NAVIGARE NECESSE EST VIVERE NON EST NECESSE

“TO SAIL IS NECESSARY; TO LIVE IS NOT NECESSARY”

ATTRIBUTED BY PLUTARCH TO POMPEY THE GREAT, DURING A SEVERE STORM, COMMANDING SHIP MASTERS AT SEA TO BRING FOOD FROM AFRICA TO ROME ABOUT 50 BC
"DOES FINLAND HAVE ENOUGH MARITIME TRANSPORT CAPACITY?"

SECURITY OF SUPPLY OVER SEAS
MAINTAINING THE CRITICAL INFRASTRUCTURE

Foreign trade

THE FINNISH FOREIGN TRADE, TRANSPORTS 2014
TOTAL = 103 Mtn
MARITIME TRANSPORT 83 %, 85 Mtn,
ROAD AND TRAIN 14 %, 14 Mtn, AIR 0,2 %, 0,235 Mtn


Maritime Import:
- Raw materials excl fuel 10,5 Mtn
- Fuel and lubricantes 21 Mtn
  - Of which coal and coke 5,7 Mtn
- Mineral oils and product 15,2 Mtn
- Chemicals 4,3 Mtn
- Foods 2,25 Mtn
  - = 38,05 Mtn

Maritime Export:
- Raw materials, wood and pulp 11,3 Mtn
- Paper and cardboard 9,0 Mtn
- Iron and steel 2,8 Mtn
  - = 23,1 Mtn

MARITIME TRANSPORTS:

IMPORTS 45 Mtn
(metric tonnes) = 78 % of the total import to Finland

EXPORTS 41 Mtn
(metric tonnes) = 90 % of the total export from Finland

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MARITIME TRANSPORTS
IMPORT AND EXPORT
IN THE NORDIC COUNTRIES
Tonnes (metric) per capita

NORWAY
12.2
28.3

DENMARK
8.9
6.7

FINLAND
8.7
7.6

SWEDEN
7.8
6.4

TONNES/CAPITA/YEAR

SOURCES:
1. Svensk trafikanalys, Sjöfart 2013
2. Liikennevirasto, Ulkomaan meriliikennetilasto 2013
"DOES FINLAND HAVE ENOUGH MARITIME TRANSPORT CAPACITY?"

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Paper and cardboard 9,0 Mtn
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= 23,1 Mtn
THE BALTIC MARITIME TRAFFIC INTENSITY 1.-7.1.2014,
NUMBER OF SHIPS PER YEAR
All ships at Bornholm longitud, sailing South or North, both directions

67 204 AIS targets,

EVERY MOMENT THERE ARE APPR 2500 AIS-SHIPS SAILING IN THE BALTIC

BÖS-3.9.2015
ON THE BALTIC

**2500 SHIPS** SAILING EVERY MOMENT DURING THE DAY

FROM A FINNISH POINT OF VIEW 160 SHIPS ARRIVING OR DEPARTING FROM OR TO OUR HARBOURS EVERY DAY ALL OVER THE YEAR FROM

= **320 000** METRIC TONNES CARGO

THE CARGO FROM 160 "DAILY" SHIPS EQUAL TO **7000 RAILWAY WAGON**

**OR 11 200** TRUCKS

1000 CONTAINER( TEU) CARGO CAPACITY EQUAL TO = 500 TRUCKS
1500 TEU Cargo Ship Capacity Compared to Other Transport Alternatives 2009
(Average Ship, Capacity in SSS 1400 TEU)

A cargo train transports 75 TEU,
a truck in average 1.6 TEU

A container shipload equal to
20 cargo trains or
939 trucks

Source: Applied Short Sea Container Models in the Baltic Sea Region, July 2014
1. A government report on Finland's security and defence policy states that the functionality of transport services vital for Finland must be ensured in all circumstances.

= MERCHANT FLEET, WITH ADEQUATE PERFORMANCE

2. Critical import products include energy and food. In a more long-term disruption, it is also necessary to be able to safeguard the transport of exports in order to maintain a balanced economy.

3. At the moment, Finnish vessels are capable of handling all imports of energy necessary for the functions of society. In the event of a shift in the import of oil and coal from neighbouring areas to geographically distant markets, the current vessel capacity and its structure would be insufficient.

= CRITICAL SHARE OF THE CARGO CAPACITY
FINLAND IS THE \textbf{ONLY COUNTRY} (+ESTONIA, NOW AND THEN) IN THE WORLD WHERE THE SEA TRAFFIC IS POSSIBLE ALL AROUND THE YEAR ONLY BY \textit{ICEBREAKER ASSISTANCE}

"DEMANDING" IS’N IT

\textbf{ONLY} A THIRD OF THE MARITIME TRANSPORT SERVICES OF FINNISH FOREIGN TRADE ARE CARRIED OUT ON FINNISH KEEL

\textbf{ENOUGH OR INSUFFICIENT ?}
THE ROUTE ALTERNATIVES FOR THE FINNISH FOREIGN TRADE

2014

103 Mtn transported in Finnish Foreign trade
## CRITICAL INDUSTRY SECTORS IN FINLAND AND THEIR MAIN IMPORTS

**AACCORDING TO A INDUSTRY SURVEY 2011**

<table>
<thead>
<tr>
<th>Critical industry</th>
<th>Main imported goods and materials</th>
<th>Rate of import dependency (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy</td>
<td>Oil, gas, uranium, coal</td>
<td>Crude oil, uranium, coal, natural gas 100%</td>
</tr>
<tr>
<td></td>
<td>- Share of imports in all energy production 65 %</td>
<td>- Electricity: 15-20 %</td>
</tr>
<tr>
<td>Food sector</td>
<td>Pesticides, fertilizers and their raw materials, animal feed, agricultural machinery, chemicals, packaging materials</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Pesticides 100 %</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Fertilizers (surplus approx. 50 %)</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Ammonia % noble metal catalysts used in fertilizer production 100 %</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Animal feed (soya protein) 70 %</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Machinery 45 %</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Raw materials for foodstuff 20 %</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Food sold for customers 30 %</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Packing materials</td>
<td></td>
</tr>
<tr>
<td>Health care</td>
<td>Pharmaceuticals, equipment, chemicals</td>
<td>Raw materials for pharmaceutical production</td>
</tr>
<tr>
<td></td>
<td>- Raw materials for pharmaceutical production 85 %</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Equipment 70 %</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Packing materials</td>
<td></td>
</tr>
<tr>
<td>Forestry industry</td>
<td>Timber, fillers, coating pigments</td>
<td>Timber 10-23 %</td>
</tr>
<tr>
<td></td>
<td>- Fillers (kaolin) 70 %</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Pigments</td>
<td></td>
</tr>
<tr>
<td>Chemical industry</td>
<td>Crude oil, basic chemicals, rubber</td>
<td>Crude oil 100 %</td>
</tr>
<tr>
<td></td>
<td>- Basic chemicals</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Rubber 100 %</td>
<td></td>
</tr>
<tr>
<td>Technology industry</td>
<td>Components and parts, metals, minerals, fuels</td>
<td>Components &amp; Parts</td>
</tr>
<tr>
<td></td>
<td>- Iron concentrate 100 %</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Copper, nickel, &amp; zinc concentrate</td>
<td></td>
</tr>
<tr>
<td></td>
<td>- Components and other raw materials</td>
<td></td>
</tr>
</tbody>
</table>

**Sources:**
1. FINNISH CRITICAL INDUSTRIES, MARITIME TRANSPORT VULNERABILITIES AND SOCIOECONOMIC IMPLICATIONS, PUBLICATIONS FROM THE CENTRE FOR MARITIME STUDIES, UNIVERSITY OF TURKU. A 55, 2011,
2. HUOLTOVARMUUUS (2009),
3. MANNI & RIIPI 2002,
4. SIMOLA 2010,
5. HE 151/2008,
6. SUNDBERG 2009,
7. TEM 2008,
8. TEM & ELY 2010
## Critical Length of Disruption by Industries

Based on Industries Interviews Among Industries Dependent on the Maritime Transports via the Gulf of Finland

<table>
<thead>
<tr>
<th>Industry</th>
<th>How long production can be carried out after a disruption</th>
</tr>
</thead>
<tbody>
<tr>
<td>Energy production</td>
<td>Coal: 3 months (reserves by law 3 months)</td>
</tr>
<tr>
<td></td>
<td>Oil production: 2–3 days (production process is then forced to put down), reserve stocks of critical products (corresponding the amount of imports for 90 days)</td>
</tr>
<tr>
<td>Food supply &amp; food exports</td>
<td>Grain imports &amp; exports: several months (can be stored)</td>
</tr>
<tr>
<td></td>
<td>Meat 2-3 weeks (with special arrangements)</td>
</tr>
<tr>
<td></td>
<td>Animal feed: 2-3 weeks (with special arrangements: if there is a breakdown etc. at a factory, it will have an immediate impact)</td>
</tr>
<tr>
<td></td>
<td>Malt: several months (can be stored)</td>
</tr>
<tr>
<td></td>
<td>Milk products: 2-3 days</td>
</tr>
<tr>
<td></td>
<td>Consumer products: from 2-3 days (perishable products) to 2-3 weeks (based on the products)</td>
</tr>
<tr>
<td>Chemical industry</td>
<td>Approximately 2 weeks (with special arrangements) 2-9 days</td>
</tr>
<tr>
<td>Pharmaceuticals &amp; healthcare supplies</td>
<td>Mandatory reserves by law industry &amp; imports (3,6 &amp; 10 months) of critical supplies, hospital (3-6 month stocks)</td>
</tr>
<tr>
<td></td>
<td>Other supplies*: 3 weeks to 2 months</td>
</tr>
<tr>
<td>Forestry</td>
<td>12 hours- 2 days</td>
</tr>
<tr>
<td>Metals and mining</td>
<td>Depending on the product: from a few weeks to 2-3 months</td>
</tr>
<tr>
<td>Technology industry</td>
<td>2-3 days</td>
</tr>
</tbody>
</table>

### Sources:

FINNISH CRITICAL INDUSTRIES, MARITIME TRANSPORT VULNERABILITIES AND SOCIETAL IMPLICATIONS, PUBLICATIONS FROM THE CENTRE FOR MARITIME STUDIES, UNIVERSITY OF TURKU, A 55, 2011,
FOREIGN MERCHANT TRADE
Based on 2012 Statistics

FINNISH MERCHANT FLEET = 1 269 994 Dwt
(- Tankers, Coal bulk, Passenger, special ships and tugs)

Available = 841 774 Dwt
Cargo capacity 379 128 tons
Import 29 808 483 tons

69 Roundtrips a year
Export 36 919 985 tons

86 Roundtrips a year

Import 41,0 %
Fin = 19,97 Mt
N = 5,691 Mt
Swe = 4,15 Mt
N = 2,25 Mt
Antigua & Barbados = 2,05 Mt
Vienti 19,1 %
Fin = 8,4 Mt
N = 6,38 Mt
Swe = 4,77 Mt

BÖS 11.3.2014
15.9.2015, 18.9 2015

48 Foreign trade Harbours
23 Winter harbours
HAMINAKOTKA, HELSINKI, TURKU JA NAANTALI

14+ 1 Security of Supply Harbours

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Ship calls, incoming and outgoing in average
160 ships daily = 320 000 metric tonnes of cargo
Of which 28 000 metric tonnes to the next harbour, or from the first harbour

Daily transported merchant cargo

Equal to 6960 cargo trains, Or 8000 trucks
CONCLUSIONS-------SUMMARY

- **FINISH OWNED, SAILING UNDER FOREIGN FLAG**
  - Use for domestic securing of supply purpose

- **Number of ships, DWT cargo dependent shiptypes**

- **Total capacity supply change**

- **Logistic-connected storage**

- **Required cargo capacity DWT--DWCC**

- **Secure supply chain demands**
  - Import vs. Export
  - Amount of merchant shipping capacity

- **Finnish flagged tonnage**
  - Ships chartered from abroad
  - Use for domestic securing of supply purpose
  - Uncertainty

- **Transport needs supply available fleet**
THIS IS AN ONGOING RESEARCH PROJECT

THANK YOU FOR YOUR ATTENTION

ANY SHORT ANSWERS REQUIRING QUESTIONS?