

**Huoltovarmuusorganisaatio**  
Försörjningsberedskapsorganisationen  
National Emergency Supply Organisation

# Finland's Maritime Transport Capacity for Security of Supply

Juha Savisaari, Pool Secretary  
Maritime Transport Pool

Joint project undertaken by  
the Maritime Transport  
Pool and Shipbrokers  
Finland

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Compilation of the results of the  
public version of the report

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# Project purpose and goal

- The project, conducted during 2022, sought to clarify the sufficient maritime transport capacity for the security of supply with the help of, for example, critical transport scenarios under exceptional conditions, statistical analyses, interviews and workshops.
- The work involved assessments of, among others, the following:
  - The sufficiency of the transport chain's critical transport capacity and port stowage capacity as a foundation for further planning.
  - The role of shipbrokers and foreign shipping companies within the critical supply chain for security of supply and outlines of collaboration models between the Government and foreign shipping companies to ensure the security of supply.
  - The foreign fleet capacity, also in terms of the registry state, ice class and larger shipping companies.
- The public version of the work is a summary of a broader report drawn up for the use of the authorities. The report was done as part of the Logistics 2030 programme of the National Emergency Supply Agency.



# Project package conducted during 2022

- **Assessment of the sufficient maritime transport capacity for Finland's security of supply on the basis of defined exceptional case scenarios**
- The Maritime Transport Pool section focused on domestic tonnage and ports.
  - Opinion concerning the need for critical maritime transport capacity as based on statistical analysis and workshop results.
- The Shipbrokers Finland section focused on foreign vessel capacity and the shipbrokers' role in the vital supply chain for the security of supply.
  - Aforementioned operators and foreign shipping companies were surveyed to clarify the possibilities for collaboration as a means of safeguarding Finland's security of supply.
- The report for the authorities was completed in November 2022.
- The public version will be published as part of the National Emergency Supply Agency's series in February 2023.



# Primary delimitation of the public version of the report

- Finland's merchant fleet and vessel visits during the year in review 2021
- Main focus of foreign trade transport flows concerns 2019–2021
- General sufficiency of port stowage capacity
- General overview of regulation and the activities of the authorities under exceptional circumstances
- For example, only a provisional impact assessment has been conducted on the impacts of Russia's war of aggression and Finland's NATO membership

# Finland's maritime transport capacity for security of supply - structure



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# Steering groups, coordination group and project managers

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The coordination team for the project was comprised of the project managers and Jukka Etelävuori of the National Emergency Supply Agency.



# Maritime Markets: Background



Figure 1. Simplified structure of the maritime sub-market by main type and chartering method, particularly in the Finnish maritime market.

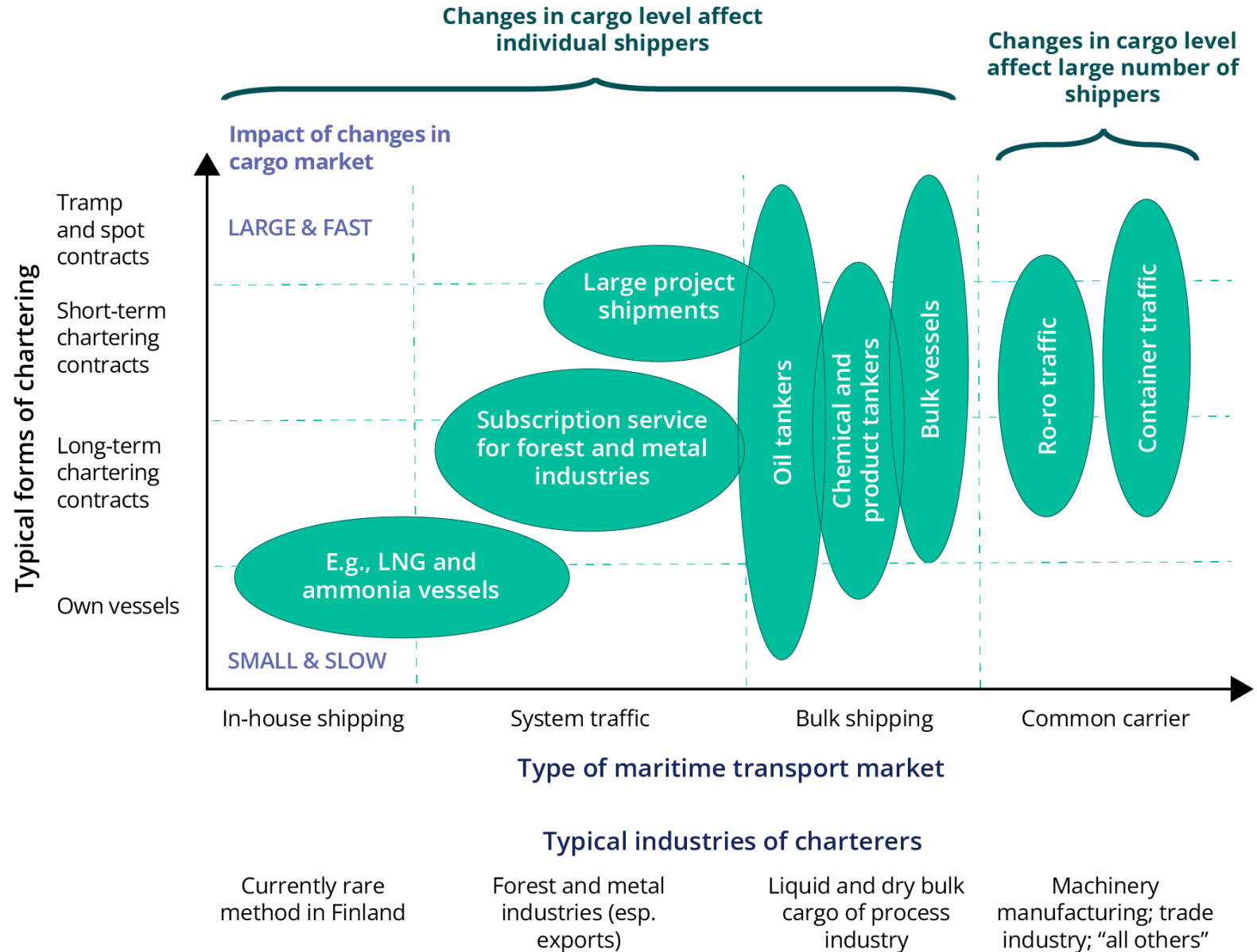
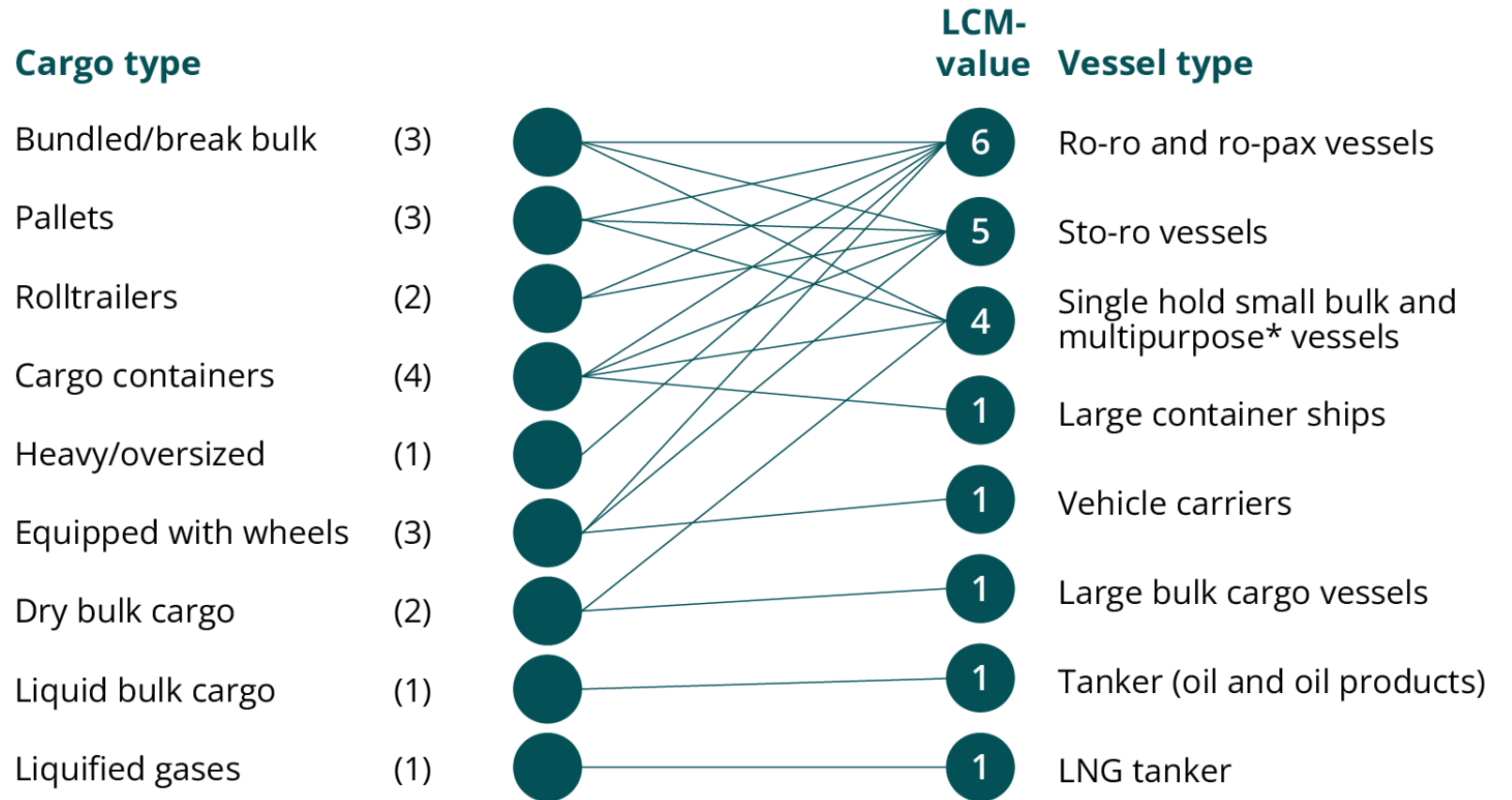




Figure 2. Availability of vessel types for different cargo types and related Lateral Cargo Mobility value.



\*) Multipurpose refers here to bulk cargo vessels that have been modified to transports containers



# Finnish Foreign Trade and Maritime Transports

Situational picture in light of  
the figures from 2021

Maritime transport diagrams  
included at the end as  
appendices



# Situation in 2021



- Maritime import tonnage decreased by approx. 10 million tonnes since 2010, 2021 < 45 MT
- Maritime exports increased until 2019, but has since decreased, 2021 = approx. 50 MT
  - Transit traffic primarily gone by 2023; 2021 = approx. 5 million tonnes
  - Domestic maritime traffic in 2021 = total of approx. 5 million tonnes (incl. inland waterways); along the coastline = approx. 4 million tonnes
- Share of Finnish vessels in bulk cargo traffic low, excl. imports of crude oil
  - Dry bulk cargo: approx. 30% of imports and approx. 10% of exports on Finnish vessels
  - Oil product imports <10% and approx. 20% of exports; majority of domestic traffic on Finnish vessels
  - More than 60% of crude oil imports on Finnish vessels, essentially no exports
- Volume of large unit traffic appears to continue to increase
  - Ro-ro or ro-pax: approx. 50% of imports and more than 40% of exports on Finnish vessels
  - Less than 5% of container traffic on Finnish vessels, which falls under contract traffic
  - Also, approx. 10% of container traffic is transported on ro-ro ships, half of which are Finnish



Table 5. Estimated share of Finnish vessels used in foreign trade by sea, by vessel type, 1,000 tonnes.

Finnish vessel transports in 2021, estimate	Import, 1 000 tn	% FI	Export, 1 000 t	% FI
Dry and bulk cargo vessels	6 300	30%	3 000	11%
Ro-ro, ro-pax and sto-ro vessels*	5 000	49%	6 500	43%
Oil tankers	5 000	62%	0	0%
Product tankers	350	8%	1 300	20%
Container vessels**	100	3%	200	3%
<b>Total</b>	<b>16 750</b>	<b>38%</b>	<b>11 000</b>	<b>22%</b>

There are no chemical, gas or car transport vessels in the Finnish register

\*) The functional unit is lane metres, which, when used as the basis of calculations, changes the shares slightly

\*\*\*) The functional unit is TEU where, in particular, the number of empty units is high



# Finnish vessels' share of visits to Finland's ports during 2021

• Container ships	less than 6%
• Oil tankers (> 30 000 NT)	32%
• Tankers (< 30 000 NT)	16%
• Dry bulk vessels (> 30 000 NT)	less than 2%
• Dry cargo vessels (< 10 000 NT)	18%
• Chemical tankers:	0%
• LNG carriers:	0%

**Finland's register has no dry cargo or dry bulk vessels in the 10,000–30,000 NT category**

Source: Traficom, 2022





Table 3. Indicative summary of Finnish shipping companies' fleets and registrations in June 2022, incl. vessels of foreign-owned\* shipping companies.

Vessel type	Vessels 2021/2022			New builds and acquisitions 2022–2023		
	FIN	Other EU/ETA	Outside of EU/ETA	FIN	Other EU/ETA	Outside of EU/ETA
<b>Passenger-car ferries and ro-pax ships</b>	15	7	0	3	0	0
<i>...of which are foreign-owned</i>	7	5	0	3	0	0
<b>Ro-ro ships carrying cargo only</b>	30	4	0	1	2	0
<i>...of which are foreign-owned</i>	20	2	0	1	2	0
<b>Container vessels</b>	5	5			3	
<b>Bulk and dry cargo vessels</b>	30	11	2	1	0	0
<b>Tankers</b>	6	0	9	0	0	2
<b>Tugs, icebreakers and similar</b>	35	24	0	0	0	0
<b>Total</b>	<b>122</b>	<b>51</b>	<b>11</b>	<b>5</b>	<b>5</b>	<b>2</b>



# Hypothetical Scenario Review

What might exceptional circumstances comparable to war mean for foreign trade by sea?





Table 20. Possible impacts of hypothetical exceptional circumstances.

Gravity of situation	Exceptional circumstances	
	Comparable to state of war	Comparable to near state of war
Primary aim of security of supply	To safeguard import of goods necessary for vital societal functions	To safeguard the import of vital functions and facilitate key exports
State of Defence Act (1083/1991)	In effect	Not in effect
Emergency Powers Act (1080/1991)	In effect	
Authorities' powers concerning transport operations	Utilising powers granted by Emergency Powers Act (e.g., rationing of motor fuels, transport regulations)	
Imports by sea (approximate)	30 million tonnes (about 2/3 of level in 2021)	
Exports by sea (approximate)	5 million tonnes (-90%)	20 million tonnes (-60%)
Domestic commercial marine traffic	4 million tonnes (-20%)	
Exports, EU internal trade and regulation	Commercial export activities forbidden	Significant restrictions; exports subject to license
Russian trade	Ceased completely	
Manufacturing industry	Only functions necessary for society	Necessary functions and vital export industry
Purchase power of consumers	Very significantly weakened	Significantly weakened
Food supply	Imports halved, rationing of amount and prices in force, selection highly limited	
Fuel supply	Own refining production nearly ended and imports decreased, distribution volumes and prices regulated	



Table 21. Example exceptional situation scenario and assessment of the need for foreign tonnage without any national defence reserves.

Transport need met by domestic tonnage capacity, %	Share and sufficiency of domestic tonnage			Need for foreign tonnage in exceptional situations (100% - C)
	Realised share 2021	Theoretical sufficiency 2021	Estimated sufficiency in exceptional situations; goods volumes and changed directions	
	A	B	C	D
Ro-ro/ro-pax, lane metres*	40%	100%	100%	0%
Oil tankers**, tn	63%	65%	60%	40%
Product tankers, tn	16%	20%	35%	65%
Large dry cargo ships, tn	20%	30%	30%	70%
Small dry cargo ships, tn	20%	30%	40%	60%
Container ships, TEU	4%	15%	10%	90%

\*) The assessment of the sufficiency of these capacities is more difficult than for other vessel types due to, e.g., the multipurpose aspect of the vessels

\*\*\*) Large change already in 2022, when import distances were dramatically lengthened as Russian imports were replaced with other traffic. The need for transports is fundamentally affected by the degree to which the manufacturing capacity is being utilised



# Key Conclusions Concerning Ports



Table 22. Tonnage and shares of foreign and domestic commercial transports; ten busiest ports (import+export) in 2021.

Foreign freight traffic	Processed tonnes (milj. tn)	Finland (%)	Domestic freight traffic	Processed tonnes (milj. tn)	Finland (%)
Sköldvik	16,6	17,7 %	Sköldvik	2,6	27,1 %
Helsinki	14,2	15,1 %	Naantali	1,3	13,4 %
HaminaKotka	14,1	15,0 %	Kokkola	0,7	7,0 %
Kokkola	5,8	6,2 %	Oulu	0,5	5,2 %
Hanko	5,5	5,8 %	Parainen	0,5	5,1 %
Raahe	5,5	5,8 %	HaminaKotka	0,5	5,0 %
Rauma	5,2	5,5 %	Kemi	0,5	4,8 %
Naantali	3,8	4,0 %	Lappeenranta	0,3	3,0 %
Tornio	3,4	3,6 %	Pori	0,2	2,3 %
Pori	3,4	3,6 %	Raahe	0,2	2,2 %
Others (41)	16,6	17,7 %	Others (55)	2,4	25 %
<b>Total (51)</b>	<b>94,0</b>	<b>100 %</b>	<b>Total (65)</b>	<b>9,7</b>	<b>100 %</b>

\*) Approximately 5 million tonnes of domestic marine traffic is processed by ports of loading and discharge, whereby the volume totals 9.7 million tonnes



# Figure 10. Conclusions for security of supply concerning ports (1/3)

- No national port policy
  - Fairway investments are the State's key (in)direct method
- No single specific port authority
  - As per security legislation (485/2004), competent authorities in ports include Traficom, Finnish Customs, Finnish Board Guard and Finnish Police
  - Traficom provides supervision of, among others, port security arrangements and ISPS codes
  - Finnish police confirm a port's ISPS security level
  - The use of a port can also be restricted under normal circumstances by virtue of the general powers of different authorities.



# Figure 10. Conclusions for security of supply concerning ports (2/3)

- Capacity concentrated in a market-oriented manner; changes are slow
  - Port management operated by local municipal company or industrial enterprise
  - No new ports after Vuosaari and Jätkäsaari
- Competition between ports for traffic is minimal; competition mainly for cargo from new industrial facilities
- The ports of the forest and metal industries are specialised; their use for general traffic is difficult in some aspects
- Overall volume on downward trend even without the end of Russian transshipment, so port capacity is likely sufficient for the 2020s under normal conditions





# Figure 10. Conclusions for security of supply concerning ports (3/3)

- Port capacity for smaller overall amounts during exceptional circumstances should be highly sufficient on the whole
- Ro-ro traffic can adapt rather well and rapidly to exceptional circumstances
- If the routes for and/or the composition of the flow of goods during exceptional circumstances should change drastically, bottlenecks in the port capacity could arise particularly for the following:
  - Liquid bulk cargo, esp. oil refinery products, if Sköldvik is (for the most part) out of use
  - Container traffic, if HaminaKotka and/or Helsinki's capacity is low
  - Individual dry bulk cargo
- Ports'/Port operators' investments have been reasonably high in recent years
- Port operators play a key role in ensuring smooth operational activities



# Competence and Sufficiency of Personnel





# Competence and sufficiency of personnel

- Competence level in navigation (very) high internationally
- Finland is at the peak globally in many maritime cluster sub-areas
- Teaching capacity for deck and engineer officers as well as secondary education is notably higher than indicated by graduate numbers; 4 maritime academies
- Number of Finnish seafarers decreasing, which is worrisome in terms of security of supply

Shortage in administration and general service personnel in 5–10 years



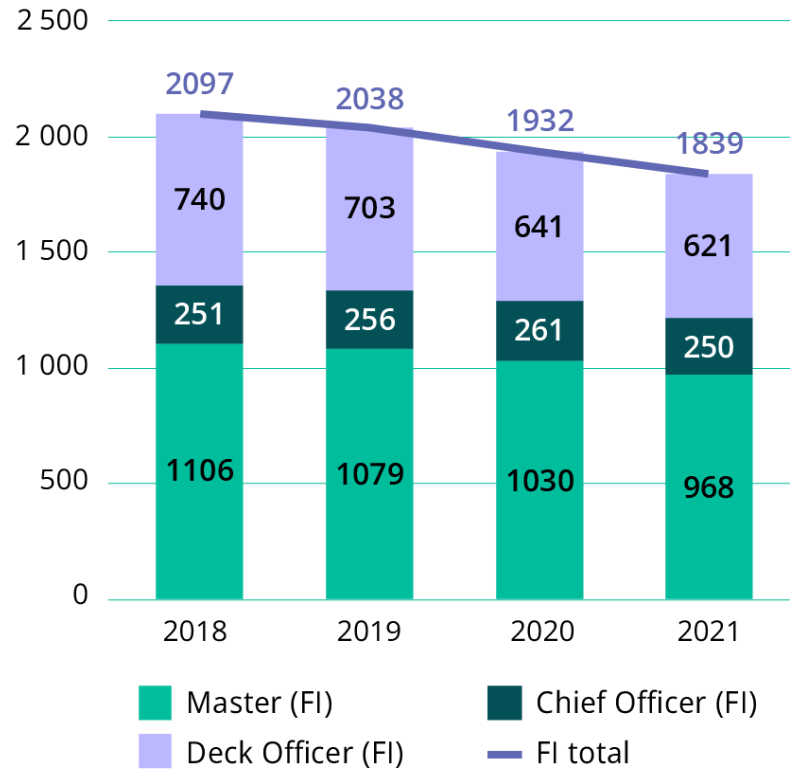
# Conclusions for security of supply

- Availability of domestic crew and officers weak and weakening
  - A large number of the most experienced deck and engine officers will be retiring in the near future
- This is already a problem for shipping companies now
  - Authorities, pilotage, VTS and ferries will be facing big problems in 5–10 years
  - The share of foreign officers will continue to grow
  - Currently 36% of Deck Officer certifications foreign, 16% of Masters
- Sufficient educational capacity, few graduates; unattractive industry
  - Few rapid solutions, one is increasing teaching in English
  - Role of educational institutions and educational administration in solving future problems?
  - Inflexible positions within the labour market do not facilitate co-operation on this matter

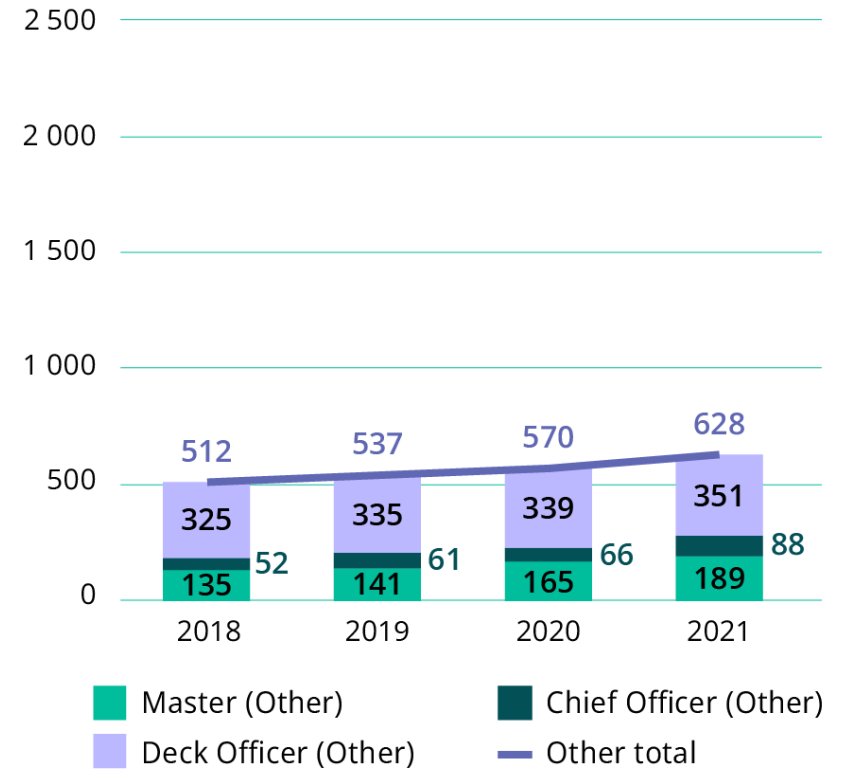


Figure 11. Finnish maritime certificates of competency (persons).

Finnish maritime certificates of competency (persons)



Endorsements issued by Finland to foreign deck officers (persons)



Statistical source: Traficom



Table 24. Estimate of those with deck officer qualifications working in general maritime positions in Finland in August 2022. Summary of data from operators listed below; does not refer to currently valid certifications.

	Estimate of personnel	
	Deck officers	Masters
Navigational guidance	20	50
Pilotage		140
Icebreaking, hydrographic survey (Arctia)	5	50
Road ferry, cable ferry and connection boats	25	10
Maritime academies	10	40
Ports and port operators	10	40
Maritime administration	10	90
<b>Total</b>	<b>80</b>	<b>420</b>
<b>Overall total</b>	<b>500</b>	



# Scenario Workshops

Observations from the three scenario-based workshops held in early 2022 in relation to maritime security of supply





# Key observations of workshops (1)

- Further developments needed in terms of legislation on and application in exceptional circumstances
- In practice, the powers of the authorities are limited only to national waters
- National authorities have little influence in international maritime waters
  - Increasing and utilising competence in international maritime law.
- Maritime transport protection and escort activities carried out by the Navy
  - Passive protection by, e.g., restricting fairways, recognised maritime situational picture
  - Active, e.g., escort protection; very limited resources to protect ships
  - In exceptional military circumstances, NATO membership mainly improves the situation





## Key observations of workshops (2)

- Especially vital for ice-strengthened tonnage to remain in Finnish traffic
- Critical resources include pilots and winter shipping assistance
- Management of the continuity of ports and land connections is also very important
- Identification of the governing authority is a problem in terms of, e.g., shipping companies
- The pandemic showed that operators' resilience is good
- The pandemic also improved the exchange of information between industry and public authorities as well as the ability to co-operate: the “forced exercise” was successful, for the most part



# Ship Brokers and Availability of Foreign Tonnage in Exceptional Circumstances

Six outlined operational models





# Ship Brokers in this review

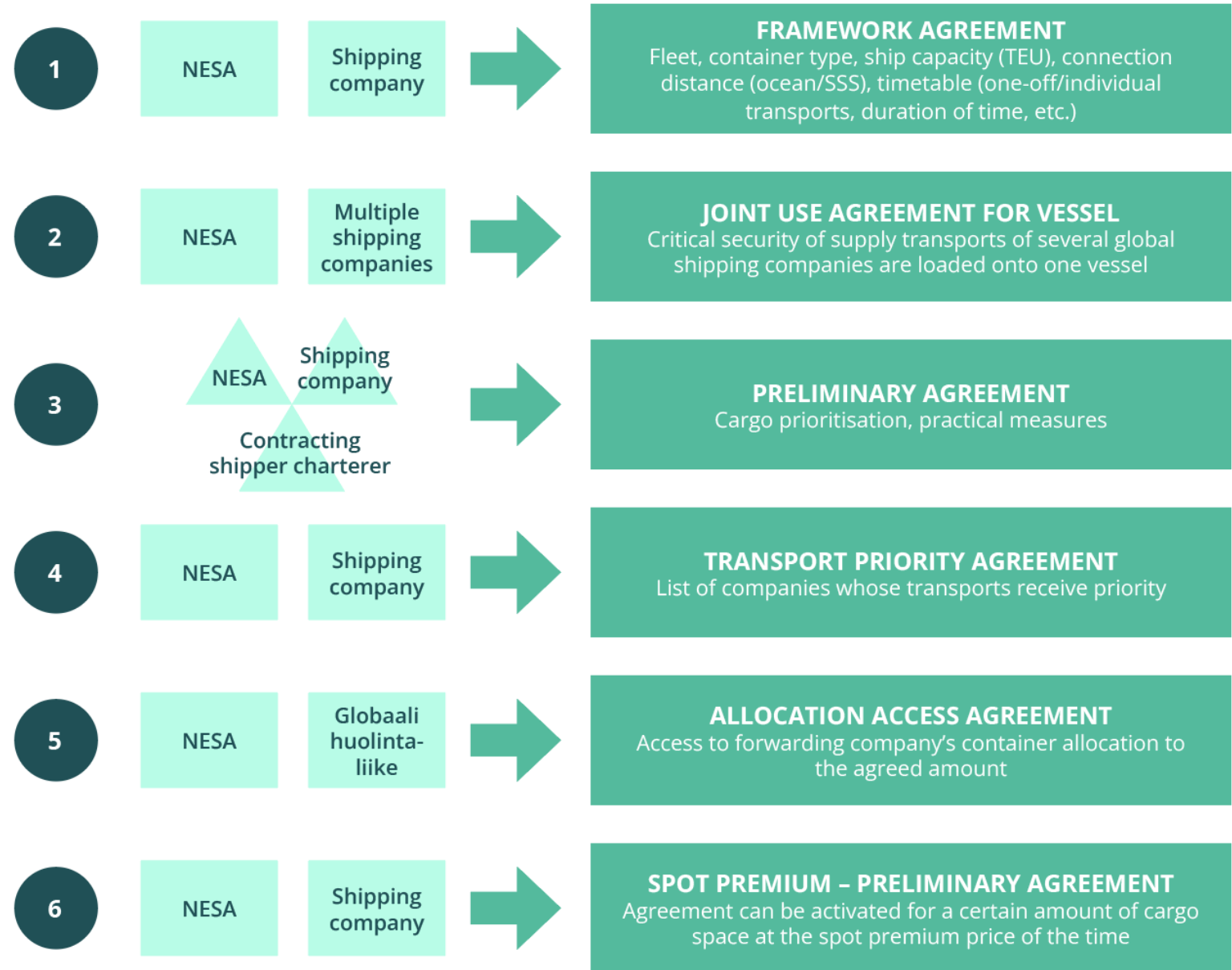
- The review also included an operator group of ship brokers that includes:
  - liner agents for global container shipping (only a few small, independent),
  - chartering brokers focusing on cargo and vessel brokerage and
  - ship agents.
- A total of about 200 people work in container shipping agencies in Finland.
- There are around a dozen companies providing vessel brokerage services in Finland, and they employ a few dozen people in total.
- The three largest companies, which focus on ship clearance, have a total of around 35 full-time ship agents along with a number of small companies with a few employees. Also, port operators and liner agencies, among others, employ ship agents.
  - Estimated that ship agents work in fewer than 40 companies.
  - The resource of competent ship agents consists of 120-150 persons.



# Six operating models were outlined for the availability of foreign tonnage in exceptional circumstances

- Based on interviews with industry operators and a situational survey
- Different framework, allocation, prioritisation and preliminary agreements, and combinations thereof, between the Government and shipping companies
- Models for both bulk and large unit transport
- The refinement and possible application of the models will likely continue after the project under the leadership of the NESO

Figure 14.





# Navigation as Part of Security of Supply

Summary





# Availability of high ice-class vessels is extremely important for Finland's security of supply

Table 25. IAS and IA vessels in the world's merchant fleet, autumn 2022.

Number of IAS and IA vessels by vessel type and register	Global	Non-EU (incl. Norway)	Other EU	Other EU, % of global	Finland	Finland, % of global
Bulk and dry cargo vessels	909	489	397	44 %	23	3 %
Oil tankers	93	74	17	18 %	2	2 %
Chemical and product tankers	511	296	211	41 %	4	1 %
LNG tankers	64	46	22	34 %	0	0 %
Container vessels	381	185	196	51 %	0	0 %
Ro-ro & passenger-car ferries	<b>248</b>	<b>83</b>	<b>109</b>	<b>44 %</b>	<b>56</b>	<b>23 %</b>

Source: Clarksons 2022



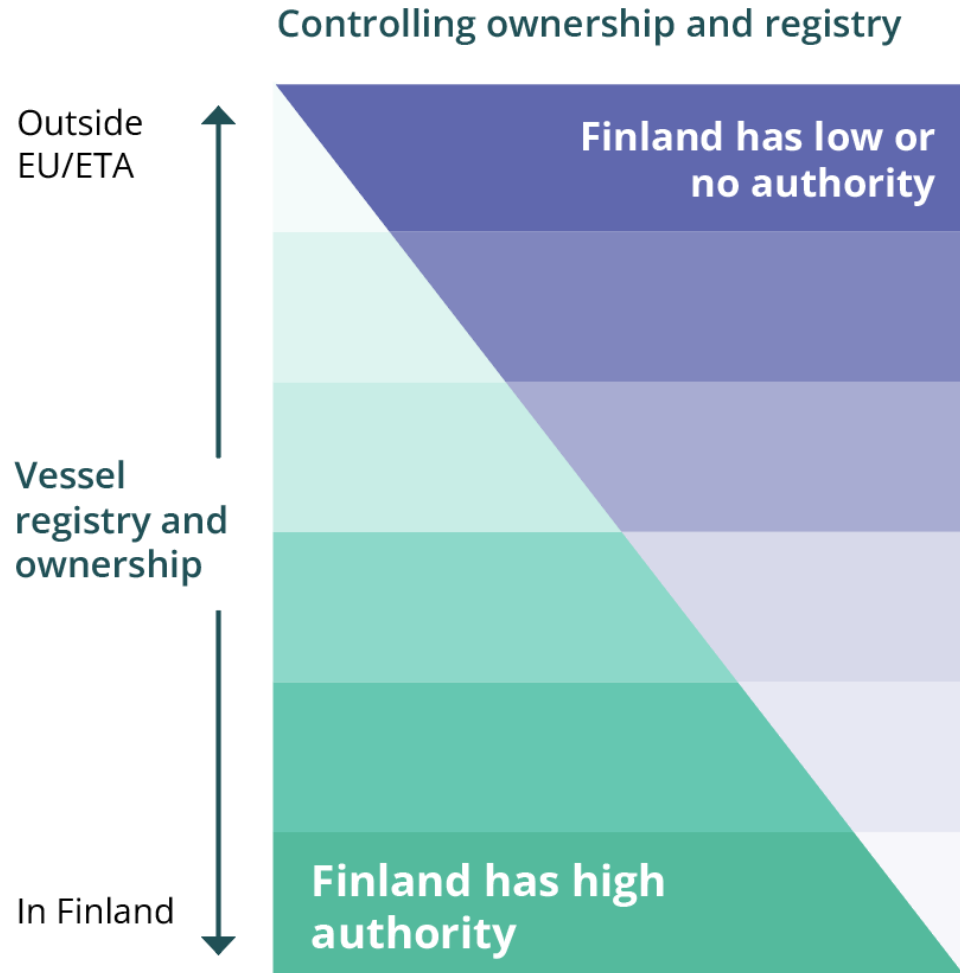
Table 26. Availability assessment concerning IAS and IA ice-strengthened vessels in maritime markets at the end of 2022, and estimates of related development for the 2030s.

IAS and IA ice-strengthened vessels	Availability in maritime markets in Finland
<b>Oil tankers</b>	Two 112,000 DWT vessels registered in Finland. Availability beyond that in the market is currently quite weak.
<b>Chemical and product tankers</b>	Four vessels registered in Finland. Current availability sufficient; fairly high number of vessels in the market. Considering the age structure, availability for the 2030s will weaken if new investments are minimal. At the same time, the need for transport work will increase as transport distances increase and Finland's own refinery capacity decreases. If one large or two smaller ports handling oil products and their terminal clearance capacity were to be out of use, the land transport capacity, meaning the tank trucks and drivers will bottleneck. The railway capacity for the distribution of these products is currently already limited.
<b>LNG carriers</b>	There are no LNG carriers registered in Finland. Availability in addition to subscription service is currently very weak.
<b>Container vessels</b>	There are no container ships registered in Finland, but 12 vessels have a container transport capacity. Availability in Finnish traffic has generally been good, but considering the age structure of the fleet, the availability for the 2030s will weaken if no new investments are made. Approximately 10% of Finland's container traffic is realised using ro-ro cargo ships.
<b>Ro-ro and ro-pax ships, passenger-car ferries</b>	More than 22% of the fleet (47 vessels) and approx. 29% of the lane metre capacity are registered in Finland. 15–20 of the 108 vessels from other EU countries are in Finnish traffic. Availability has been very good. Due to the multipurpose aspect of the vessels, availability during exceptional military circumstances is difficult to assess, as the need for transports would be great and there are presumably different reserve arrangements for the ships, also for other countries.
<b>Dry cargo vessels</b>	There are approx. 900 ice-strengthened dry cargo vessels in the world, but their average age is high (18 years). Less than 250 vessels with DWT of under 5,000; average age approx. 22 years. Demand for dry cargo vessels has remained very high, and the cargo levels during the autumn 2022 are high. There are practically no used vessels with DWT of under 5,000, or their price corresponds with that of new vessels. The availability of vessels with DWT of under 5,000, in particular, will weaken significantly as we enter the 2030s if new investments are minimal.





Figure. 15 Link of a commercial vessel sailing to Finland to the powers of the Finnish authorities according to the controlling shareholding and the registry state .



- In terms of security of supply, the flag state is, in most cases, a more relevant factor than the ownership ratio for vessels in Finnish traffic
- It grants authorities more expansive powers to the vessel than reserved under just ownership
- The relationship between the vessel's register and security of supply is not unambiguous, as the following aspects also have affect:
  - Actual ownership of the vessel
  - Registered domicile of the shipping company
  - The current traffic area of the vessel
  - Crew composition
  - Other possible commitments for the use of the vessel



# Reserve requirements in the transport sector

- The legislation does not include contingency obligations for maritime operators (shipping companies, ports), except for the VTS service provider and pilotage company, as well as certain provisions to prevent the spread of a pandemic to shipping and ports
  - The organisation of the contingency planning of the VTS service provider is regulated by Government Decree
  - Amendment to the Pilotage Act in 2022 clarified the pilotage company's contingency obligation
- Regulations concerning a lower level of maritime contingency can only be issued by Government Decree
- In exceptional circumstances, key regulation and powers are stipulated in the Emergency Powers Act and, in a state of war, also in the State of Defence Act
  - These are supplemented by regulatory provisions, with the key actor being Traficom



Figure 16. Requirements for additional powers related to shipping and ports as specified in Chapter 10 of the Emergency Powers Act after the legislative amendment (hybrid threats) adopted on 8 July 2022 .

		Requirement for additional powers						
§	Chapter 10 of Act – Transport security and fuel rationing; applicability of legal acts under emergency conditions as intended in Section 3	1. Armed attack	2. Threat of attack	3. Financial threat	4. Catastrophe	5. Pandemic	6. Hybrid threat (new)	
	67-73; 80	Rationing of fuel* in traffic	X	X	X			X
80§	7	Road transports in exceptional circumstances	X	X	X	X	X	X
	74; 76-78	Road transport authorities, vehicles	X	X	X			X
79§	79	Securing marine and water transports	X	X				X
	81	Securing air transports	X	X				
	82	Rationing of air traffic fuel, spare parts and goods	X	X	X			X
	83	Railway transports in emergency conditions	X	X				X
84§	84	Emergency evacuation transports	X	X		X	X	X
85§	85	Ministry of Transport and Communications' power to assign transports	X	X				X

\*) General paragraph on the rationing of fuel in Section 30



# Summary: Navigation as part of security of supply

- Finland's security of supply relies heavily on standard-time logistical solutions
- Almost 70% of maritime transport carried out on vessels registered abroad
  - The situation arose over a long period of time, particularly as a result of shippers' decisions
- In normal circumstances, public authorities may restrict maritime traffic within their own waters primarily through traffic restrictions on a specific fairway, area or type of vessel
- The flag state is often more relevant to security of supply than ownership
  - The actual ownership of the vessel, the domicile of the shipping company, the vessel's traffic area, crew composition and other commitments also affect the overall scenario
- The number of Finnish seafarers is decreasing: shipping companies already in trouble, with public authorities and general services set to face major challenges in the 2030s



# Government's "Toolbox" for Shipping

...and emerging needs for  
follow-up projects





# Government's “toolbox”\* for shipping 1/3

- **Corporate taxation:** tonnage taxation in the current form has been in place for more than 10 years; almost all cargo shipping companies fall within this sphere, effective tax rate very low.
  - **Difficult to increase the competitiveness of Finnish shipping companies with legal amendments**
- **Crew subsidy:** in current form, net cost close to competing countries
  - **Difficult to increase the competitiveness of Finnish shipping companies due to EU regulation**
- **Fairway fees:** “halved” since 2014, ice class key factor, the register has no effect
  - **Tax linked to the maintenance of icebreaking services and fairways: pressures to raise**
- **Pilotage fees:** ~4.7% increase 1.1.2023; 52–90% of the fee from nautical mile journey
  - **Comparison of payments with other countries difficult, but rather moderate price level**
- **Other licence fees:** pressures to raise technical inspection fees and the amendment of the Pilotage Act increases the cost of pilotage exemption; **Minimal impact on competitiveness**

\*) Not in order of priority



# Government's “toolbox” for shipping 2/3

- **Dual registration:** bareboat registration possible in Finland
  - **B/B chartering could increase the competitiveness of Finnish shipping companies**
  - **Labour market party positions pose challenges, politically difficult to implement**
  - **Relatively few potential vessels, so the benefits may be limited**
- **Parallel registration:** the idea of a possible international register in Finland
  - **System has low cost-effectiveness, few potential vessels**
  - **Numerous options available for shipping companies (NIS, GIS, Madeira, Malta...)**
- **Security of supply:** closer co-operation between authorities and industry/industries
  - **Agreements on the use of domestic and foreign tonnage in exceptional circumstances**
  - **Development of preparedness under the leadership of the authorities**



# Government's “toolbox” for shipping 3/3

- **RDI support:** possible mainly for innovations and technological development
  - **Maritime technology cluster is the key target, shipowners derive some benefit**
  - **Benefits often indirect and slow to have impact**
- **Infrastructure, cyber, hybrid, and other types of resilience support provided by the EU and NATO\*:**
  - **Port, land and fairway infrastructure offer a number of obvious targets**
  - **Connecting Europe Facility: good success in port and fairway projects**
  - **Transport network resilience emphasised in project motivations**
  - **Active search preparations for instruments to combat hybrid threats**
  - **EU Military Mobility and Civil Protection projects**
  - **NATO's dual-use infrastructure funding and other similar subsidies**
- **Active lobbying** in maritime (environmental) regulation within the EU and IMO

\*) The Government's (MEAE, MTC, NESAs, Business Finland...) investment should be increased, also in terms of supporting project preparations





# Identified topics for follow-up projects and studies

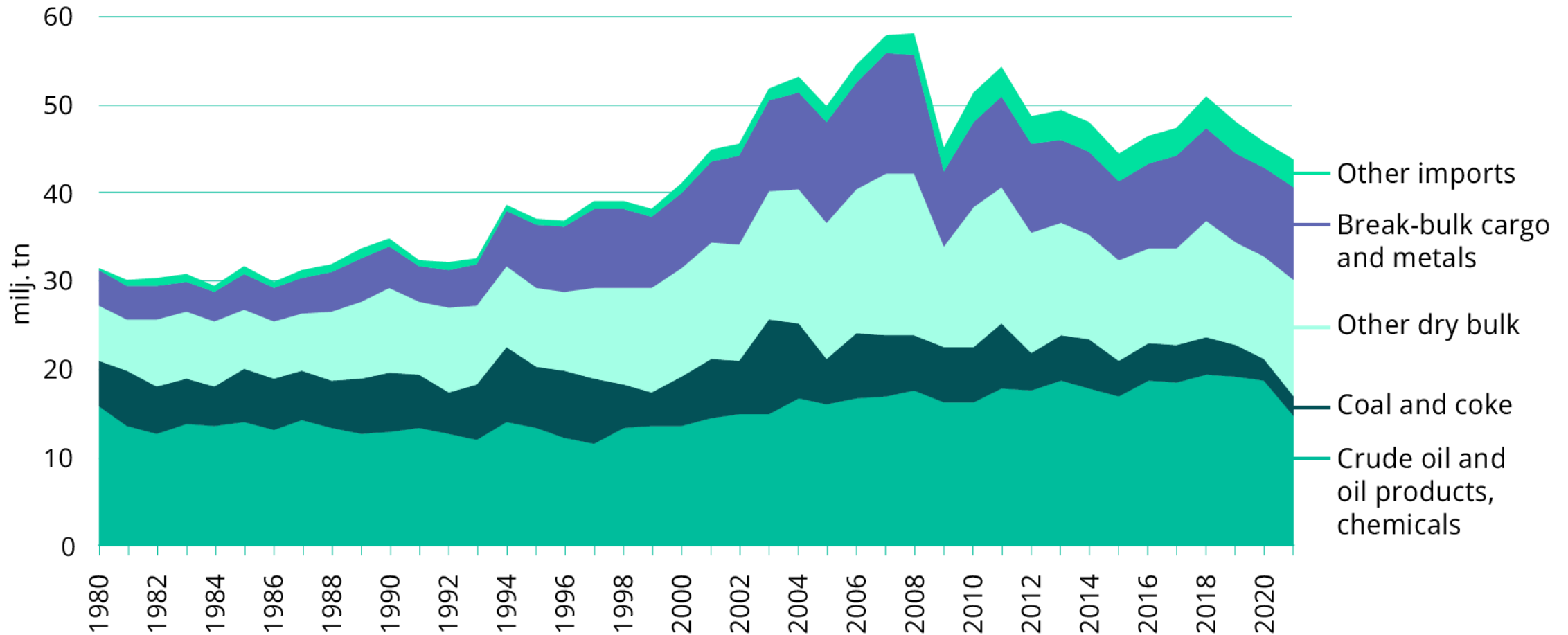
- Analyses of transport capacity per port and type of cargo
- Sufficiency of maritime and port personnel during disturbances
- Sufficiency of Finnish tonnage, taking into account the environmental regulations for shipping and the ice navigation capability of vessels
- Potential of Finnish shipping companies to expand their activities beyond Finnish traffic
- Survey of repair and maintenance capacity of ships and port facilities
- Follow-up to the models outlined to ensure the availability of foreign tonnage

# APPENDICES





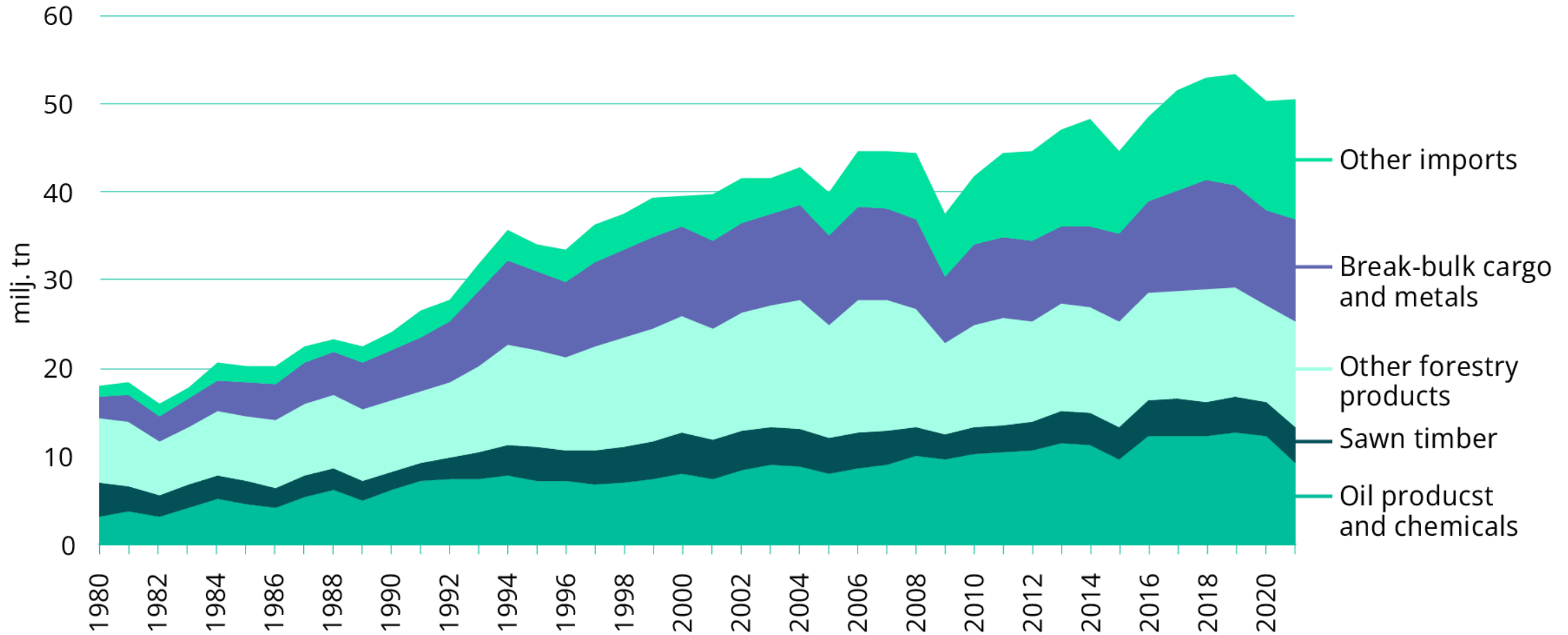
Figure 3. Finland's foreign imports via marine traffic 1980-2021, millions of tonnes.



Source: Statistics Finland, 2022



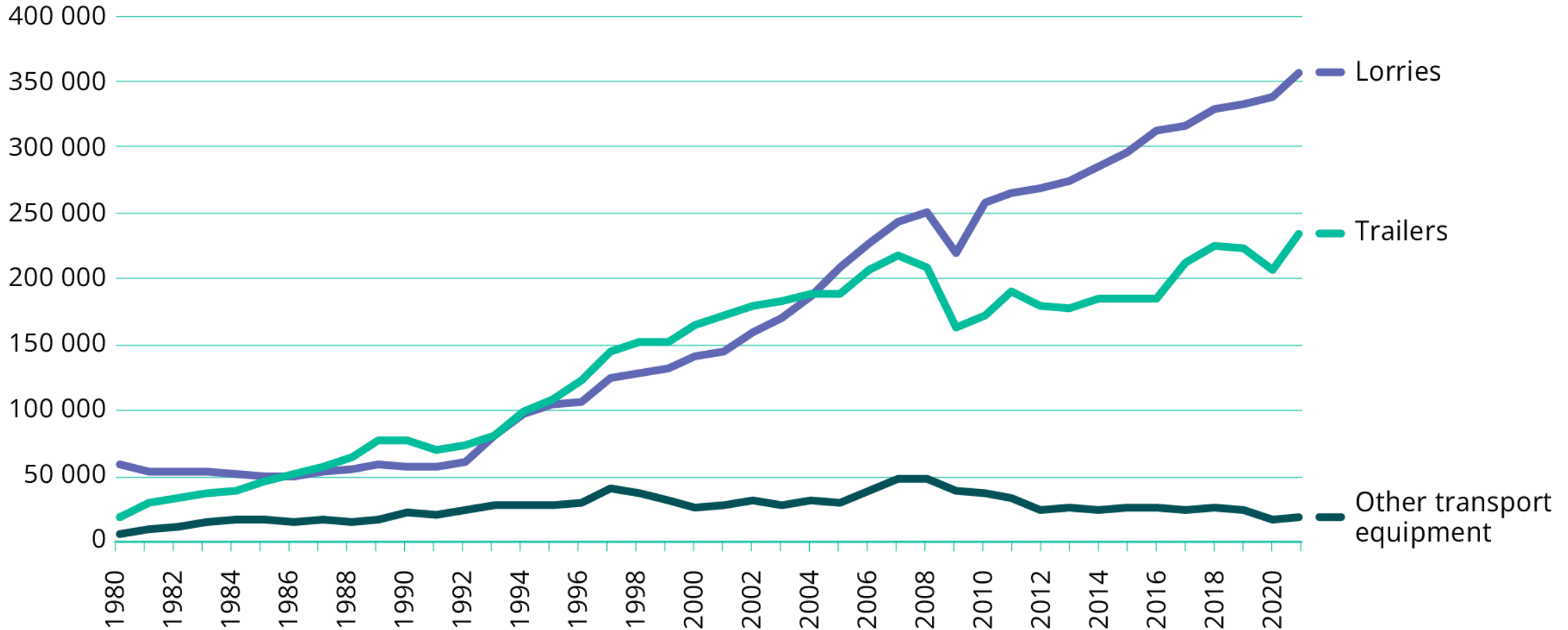
Figure 4. Finland's foreign exports via marine traffic, millions of tonnes,



Source: Statistics Finland, 2022



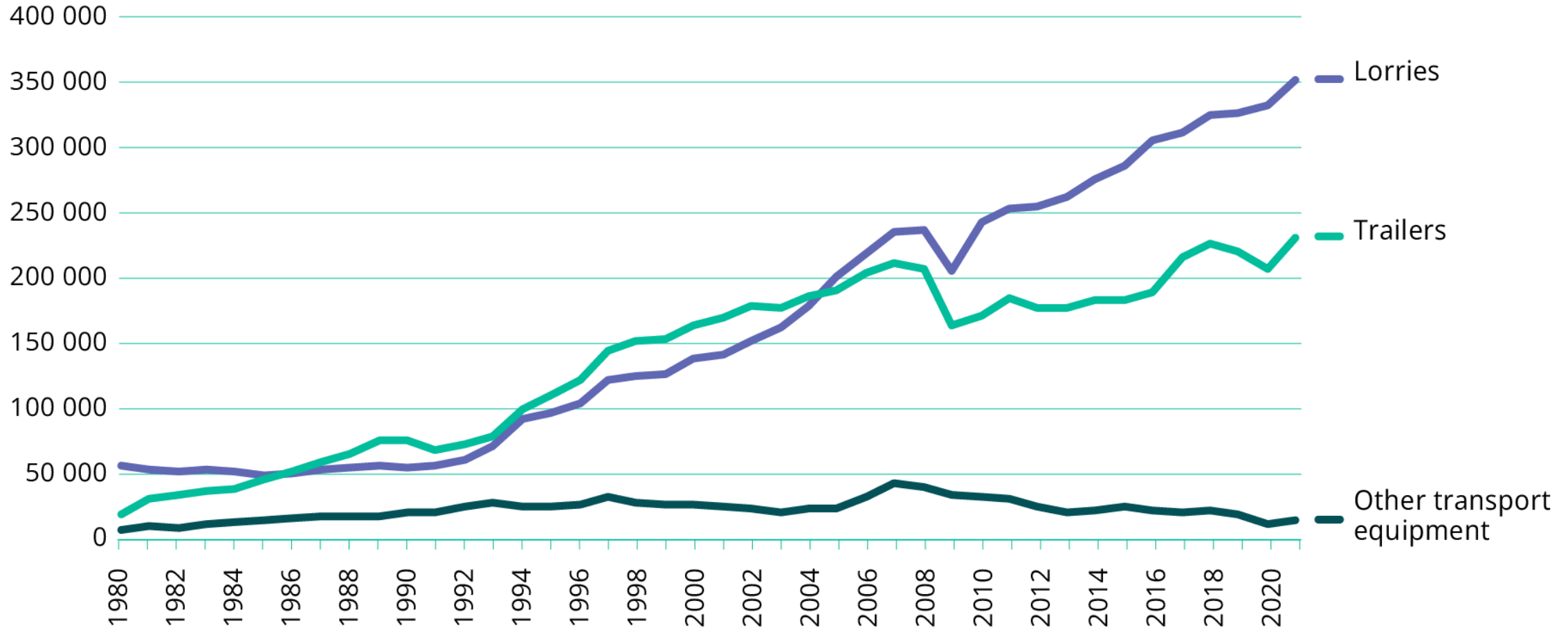
Figure 5. Large unit traffic imports (number) 1980–2021.



Source: Statistics Finland, 2022



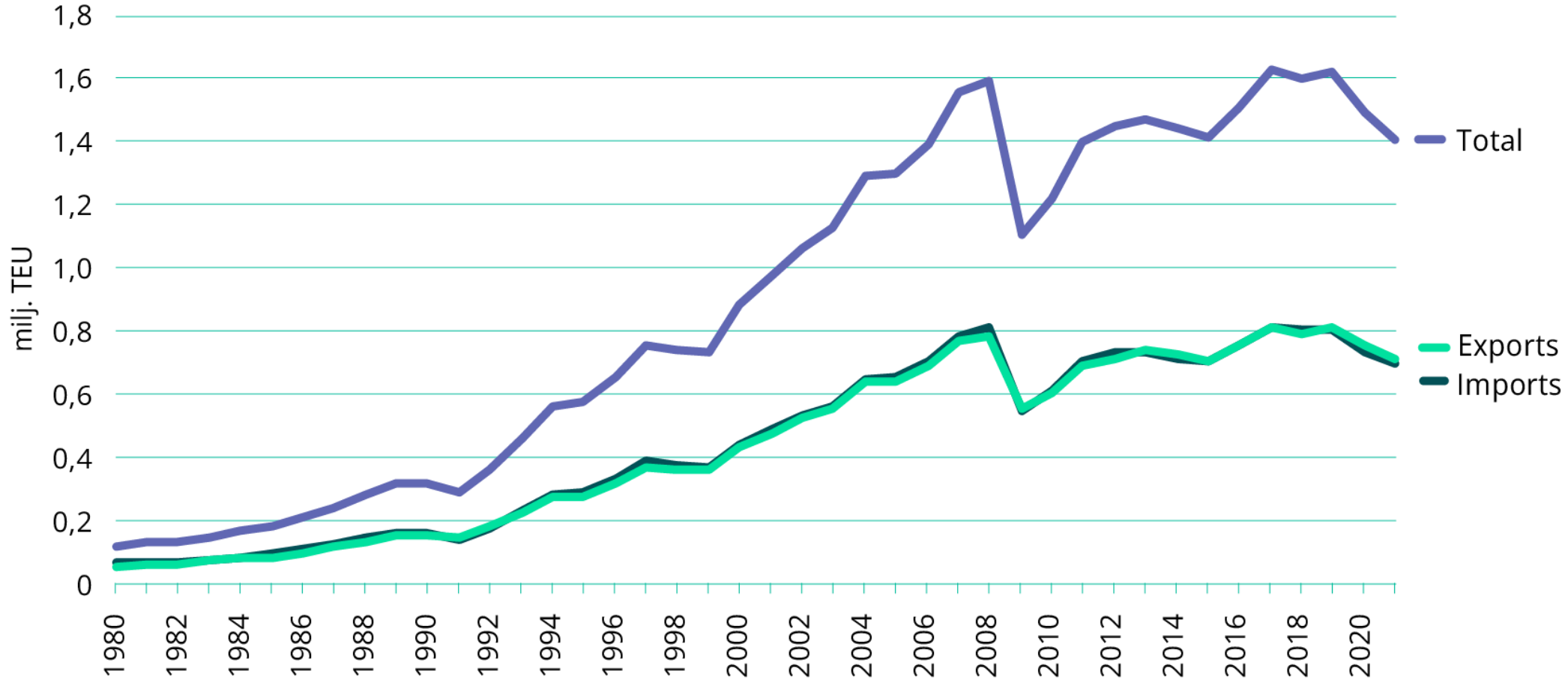
Figure 6. Large unit traffic exports (number) 1980–2021.



Source: Statistics Finland, 2022



Figure 7. Container traffic between Finland and other countries (TEU) 1980–2021.



Source: Statistics Finland, 2022



Table 2. Finland's foreign trade transports by sea in terms of main goods in 2020 and 2021, thousand tonnes. Types of goods organised according to the tonnage of imports in 2021.

	Import		Export	
	2020	2021	2020	2021
<b>Total</b>	45 829	43 689	50 203	50 374
Break bulk	8 618	8 854	7 860	8 470
Crude oil	11 314	8 073	0	6
Ores, concentrates	4 373	5 158	4 660	4 461
Oil products	4 908	4 143	8 768	6 651
Raw minerals, cement	3 839	4 128	1 337	1 785
Raw wood	3 003	3 460	482	394
Chemicals	2 480	2 486	3 518	2 608
Other goods	2 400	2 480	1 016	1 143
Coal, coke	2 597	2 344	799	1 593
Metals, metal products	1 412	1 648	2 910	3 151
Paper	254	338	6 467	7 255
Fertilizers	282	275	3 650	3 919
Cellulose, wood pulp, wastepaper	215	119	3 944	4 059
Grain	62	98	778	573
Sawn timber	34	46	3 799	4 028
Plywood, other wood panels	37	38	213	277

Source: Statistics Finland, 2022



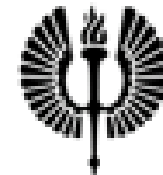
Thank you for  
your interest!



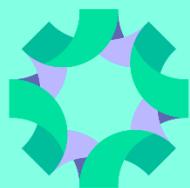
**Huoltovarmuusorganisaatio**  
Vesikuljetuspooli



**SHIPBROKERS**  
**FINLAND**



**TURUN**  
**YLIOPISTO**



**Huoltovarmuusorganisaatio**  
Försörjningsberedskapsorganisationen  
National Emergency Supply Organisation

Co-operative management  
of security of supply.

Just to be safe.

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