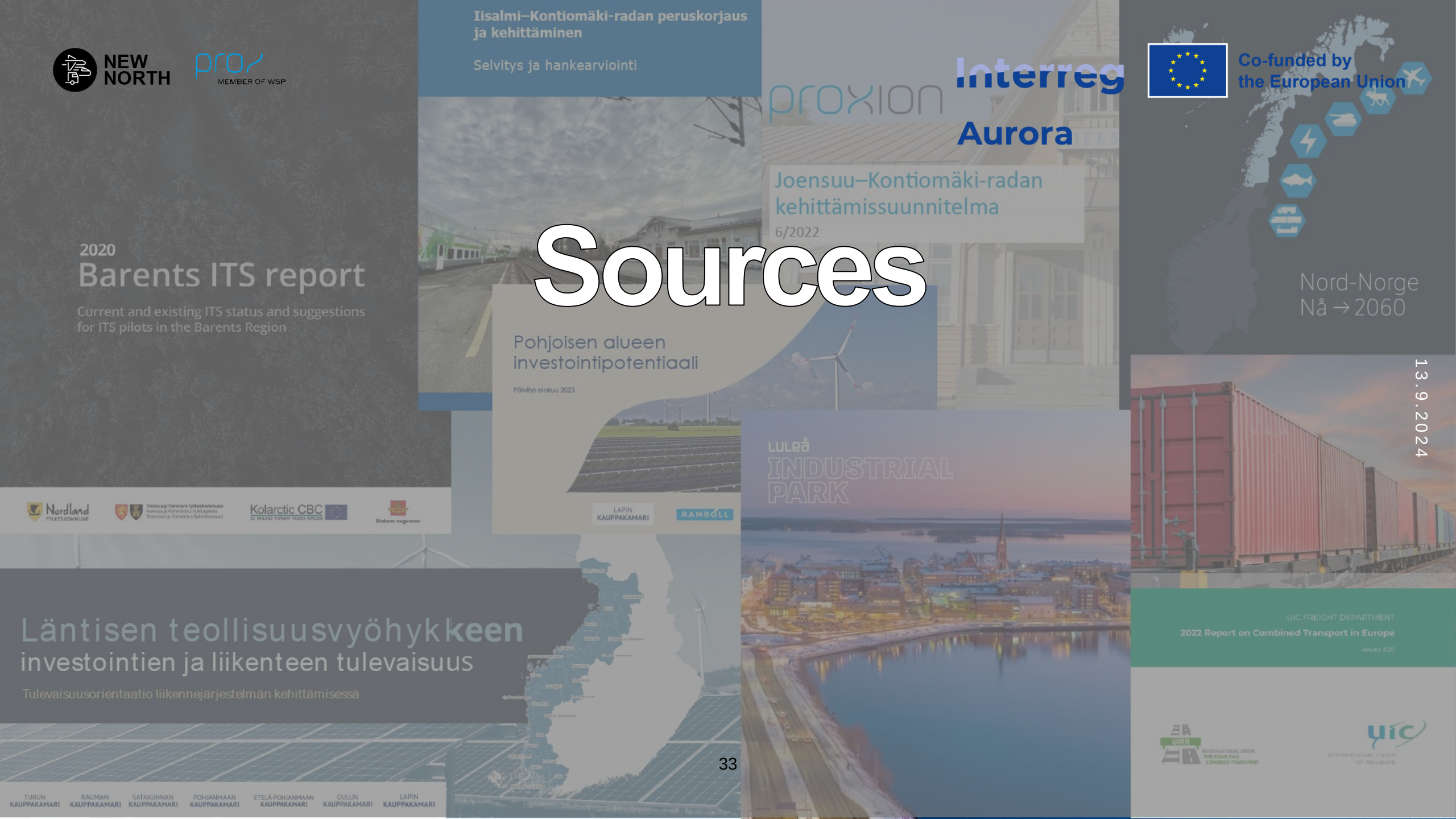
By 2050 the increasing global demand for fossil free iron will push the Malmbanan's limits, together with the combined transports from Norwegian ports. Norrbotniabanan has absorbed the tonnes from the Swedish main line, and that gives more capacity for steel trains between the production sites. If the Finnish mining investments realise, lines from Kemi to Kolari and Patokangas are facing heavy pressure in tonnes and in capacity.

Suggestions for next step

Based on the analysis of the current situation and the potential investments that might generate rail traffic in the region, it has been identified that the next step for analysing the green corridors in the New North area could be:

- Defining development needs and action plan for the railway network from capacity point of view based on the findings in this study.
- Analysing the need for possible new railway connections in the area and the effect of those on the capacity and traffic flows in the current railway network.
- Taking into consideration the outcomes from New North work package 2 (security of supply and co-operation) and analysing how the traffic flows and capacity outlooks for 2030 and 2050 might change.

Sources


NEW NORTH
MEMBER OF WSP
Iisalmi–Kontiomäki-radan peruskorjaus ja kehittäminen
Selvitys ja hankearviointi
proXion
Interreg
Aurora
Co-funded by the European Union
Joensuu–Kontiomäki-radan kehittämissuunnitelma
6/2022
2020
Barents ITS report
Current and existing ITS status and suggestions for ITS pilots in the Barents Region
Nord-Norge
Nå → 2060
Pohjoisen alueen investointipotentiaali
Päivitys elokuu 2023
LAPIN KAUPPAKAMARI
RAMBØLL
Nordland FYLKESKOMMUNE
Kolarctic CBC
Statens vegvesen
LULEÅ
INDUSTRIAL PARK
13.9.2024
Läntisen teollisuusvyöhykkeen
investointien ja liikenteen tulevaisuus
Tulevaisuusorientaatio liikennejärjestelmän kehittämisessä
TURUN KAUPPAKAMARI
RAUMAN KAUPPAKAMARI
SATAKUNNAN KAUPPAKAMARI
POHJANMAAN KAUPPAKAMARI
ETELÄ-POHJANMAAN KAUPPAKAMARI
OULUN KAUPPAKAMARI
LAPIN KAUPPAKAMARI
UIC FREIGHT DEPARTMENT
2022 Report on Combined Transport in Europe
January 2023
VIRR
INTERNATIONAL UNION FOR ROAD-RAIL COMBINED TRANSPORT
uic
INTERNATIONAL UNION OF RAILWAYS

Sources:

Banenor: Goods transport terminals

Confederation of Finnish Industries: Green Investments in Finland (2024)

Det Kongelige Samsferdselsdepartment: Nasjonal transportplan 2025-2036 (2024)

Finland's Environmental adminstration: Environmental impact assessments

Finnmark Fylkeskommune, Eirik Selmer (email conversation)

Geological Surveys of Finland GTK : Mining investments in Finland

Green Cargo: Terminal information

IVA: Industrisatsingar i norra Sverige (2024)

Jernbanedirektoratet: Årsrapport 2023 (2024)

Jernbanedirektoratet, Statens Vegvesen, Kystverket, Avinor: Nord Norge Nå til 2060 (2023)

Lapland Chamber of Commerce: Study of investment potential of the North (2023)

NHO Nordland, Lars Fredrik Martinussen (email conversation)

Regional councels and county adminstrations of the area

Traficom: Analysis of the measures to enable the start of intermodal transport in Finland

Traficom: National Transport Forecasts (2024)

Trafikverket: Järnvägens kapacitetutnyttjande 2023 (2024)

Trafikverket: Prognos för godstransporter 2040 (2023)

Trafikverket: Tilläggsprognos för de stora industriinvestningarna i Norrbottens och Västerbottens län (2023)

Trafikverket: Prognos för godstransporter 2045 (2024)

Trafikverket, Simon Lindgren, Nils Ahlm (interview)

UIC: 2022 Report on Combined Transports in Europe

Väylävirasto: Freight transport volymes 2021 (2022)

Väylävirasto: Freight transport volymes 2023 (2024)

West Coast Chamber of Commerces in Finland: The future od investment and transport in the Western industrial zone (2023)