

The train ferry connects Finland efficiently and environmentally friendly to Europe

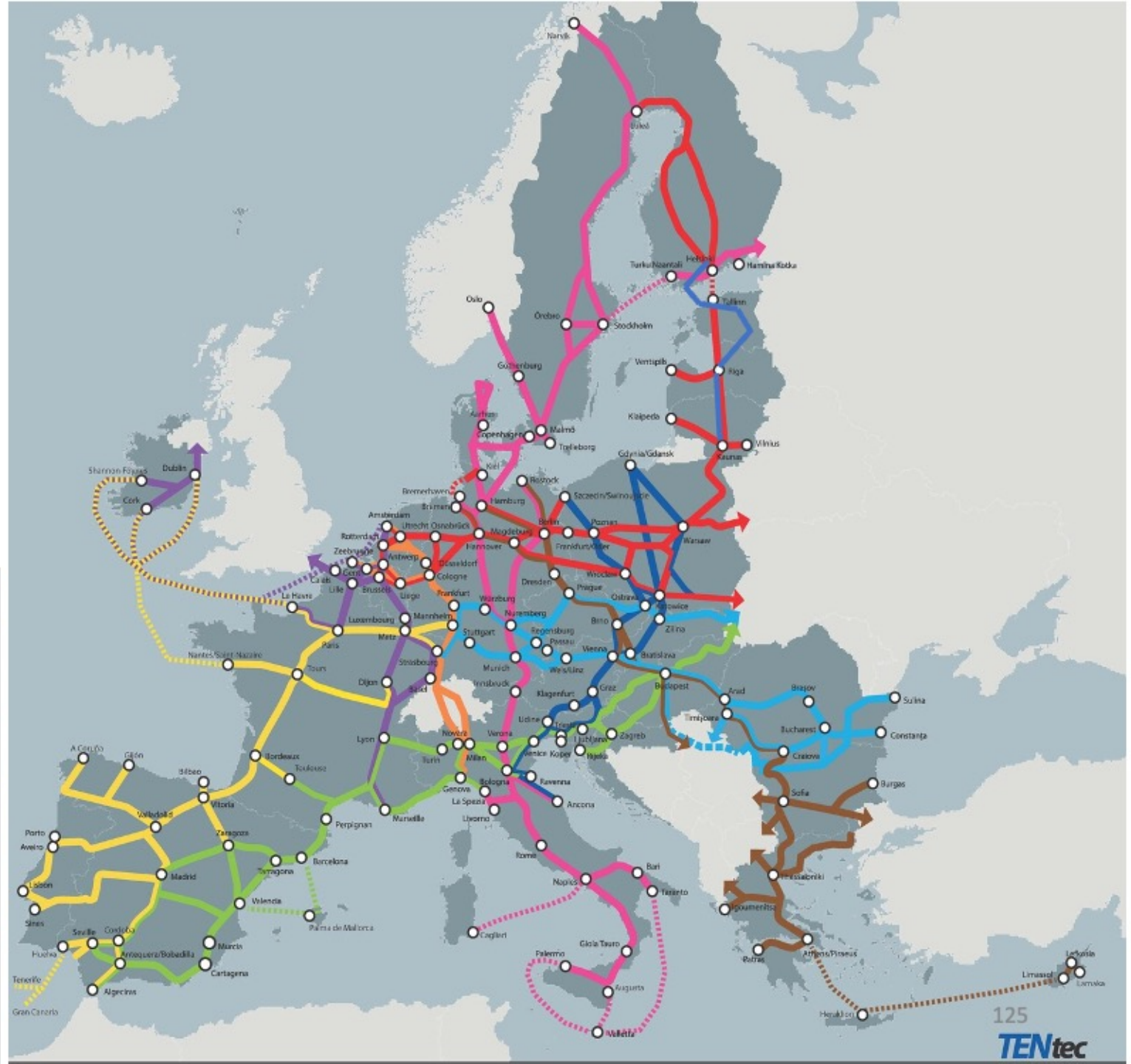
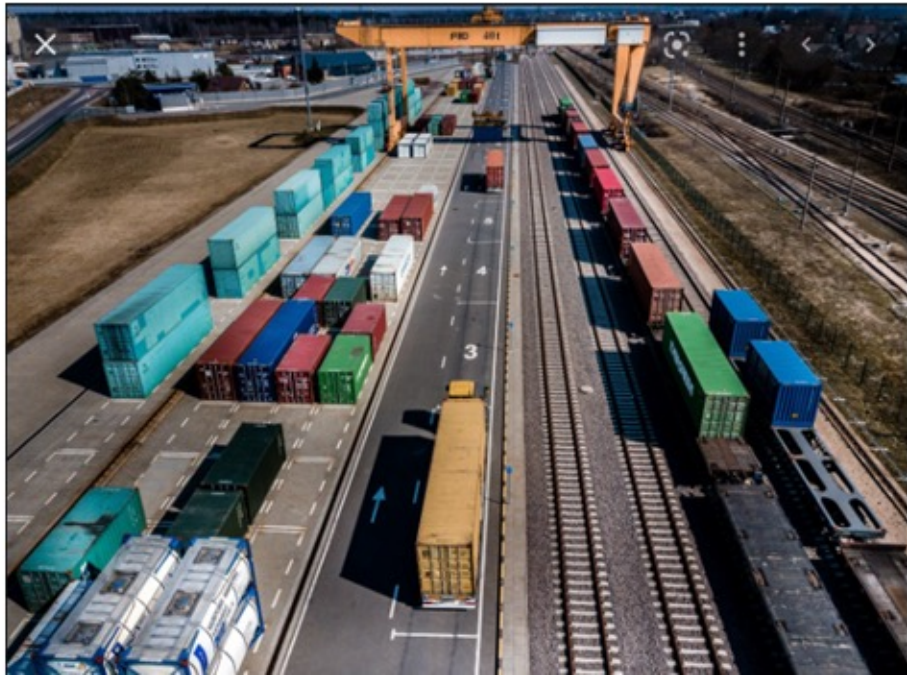
DigiLog 2023

Ship-Train transportation/train ferry,

Helsinki, January 19, 2023

In 2025-26, the rail ferry will create a connection to the European TEN-T rail network!

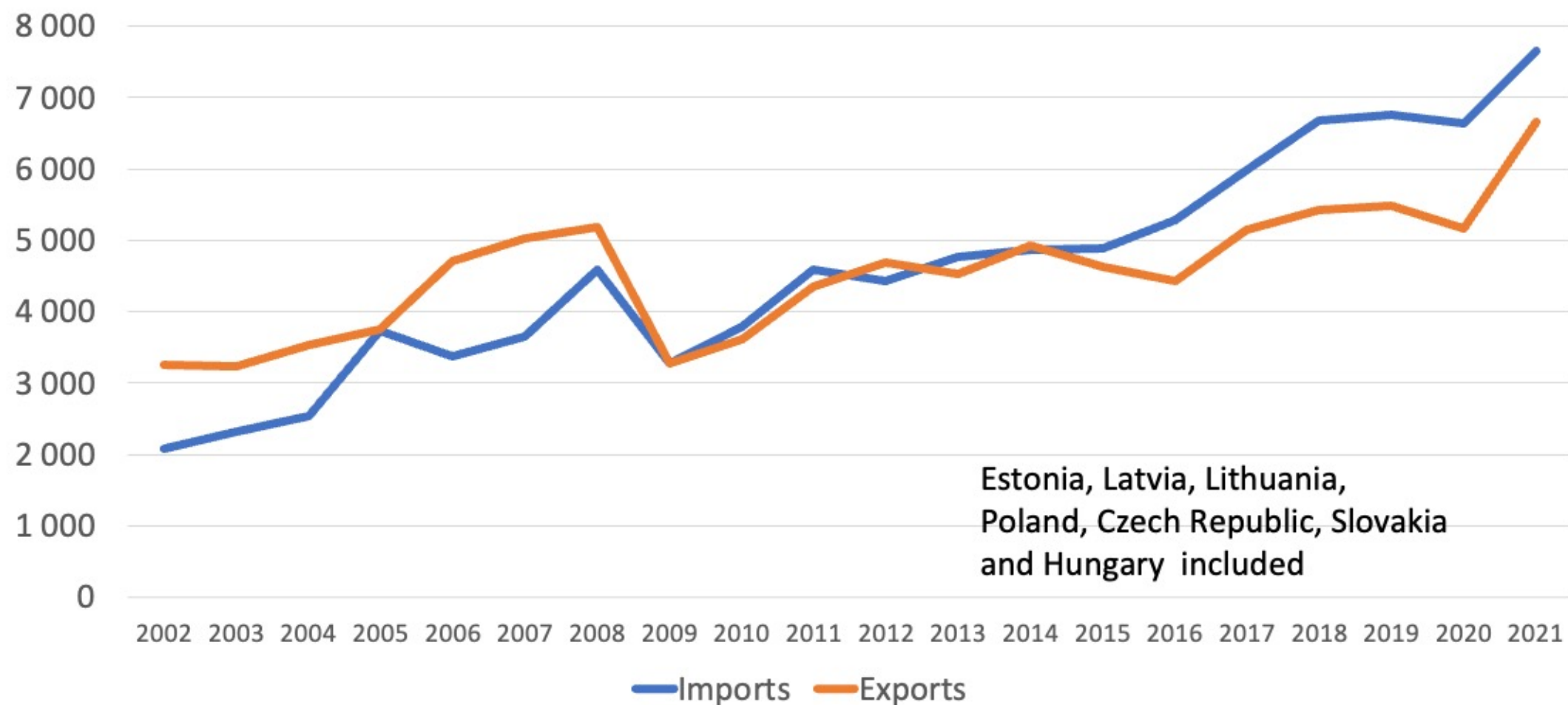
In the Kaunas intermodal terminal, containers and trailers are quickly lifted from our trains to European gauge trains!



The strategic importance of the train ferry for Finland

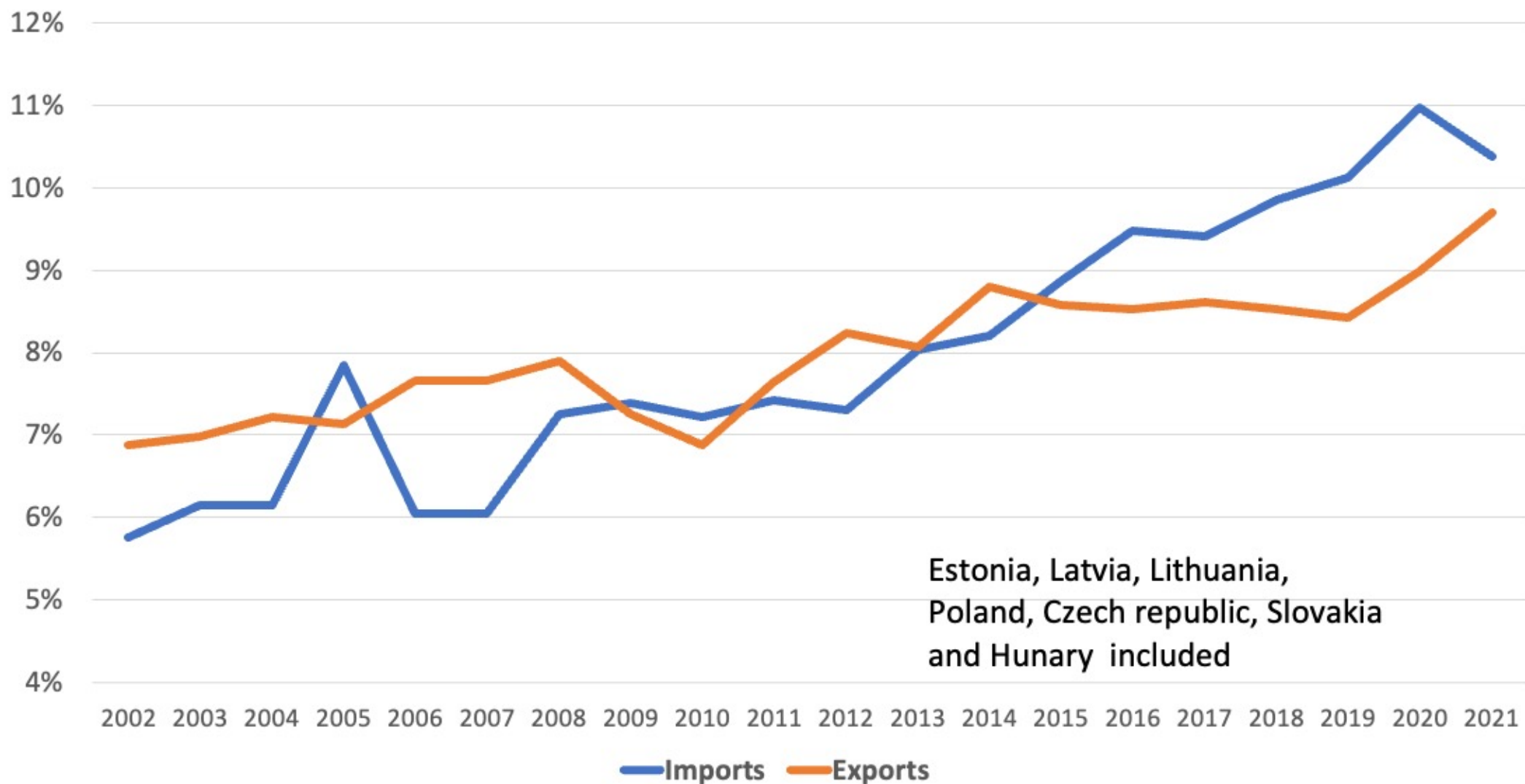
- The train ferry makes transportation between Finland and the Baltic States as well as other nearby Eastern European countries more efficient. The area is becoming Finland's most important foreign trade area. (Slides 4-7) Train transport to Germany and the rest of Central Europe will also open.
- The train ferry enables train transport, which reduces climate emissions (CO₂e) by a fifth compared to truck transport. This is the most important step to turn transportation across the Gulf of Finland into a green one. (Slide 8) Now around 1,100 trucks handle transports between Finland and the Baltics and Eastern Europe per day.
- The Estonian route has overtaken the German and Swedish routes in the transport of trucks and trailers. (Slide 9) The train ferry between Koverhar and Paldisk essentially increases the security of supply in the fast transport of products important to consumers and industry.
- In addition, the train ferry enables the import of important raw materials such as wood and wood chips needed by the forest industry and energy plants, which is now blocked from Russia. (Slides 10 and 11) Inland facilities located along the rail network will especially benefit from this.
- The train ferry enables uniform transportation of Finnish and NATO heavy defense equipment without intermediate loadings from the Baltic countries to Finland and from Finland to the Baltics. (Slide 12) This essentially strengthens the region's defense when Finland joins NATO.

Development of Finnish Trade with Baltic and Eastern European Countries, MEUR



Source: Uljas Statistical Database <https://uljas.tulli.fi>

Share of Baltic and Eastern European Countries in Finnish Trade



Source: Uljas Statistical Database <https://uljas.tulli.fi>

Finland 's largest importing countries in 2021

Rank			Imports MEUR	Exports MEUR	Trade Balance MEUR	Share of Imports
	AA	All countries	72 707	68 761	-3 945	100 %
1	DE	Germany	10 820	9 157	-1 663	14,9 %
2	RU	Russia	8 620	3 736	-4 884	11,9 %
3	SE	Sweden	8 427	7 077	-1 350	11,6 %
		Baltics and Eastern Europe	7 539	6 666	-873	10,4 %
4	CN	China	6 575	3 619	-2 956	9,0 %
5	NL	Netherlands	3 880	4 352	473	5,3 %
6	PL	Poland	2 423	2 008	-415	3,3 %
7	EE	Estonia	2 395	2 393	-3	3,3 %
8	US	USA	2 335	4 642	2 307	3,2 %
9	IT	Italy	2 006	2 927	921	2,8 %
10	FR	France	1 815	2 078	263	2,5 %
11	DK	Denmark	1 718	1 230	-488	2,4 %
12	NO	Norway	1 694	1 745	50	2,3 %
13	BE	Belgium	1 596	2 295	699	2,2 %
14	ES	Spain	1 589	1 024	-565	2,2 %
15	GB	United Kingdom	1 371	2 551	1 179	1,9 %
16	CZ	Czech Republic	1 014	433	-581	1,4 %
17	JP	Japan	775	1 598	823	1,1 %
18	AT	Austria	770	499	-271	1,1 %
19	TR	Turkey	723	949	226	1,0 %
20	KR	South Korea	683	762	79	0,9 %

Source: Finnish Customs, Uljas Database

Baltics and Eastern Europe includes here Estonia, Latvia, Lithuania, Poland, Czech Republic, Slovakia and Hungary

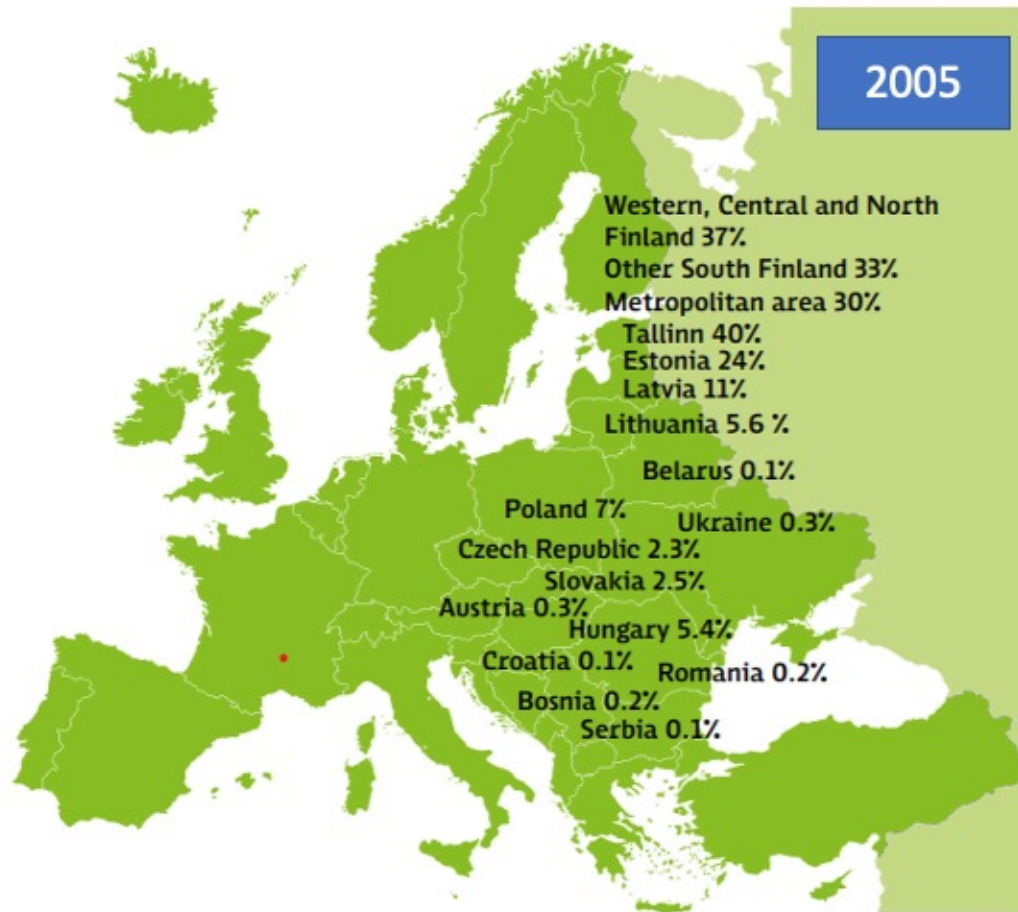
Finland's largest exporting countries in 2021

Rank	Country	Imports MEUR	Exports MEUR	Trade Balance MEUR	Share of Exports	
	AA	All countries together	72 707	68 761	-3 945	100 %
1	DE	Germany	10 820	9 157	-1 663	12,6 %
2	SE	Sweden	8 427	7 077	-1 350	9,7 %
		Baltics and Eastern Europe	7 539	6 666	-873	9,2 %
3	US	USA	2 335	4 642	2 307	6,4 %
4	NL	Netherlands	3 880	4 352	473	6,0 %
5	RU	Russia	8 620	3 736	-4 884	5,1 %
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7	IT	Italy	2 006	2 927	921	4,0 %
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13	NO	Norway	1 694	1 745	50	2,4 %
14	JP	Japan	775	1 598	823	2,2 %
15	DK	Denmark	1 718	1 230	-488	1,7 %
16	CH	Switzerland	609	1 209	600	1,7 %
17	ES	Spain	1 589	1 024	-565	1,4 %
18	TR	Turkey	723	949	226	1,3 %
19	CA	Canada	502	805	303	1,1 %
20	LT	Lithuania	591	784	193	1,1 %

Source: Finnish Customs, Uljas Database

Baltics and Eastern Europe includes here Estonia, Latvia, Lithuania, Poland, Czech Republic, Slovakia and Hungary

Share of European countries and areas of Finland of the number of Helsinki-Tallinn Trucks both ways in 2005 and 2012.



Source: Strafica Oy, Helsingin-Talinnan välisen tavaraliikenteen määräpaikkatutkimus 2005, Helsinki Port publication A, 2006:1



Source: HSL, Helsingin ja Tallinnan autolauttasatamien tavarautoliikenteen tutkimus 2012, in Publication Helsinki and Tallinn on the move, Helsinki – Tallinn 2012

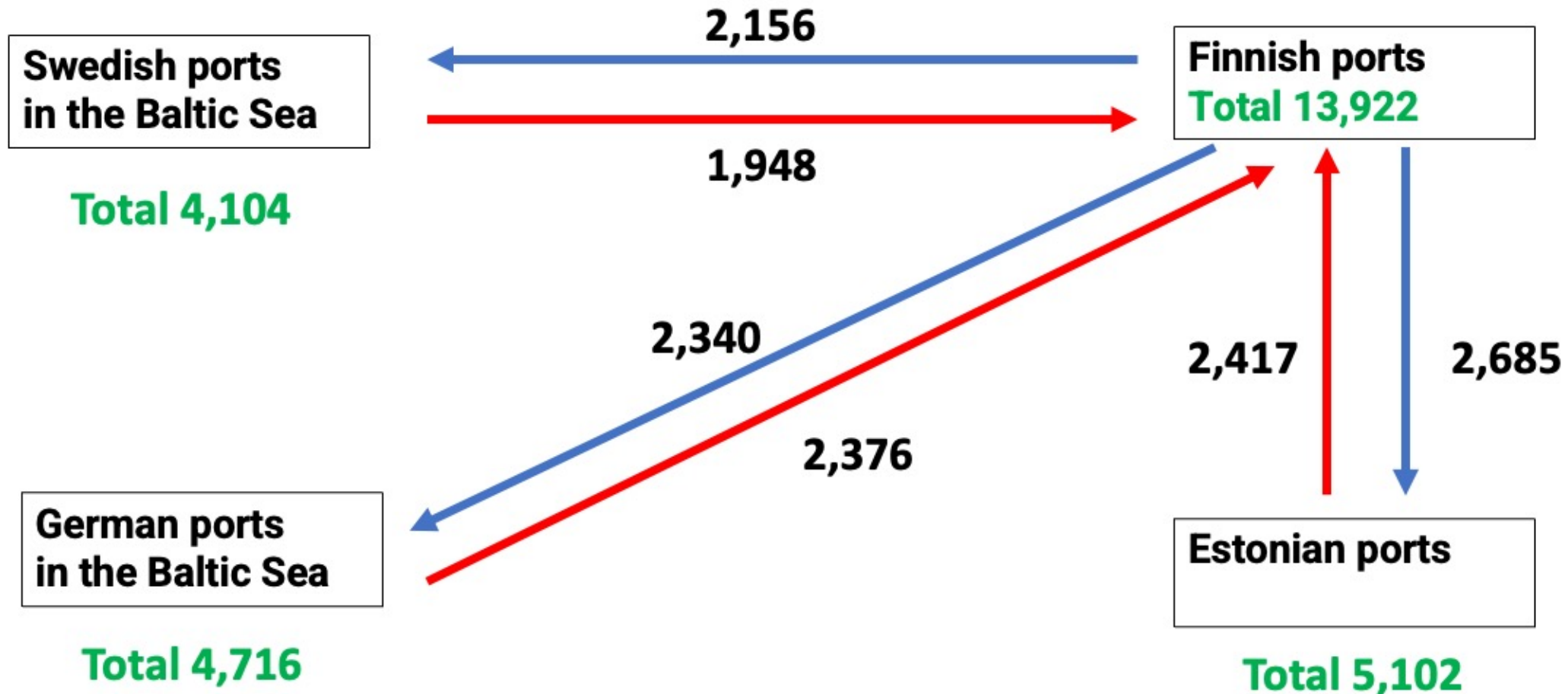
New Study with climate emission is needed!!!

Emission [gCO₂e/tkm] of heavy goods vehicle was 137g/tkm and of freight train 23,99g/tkm in EU27 on 2018.

Source: Methodology for GHG Efficiency of Transport Modes, Final report 12/2020, EU finaced, made by Fraunhofer, CE Delft and Ramboll

RoRo transportation between Finnish and Baltic Sea ports in 2019, Million tonnes

(Finnish ports Helsinki, Hanko, Turku, Naantali, Uusikaupunki and Vaasa included)



Source: TrafiCom. Note: in 2020, the maintenance of this statistic was transferred to Statistics Finland, which no longer publishes ports of destination for data protection reasons.

Finnish Imports of Fuel Wood, year 2021

Suomen polttopuun tuonti vuonna 2021

Product Group		Value MEUR	Quantity		Value Share	Quantity Share
4401 Fuel wood, in logs, billets, twigs, faggots or similar forms; wood in chips or particles; sawdust and wood waste and scrap, whether or not agglomerated in logs, briquettes, pellets or similar forms	All Countries	222	6 923 213	m3	100 %	100 %
	Russia	150	4 987 301	m3	68 %	72 %
4401 Polttopuu, rankoina, pölkkyinä, halkoina, oksina, risukimppuina tai niiden kaltaisissa muodoissa; puu lastuina ja hakkeena; sahanpuru ja puujäte, myös pölkyiksi, briketeiksi, rakeiksi tai niiden kaltaiseen muotoon yhteenpuristettu	Baltic Countries	58	1 370 620	m3	26 %	20 %
	Estonia	34	771 293	m3	15 %	11 %

Finnish Imports of Wood in the Rough, year 2021

Suomen metsäteollisuuden puun tuonti, vuonna 2021

Product Group CN 4403		Value MEUR	Quantity		Value Share	Quantity Share
4403 Wood in the rough, whether or not stripped of bark or sapwood, or roughly squared (excl. rough-cut wood for walking sticks, umbrellas, tool shafts and the like; wood in the form of railway sleepers; wood cut into boards or beams, etc.) 4403 Raakapuu, myös jos siitä on poistettu kuori tai pintapuu, tai karkeasti syrjäetty puu (paitsi karkeasti muotoiltu puu kävelykeppien sateenvarjojen, työkalujen varsien tai niiden kaltaisten valmistukseen; rata- tai raitiopölkyiksi muoto)	All Countries	287	6 303 204	m3	100 %	100 %
	Russia	199	4 609 519	m3	69 %	73 %
	Baltic Countries	77	1 511 804	m3	27 %	24 %
	Estonia	43	834 604	m3	15 %	13 %

Examples of heavy equipment of the Finnish Defense Forces that the train ferry can transport

Battle tank Leopard 2A6



Cannon 155 K 98



Heavy rocket launcher 298 RSRAKH 06



Armored howitzer 155 PSH K9 FIN (Hammer)



Anti-aircraft missile 90M (ITO90) Crotales



Bridge car SISU E15 TP-L



Hanko's Koverhar port will become the Finnish train ferry port

- There is a short rail connection from the port of Koverhar to the Hanko-Hyvinkää freight line, through which there is a connection to the entire Finnish rail network. The Hanko-Hyvinkää line will be electrified and level crossings will be removed and secured.
- Koverhar is also the shortest possible distance to the train ferry port on the Estonian side, which is Paldiski Northern Port on the opposite side.
- The city of Hanko's long-term goals are to concentrate port operations in Koverhar and develop the port. The train ferry port is a significant concrete step in this.
- There is space in the port area for the structures required by the train ferry (pier, marshalling yard, trailer area). A marshalling yard would be built in Koverhar at a height of 3 meters above sea level, i.e. at the same level as the train deck. Trailers can be taken along the ramp directly to the weather deck.
- The train ferry will be placed at the southern end of the planned new pier. The bow faces the sea, so it would take as little space as possible from other ship traffic.
- We start planning as quickly as possible, because environmental permits and planning and construction take time.
- The harbor area of the train ferry with its structures will remain the property of the Port of Hanko. This makes it possible to get up to 80% guarantees for investments. In addition, EU Military Mobility funding can be applied for investments, which is facilitated by Finland's future membership in NATO.

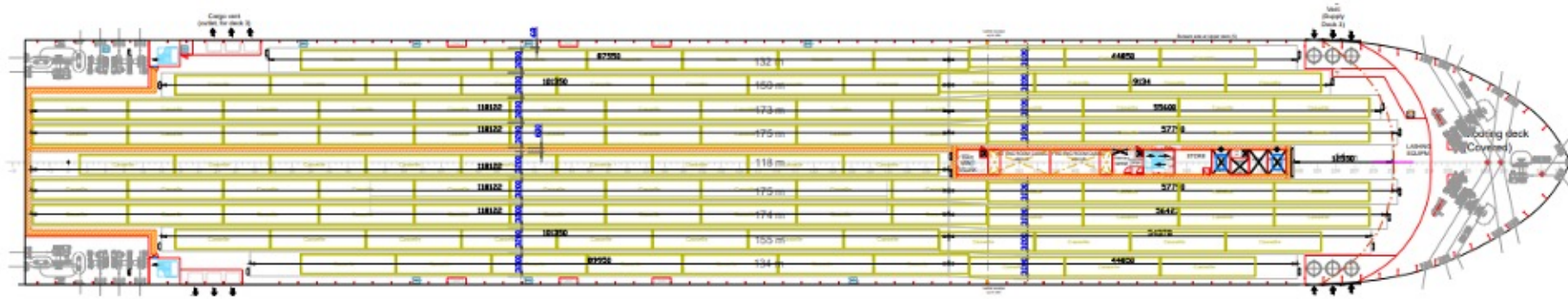
FENNORAIL train ferry

- The train ferry was designed by Deltamarin Ltd. in Finland. Design documents and drawings have been sent to the selected shipyards for quotations.
- The train ferry will have a main deck and a weather deck. The main deck is a train deck and trailers are transported on the weather deck (see slide 15).
- On the train deck, the wagon width is measured according to VR's widest wagons, i.e. timber wagons. Sturdy freight cars, which are longer, can fit 68 on the train deck (see slide 16).
- The railway track length is 1,069 meters. When the train ferry makes two round trips per day according to the operating plan, it is possible to transport more than 4 kilometers of railcars across the Gulf of Finland.
- The length of the trailer deck lane is 1,386 meters. The train ferry can take 12 trucks with drivers, because the ship is a cargo ship and not intended for passengers. There will be discussions with Traficom about increasing the number of trucks, because the distance over Gulf of Finland is short.
- Finnish technology is used as much as possible in the train ferry (diesel engines, propulsion equipment, intelligent information systems). The four engines remain to use marine diesel (MGO) or liquefied natural gas (LNG).
- In addition, the aim is to be able to use green hydrogen made from wind, solar and bioenergy in addition to MGO and LNG, but for now ship engines can only use about 3% hydrogen with the aforementioned fuels. Alternatively, biomethanol or ammonia could be used, which is produced with electricity produced by wind power and the sun.

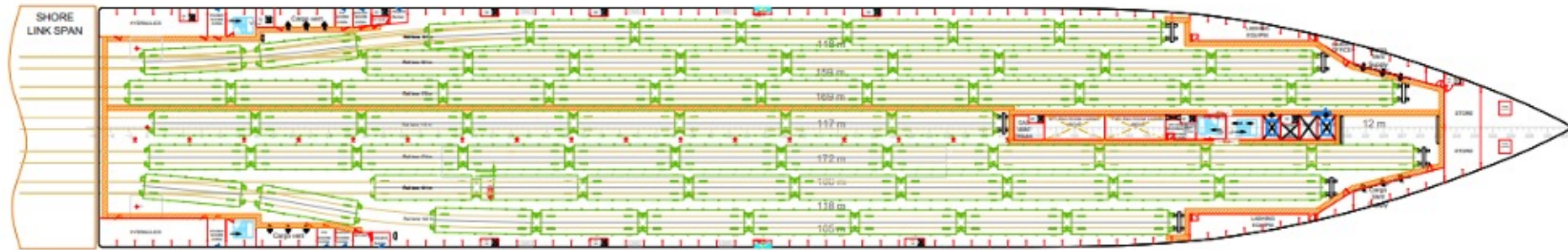
Train ferry: length 203m, width 31.5m, draft 7.0m,
ice class F/S1A, speed 20 kn, crew 22



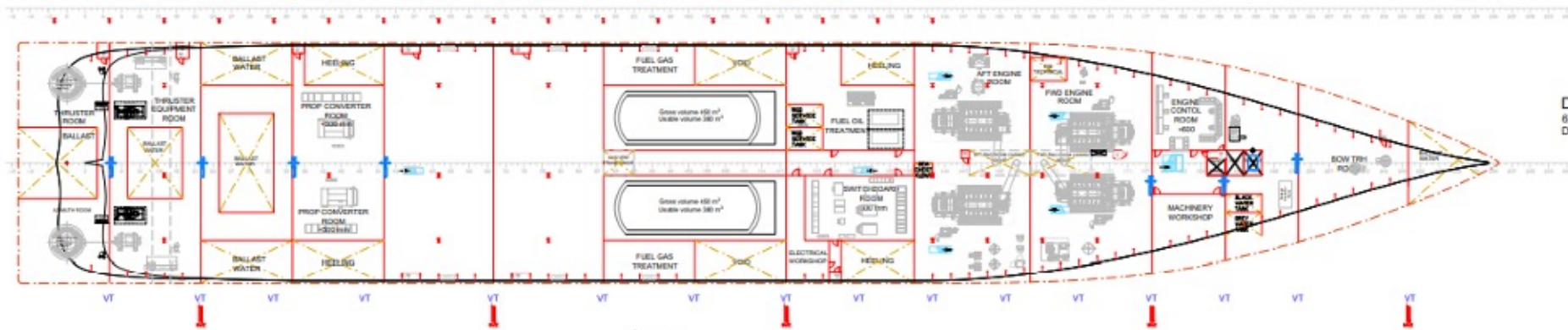
Trailer deck (Upper Deck), train deck (Main Deck) and deck 2 (engines, fuel tanks, ballast water)



UPPER DECK (5)
 16 830 ABL
 DECK HEIGHT 5 815
 Lane metres 1386 m
 Cassettes 109 pcs



MAIN DECK
 10 000 ABL
 DECK HEIGHT 6 830 / 2 950
 Lane metres 1118 m
 Rail metres 1069 m



DECK 2
 6 500/7 100 ABL
 DECK HEIGHT 3 500 / 2 900

Additional Information about FENNORAIL Train Ferry Project

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