



REPORT - 4TH APRIL 2024

Benefits of an alternative Öresund fixed link Helsingør-Helsingborg

In a military and security perspective

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Executive summary

The 2024 geopolitical landscape, shaped by Russian aggression and the invasion of Ukraine in 2022, underscores the imperative for NATO member states to strengthen military capabilities and cooperation. The accession of Finland and Sweden to NATO in 2023 and 2024 further emphasizes the need for strategic enhancements in Northern Europe. One key infrastructure project, the Helsingør-Helsingborg Tunnel, emerges as a pivotal element in reinforcing security dynamics and logistical flexibility.

The Russian invasion of Ukraine highlighted the vulnerability of single transportation routes, emphasizing the necessity for redundancy in critical infrastructure. The existing fixed-link connection between Copenhagen and Malmö, while essential, lacks the redundancy required for military reinforcements and supplies during crises. A second fixed link, particularly a tunnel, would provide strategic flexibility, allowing multiple routes for transporting military hardware and resources in addition to sea-based transportation.

A Helsingør-Helsingborg tunnel not only ensures redundancy but also contributes to the seamless connectivity between Sweden and the wider NATO alliance. This additional cargo corridor, integrated with the Fehmarn Belt route, diversifies the supply network, mitigating saturation and enhancing the survivability of military assets during potential strikes against transportation hubs. The tunnel's benefits extend to logistics operations, making the supply network less weather-dependent and more predictable, which is crucial for military planning.

Strategically, a second fixed link aligns with NATO Article 3 commitments, promoting national and allied resilience. The tunnel enhances internal resilience by providing more secure import and distribution channels for both military and civilian resources during crises. Moreover, it facilitates allied support, allowing for the efficient movement of reinforcements and supplies to and from Sweden, Norway, and Finland. Furthermore, improved connections in Öresund will enhance the possibility to use Sweden as a transit country for reinforcements to the Baltic states - the so-called Northern corridor.

Addressing challenges such as differences in Automatic Train Control Systems and voltage between Sweden and Denmark, and upgrading communication systems, is vital for seamless rail operations. The tunnel, while offering a relatively high level of security, emphasizes the importance of safeguarding land-based infrastructure from potential disruption.

In conclusion, a Helsingør-Helsingborg tunnel emerges as an excellent strategic infrastructure option, aligning with NATO's commitment to bolster military capabilities, logistics and cooperation. By providing redundancy, logistical flexibility, and enhancing national and allied resilience, a tunnel would serve as a critical component in strengthening the security dynamics of Northern Europe in the face of evolving geopolitical challenges.

About this report

With the Russian aggression against Ukraine beginning in 2022, military priorities across Europe and the NATO Alliance have changed from the time prior to the invasion of Ukraine. This is part of a wider acceptance of the need for military readiness and planning in case of a major war in Europe. The project focuses on analysing the case for building a second fixed-link rail connection across the Öresund belt between Denmark and Sweden, to bolster military logistics resilience in case they are needed in crisis or war.

The project will uncover how these initiatives may be part of a comprehensive effort to bolster the transportation infrastructure, aligning with national and regional security priorities as Sweden have joined NATO in 2024.

Methodology

This report has been developed through a qualitative research methodology, primarily relying on a series of interviews with subject matter experts. The primary sources of information for this report were individuals affiliated with Totalförsvarets Forskningsinstitut (Swedish Defence Research Agency), members of the Swedish Defence, Danish Defence and Norwegian Defence, and professionals from the security industry.

The interview process involved engaging these experts in discussions, allowing for the expression of their insights, opinions, and firsthand knowledge. These conversations served to better understand the needs for the NATO alliance and the coming requirements from Sweden as a NATO member and as a NATO Host Nation.

In addition to the interviews, relevant documents, reports, and publicly available information were consulted to complement, support, and validate the insights gathered during the interviews.



Figure 1 - Map highlighting the Helsingør-Helsingborg connection (in red) - Map by Risk Intelligence

Significance of rail infrastructure in a military context

In contemporary military operations, railways play a pivotal role in providing relatively rapid and efficient transportation of troops, equipment, and supplies. The utilisation of railways in general is in line with the military requirement for strategic mobility, logistical efficiency, and adaptability in response to dynamic military and geopolitical challenges.

NATO strategic defence planning is based on peacetime deployment of multinational forces in potential frontline countries such as the Baltic states, Poland, and Romania in peacetime. These forces are small and around 1,500 troops per country in so-called Enhanced Forward Presence (EFP) Battlegroups that are currently undergoing transformation to Brigade-level formations of 4,000-5,000 troops, each. Together with national forces these troops will be reinforced with a significant number of troops from other NATO allies in heightened crisis and in war. These troops may include several Brigades or Divisions that each are composed of 2-4 Brigades for each country. Subsequently, NATO will need to transport large military formations and supplies through Europe and to countries like Norway, Finland and the Baltic countries through Denmark, Norway, and Sweden as well as through Germany and Poland.

The ability to quickly move troops and equipment over long distances is essential for responding quickly to emerging threats and reinforcing strategic positions in wartime. The inherent efficiency of railways in handling large volumes of cargo makes them well-suited for military logistics. If the rail infrastructure is in place, rail transport allows for the relatively rapid deployment of military assets to key operational areas. By leveraging existing railway infrastructure or implementing upgrades, military forces can achieve fast and timely movement, enhancing their ability to project power and respond to crises effectively¹.

Railways contribute to the creation of redundant transportation networks, reducing reliance on single-mode routes and mitigating vulnerabilities. This redundancy enhances the overall resilience of military logistics, ensuring that alternate routes can be activated in the event of disruptions, accidents, or security threats to other parts of the network. Railways also have the added benefit of having low sensitivity to weather conditions².

Railways also offer a strategic advantage by providing a reliable and high-capacity mode of transportation for military forces over time. Trains can carry heavy equipment, ammunition, and supplies in bulk, reducing the need for multiple trips, and streamlining the logistical supply chain. This efficiency becomes particularly vital during sustained military operations and the rapid deployment of forces.

¹ Tynnhamar, Marcus - FOI Totalförsvarets forskningsinstitut (2024)

² Dr Ekström, Thomas - Senior Lecturer in War Studies, Swedish Defence University (2024)

High-capacity transport

The advantage of rail transport as a high-capacity transport mode becomes very clear when considering the sheer size of military forces of modern armies. Soldiers require large quantities of materiel, supplies, and resources, even if they do not carry it with them or have it in their vehicles:

“Often it is not understood how much material that needs to be moved. Each soldier requires the equivalence of one 20-foot container of materiel. To move 20.000 soldiers, we need 20.000 containers”
– Tore Listau, Norska Försvarshögskolan

A regular large cargo wagon can hold up to 3 20-foot containers. A conservative estimate says that it requires 1 freight train (740 m) to handle 30 large cargo wagons³. Therefore, one cargo train can move the equivalent of 90 containers for 90 troops. In addition to the requirement for the troops, there are also the significant capabilities needed to move the many heavy vehicles that are essential parts of modern military formations, where many are either armoured (with tanks), or mechanised (with infantry fighting vehicles/IFV or armoured personnel carriers/APC). It is estimated that 1 large cargo wagon can handle 2 tanks, 2 IFVs or APCs, or 2 light vehicles. The exact number can vary if the size of the cargo wagon varies. A comparison for roads is that one lorry can carry 2x20-foot containers or 1x vehicle.

To highlight the required lift-capability in case of conflict and deployment of forces, below are two examples of the size of a NATO deployment, one a Very High Readiness Joint Task Force (VJTF) structure from the NATO Steadfast Defender 24 exercise taking place from January to May 2024, and the other a standard US Armoured Brigade Combat Team.

The below example is the calculated lift requirement for moving roughly a small Brigade Combat Team with mechanized and armoured capability, as per the numbers from the Steadfast Defender 24 Exercise.

	RAIL - CARGO WAGONS	RAIL – FREIGHT TRAINS	ROAD - LORRIES
Equipment/supply containers for 3,000 troops	1,000	33	1,500
700 vehicles	350	12	500-700
Total	1,350	45	2,000 - 2,200

³ Ege, Hans (2014) - https://www.trafikdage.dk/td/papers/papers14/283_HansEge.pdf

The below example is calculated based on a standard US Armoured Brigade Combat Team with tanks, artillery, infantry fighting vehicles, and armoured personnel carriers⁴. The sheer size of the force means that it will likely land in multiple ports, requiring transport capability to be spread out across multiple corridors. Aside from the below figures, it should also be noted that the range of such a Brigade is limited by the Abrams tank at 330 km before refuelling is required⁵.

	RAIL - CARGO WAGONS	RAIL – FREIGHT TRAINS	ROAD - LORRIES
Equipment/ supply containers for 4,743 troops	1,581	48	2,371
87 Abrams Tanks	87	3	87
152 Bradley IFVs	76	23	152
18 M109 artillery pieces	9	1	18
45 M113 APCs	23	1	45
63 fuel tankers and other vehicles	32	1	63
Total	1,808	57	2,736

The examples highlight how, while a lot of rail capacity is required, 57 cargo trains on the railways are considerably less strain on the supply chain network than 2,000-3,000 lorries on the roads. Considerations here include that road traffic networks may be heavily disrupted by civilian movements or evacuation, as well as military convoys may be caught up in regular cargo traffic. For comparison of how many lorries 2,000-3,000 is, the estimated number of lorries on the Danish motorways travelling between Padborg in Germany and Copenhagen daily is estimated at around 2,200, equalling the required lift-capability of the small brigade combat team from Steadfast Defender 24. No military forces in NATO have this level of lorry-transport capability, and having to take the lorries from the civilian supply chain will very likely have a significant negative effect on the flow of resources to the civilian population.

⁴ <https://www.cbo.gov/sites/default/files/114th-congress-2015-2016/reports/51535-fsprimer.pdf>

⁵ <https://www.defensemedianetwork.com/stories/abrams-dieselization-project-doing-the-math/>

In addition, using rail means that the entire force of troops is not needed to maintain or move the vehicles and equipment. Specialist personnel at ports or junctions can work to embark and disembark the materiel and vehicles, and then fly in the troops to the destination. If the Brigade is moving on its own, it requires a large proportion of the 4,750 troops to land at the same time as the vehicles and to drive it from there.



Figure 2 - Leopard 2 main battle tanks being transported via rail during Exercise Steadfast Defender 24 - NATO

NATO logistics and Host Nation Support

NATO has an overall principle of collective responsibility for logistics in support of operations, meaning that allied nations must ensure adequate logistics capabilities within own borders.

With the accession to NATO, Sweden is taking on Host Nation Support (HNS) duties, as other NATO countries ("sending nations" – SN) will be sending forces to, and through, Sweden. This is likely to happen both in peace, in crisis, and war. HNS is the civilian and military assistance Sweden will provide SNs and NATO organisations in Sweden, whether they are staying in the country as part of deployments or during exercises, or if they are in transit.

In a NATO context, the responsibilities of the HN are outlined in various documents, including NATO doctrine and operational planning guidelines. The responsibilities of an HN are primarily related to its obligations when hosting NATO forces, exercises, or missions on its territory. These are some key responsibilities of HNs outlined in NATO standards:

Logistical Support

The HN must provide logistical support to NATO forces deployed on its territory. This includes facilities, infrastructure, and services necessary for the sustainment and operation of deployed forces. A key part of this is having the adequate transport infrastructure and networks to sustain forces and transport materiel.

Infrastructure Access

The HN must grant NATO forces access to necessary infrastructure, such as airfields, ports, railways, and roads, to facilitate the movement and deployment of forces. HNs usually have the final authority to approve, coordinate, and control movement of NATO forces on its territory. Amongst other elements, this requires the HN to have adequate measures in place to ensure that the infrastructure is dual-use, and not just suitable for civilian purposes.

Security and Force Protection

The HN must ensure the security and force protection of NATO forces on its territory. This involves collaborating with NATO on security measures and contributing to the overall safety of the deployed forces.

Communications and Information Systems

The HN must facilitate the integration of NATO forces into the Host Nation's communications and information systems, ensuring seamless interoperability and information exchange.



Figure 3 - The EDDYSTONE ro-ro-vessel, with elements of the British Army 7th Light Mechanised Brigade Combat Team, landing at Emden port during Exercise Steadfast Defender 24 – NATO SHAPE. Such deployments are likely to be part of the HN support required by Sweden.

It's important to note that the specific responsibilities of the Host Nation can vary based on the context of the NATO mission or operation and the agreements reached between NATO and the Host Nation. These responsibilities are typically outlined in Status of Forces Agreements (SOFA) or other legal arrangements between NATO and the Host Nation.

While road transport in NATO doctrines is considered the most flexible means of transportation due to often large and widespread road-networks in allied nations, railroad transport is considered to be the most suitable means of transport overland for large quantities of materiel over long distances. This makes railroad transport of military equipment and vehicles highly suitable for deployment of forces from landing points and ports, as well as transport across borders where railway connections exist⁶.

Given the above conditions, rail transport should become a prioritised type of transportation of NATO forces as part of Sweden's HN responsibilities, and it should be ensured that the Swedish railways has the capacity for movement of heavy equipment such as tanks and heavy artillery. It is also highly likely that NATO will expect sufficient and adequate capacity exist for rail transport of such forces and supplies.

⁶ Tynnhammar, Marcus - FOI Totalförsvarets forskningsinstitut (2024)

EU perspectives on critical infrastructure and dual-use

In line with increased focus on defence as part of the European Union (EU), the EU has been working on initiatives to enhance the dual-use capabilities of trans-European infrastructure, including railways, to support both civilian and military needs. These initiatives aim to improve mobility, logistics, and interoperability across EU member states.

The European Defence Fund supports projects that contribute to the development of dual-use capabilities, including infrastructure. It aims to enhance interoperability and ensure that military transport can make efficient use of civilian infrastructure. In line with the Defence Fund, the EU is actively working on the Military Mobility Action Plan, which includes measures to improve the dual-use nature of infrastructure, including railways. The plan focuses on addressing legal, regulatory, and procedural obstacles to military mobility across the EU.

Another part of the Military Mobility Action Plan are efforts made to integrate military requirements into the planning and development of existing and future trans-European transport networks, including railways. This integration aims to ensure that infrastructure is designed to accommodate both civilian and military transport needs. Encouraging civil-military cooperation is a key aspect of this, and involves coordination between civil authorities responsible for infrastructure development and military entities to ensure that infrastructure meets both civilian and military requirements.

The action plan also emphasizes the importance of standardization and interoperability in the development of trans-European infrastructure. This includes aligning technical standards to facilitate dual-use capabilities and interoperability between civilian and military transport systems. There is ongoing coordination between the EU and NATO to align efforts and ensure consistency in approaches to military mobility and dual-use infrastructure, and NATO's guidelines and standards have likely influenced the EU thinking in this regard.

Technical requirements for military transport on rail

Requirements for military transport are linked to the inherent dual-use (civilian and military use) of railways. The below table highlights the EU infrastructure requirements provided in Article 12(2) of Regulation (EU) 2021/1153. These requirements are similar to the overall NATO requirements for the movement of military cargo.

Table 1 - EU Infrastructure requirements⁷

NO	DUAL-USE REQUIREMENT	DUAL-USE VALUE	REMARK RISK INTELLIGENCE REMARK IN ()
1	Railhead service operating period	Construction or expansion of infrastructure to multimodal transport network access, and equipment that allows operations 24/7 in all-weather conditions.	
2	Railway passengers assets	Infrastructure capable of handling railway passenger's carriage cars (capable of moving passengers), including double-deckers, for loading minimum 80 PAX on each; minimum number of carriages per day: 6 pieces.	
3	Railway stations	Platform infrastructure capable of managing 3-4 trains (10 x double-decker carriages or equivalent) per station per day (5k PAX per day per station).	
4	Railhead operations	Infrastructure capable of handling at least 3 freight trains simultaneously in terminal locations.	Equipment travelling by rail will be subjected to careful load and journey planning to ensure compliance with available MS rail gauge, infrastructure, routes and tunnels.
5	Electrification system availability	Permanent with back-up system regardless of the energy source.	Concerns back-up systems for stations or multimodal handling facilities.

⁷ <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32021R1328&rid=2>

NO	DUAL-USE REQUIREMENT	DUAL-USE VALUE	REMARK RISK INTELLIGENCE REMARK IN ()
6	Bi-polarization	Yes for access.	Pertains to safety systems and track circuits to detect trains on the tracks, and if the railhead allows one or more tracks on a multiple track railway to be operated in either direction, whether for regular or emergency use.
7	Lighting availability	24/7 lighting capability in stations and terminals.	
8	Track gauge	1 435 mm. Ideal for standard continuous rail network pan-Europe and highly desirable for military mobility. In instances where there is a clear benefit for both the civilian and military sectors, 1 520/1 524 mm and 1 668 mm railway gauges can be accepted.	(RI comment: This standard is already used on all main Swedish railways, as well as the main railways in most of Europe.)
9	Loading gauge (maximum height and width dimensions of railway vehicles)	GC standard recommended. To be determined in each Member State where a different loading gauge enveloping P-400 and that is in line with the rail TSIs would be sufficient.	Large container loading gauge. GC fits the UIC P-400 standard. (RI comment: The high-capacity rail corridor for the Öresund Bridge and Fehmarn Belt Tunnels are set at the C standard rather than the GC standard. In addition to the GC standard, NATO recommends the Envelope M, with maximum dimensions slightly wider and taller.)
10	Max cargo height	4,5 m.	The figure includes the safety margin.
11	Max cargo width	3,15 m in normal circumstances. Up to 3,75 m in exceptional cases, where there is a clear civilian benefit and the TSIs are respected.	The desirable width would be up to 4,5 m for military movement.

NO	DUAL-USE REQUIREMENT	DUAL-USE VALUE	REMARK RISK INTELLIGENCE REMARK IN ()
12	Max cargo wagon length	18,75 m.	
13	Rail axle load in tonnes	Minimum 22.5 t/axle on the core TEN-T; recommended 25 t/axle.	The axle load requirement for the TEN-T core rail network including bridges is minimum 22,5 t/axle. Of note, upgrades of axle weight to minimum 25 t/axle could be beneficial for civilian and military movements. Currently military movement is at the limit of existing gross weight.
14	Max train length	Minimum 740 m.	Regulation (EU) No 1315/2013 of the European Parliament and of the Council (1) requires the capacity to operate at least 740 m long trains. The length of a moving train varies (e.g. when breaking or accelerating). The dual-use requirement is therefore congruent with the military requirement.
15	Siding spurs	Minimum 3, each minimum ≥ 300 m.	Can either be in the vicinity of or within terminal locations.

Case for a Helsingør/Helsingborg fixed link

2024 - Changing geopolitical dynamics

Russian aggression

The Russian invasion of Ukraine beginning in February 2022 dramatically and irrevocably changed the security dynamics in Europe. While Russia for many years exerted malign influence in an effort to undermine democratic and economic transformation in Eastern Europe, and to boost anti-democratic, populist, and nationalist movements in the wider European Union, the outbreak of conventional warfare in Ukraine was a dramatic change. Most notably, it made it clear to governments across NATO that re-investment in, and prioritisation of, conventional military capabilities is necessary to deter Russian aggression against the alliance. The War in Ukraine also enlarged the NATO alliance, with the ascension of Finland in 2023 and Sweden in 2024.

Sweden joining NATO

Finland and Sweden joining NATO is a very significant change in the presence of the alliance in the North and Scandinavia. Finnish and Swedish capabilities in the Baltic Sea are a major boost to NATO in the maritime domain, both countries have relatively large land forces, and Sweden is home to a significant arms industry and supplies many countries in NATO. Finland is a de-facto frontline state, with a large border to Russia, and Sweden's central position in Scandinavia and the Baltic Sea means that the country will be of very high importance in case of crisis or war. Sweden will be made a central host nation (HN) in the alliance, meaning that the forces of other NATO countries, as well as large quantities of military resources will pass through Sweden on the way to deployment zones and/or front lines.

Helsingør-Helsingborg Tunnel

In case of crisis or conflict, the existing fixed-link connection from Copenhagen to Malmö will be crucial for moving military capacity from the major ports in Germany and Denmark, and on to Sweden and Norway. However, while the current single fixed-link connection is likely enough to move the required mass of military hardware, it not assessed to offer significant redundancy on its own. Having to rely on a single route for critical transportation most likely jeopardizes military reinforcements, should an opponent have the capability to strike at the transportation hubs, links, or other parts of the network. A contemporary example of this is the Ukrainian focus on striking the Kerch Bridge over the Kerch Strait between Crimea and Russia, where the Russian military is relying on a single transport corridor to reinforce troops in Southern Ukraine, and to sustain the civilian population of Crimea⁸.

⁸ Dr Ekström, Thomas - Senior Lecturer in War Studies, Swedish Defence University (2024)



Figure 4 - Map of railways between Germany and Sweden. Green are established lines, blue is the coming Fehmarn Belt line, and the dotted red line is the proposed Helsingør-Helsingborg link. Map by Risk Intelligence.

The added strategic flexibility of railways mainly becomes apparent when there is more than one route to choose from. This is a flexibility the Russians currently lack in Crimea, and one NATO currently lacks between Denmark and Sweden. Having a second fixed link will bring even more flexibility when considering direct connection to the Fehmarn Belt tunnel, which will open up an additional cargo corridor through Denmark to Sweden in addition to the Great Belt link. Such an additional cargo corridor will enable a more quick and timely movement of large numbers of materiel, for example in the case of a US Armored Brigade Combat Team landing in Germany, which will have option of sending the vehicles and resources via different routes. This limits saturation of the transport network, as well as increasing the likelihood of survivability and combat effectiveness of the Brigade in case of strikes against the trains or railways. It will also enhance the possibility to use Sweden as a transit country for reinforcements to the Baltic states - the so-called Northern corridor^{9,10}

A second fixed link will also provide significant redundancy in relation to the ferries currently operating between Denmark and Sweden¹¹– provided that these ferry lines are either maintained or the ferries remain operational once a fixed link has been built. It should also be noted, that while a second fixed link offers redundancy, real strategic flexibility comes with also having alternatives such as ferries to complement the fixed link.¹²

"This is of the utmost importance. To have flexibility and redundancy built into the critical infrastructure systems is fundamental to achieve robustness and resilience in the systems. From a military perspective, freedom of action is always important. To have alternative routes is a baseline requirement, in line with NATO's seven baseline requirements."

– Dr Thomas Ekström

If used in conjunction with the use of the port of Gothenburg for other logistics operations, as well as using other ferry connections between Denmark and Sweden, or other parts of NATO, a rail link would significantly diversify the supply network, by providing a reliable alternative to the Copenhagen-Malmö connection.¹³ A second fixed link will also enhance the seamless connectivity between Sweden and the wider NATO alliance and the continental and Nordic transport networks. An example of this is the requirement for having land-based logistics lines to Finland.¹⁴

⁹ Barfoed, Jacob - Colonel, Ph.D, Danish Defence (2024)

¹⁰ Kjartansson, Kristján - Norwegian Defence (2024)

¹¹ Rife, Lars - Major (R), FMLOG, Swedish Defence (2024)

¹² Dr Ekström, Thomas - Senior Lecturer in War Studies, Swedish Defence University (2024)

¹³ Wiktorin, Johan - Managing Partner Intil Group (2024)

¹⁴ Dr Ekström, Thomas - Senior Lecturer in War Studies, Swedish Defence University (2024)



Figure 5 - German Bundeswehr vehicles being prepared for rail transport during NATO exercise Trident Juncture 2018 - Bundeswehr

Such a rail link would also make the overall supply network less dependent on weather conditions or maritime transport schedules. A rail link between the two cities would thus offer a more predictable and controlled logistics channel, essential for military planning!¹⁵ A second fixed link will also serve as redundancy in relation to the port of Gothenburg, which is otherwise meant to serve as the main landing point for military forces to Sweden; in case logistics operations in the port of Gothenburg being disrupted for some reason during conflict, reinforcements can still flow via Danish ports or from Germany through the fixed links.

In addition to the need for a second connection, the possibility of building a tunnel, rather than a bridge, will considerably improve the security of the connection, as the maritime parts of the corridor will be significantly less at risk from missile and aerial attacks. However, hubs, nodes, and infrastructure on land will still be targets in infrastructure disruption operations.

There are some issues regarding the difference in Automatic Train Control (ATC) Systems and voltage of the railway lines between Sweden and Denmark. Because of this, modified locomotives are needed to go via this line, although the freight wagons can remain the same. In modernising the railways, it could also be beneficial to upgrade to fixed radio systems on ultrashort wave for shorter distances, and short wave for longer distance communication.¹⁶

In general, a second fixed link between Helsingør and Helsingborg will be directly in line with the NATO article 3 on the commitment of member states to strengthen their military capabilities and cooperation, as well as national resilience, to enhance their ability to resist armed attacks, navigate crises and emergencies, and contribute to the overall security of the NATO alliance. Such national and allied resilience is part of the overall deterrence of the NATO alliance, and Swedish compliance will be highly important. A fixed link between Helsingør and Helsingborg achieves this in two major ways:

¹⁵ Wiktorin, Johan - Managing Partner Intil Group (2024)

¹⁶ Riffe, Lars - Major (R) , FMLÖG, Swedish Defence (2024)

1. It enhances the national resilience and security of Sweden by providing a means for the import and sustained distribution of both military and civilian resources in times of crisis.
2. It enables allied support to flow to allied nations – depending on a future crisis or war scenario, Swedish or allied support can go south to the continent on secure transport corridors, or allied support can go into Sweden from ports in Germany and elsewhere, and beyond to Norway, Finland, or the Baltic countries.



Figure 6 - US Army Stryker armoured fighting vehicles being transported by rail - US Army

Conclusion

The proposed project to construct a second fixed-link rail connection across the Öresund belt between Denmark and Sweden emerges as an initiative of high importance against the backdrop of evolving geopolitical dynamics.

The changing security landscape, marked by Russian aggression and the subsequent NATO expansions with Finland in 2023 and Sweden in 2024, underscores the need for robust military logistics and infrastructure. Rail transport, with its inherent strategic advantages, emerges as a focal point in fortifying military capabilities.

The significance of rail infrastructure in a military context is undeniable. It offers relatively rapid and efficient transportation of troops, equipment, and supplies, aligning with the imperative for strategic mobility and logistical efficiency. High-capacity rail transport proves crucial, especially when considering the substantial requirements for moving large military forces and equipment.

In the case of the Helsingør-Helsingborg Tunnel, the strategic value becomes apparent. The current single fixed-link connection faces limitations in redundancy, posing potential vulnerabilities in the event of disruptions. Introducing a second fixed link, particularly a tunnel, offers strategic flexibility, enhancing survivability and combat effectiveness during potential strikes against the transportation network.

The project aligns with NATO principles, notably Article 3, emphasizing member states' commitment to strengthen military capabilities, cooperation, and national resilience. For Sweden, now a NATO member, the project directly contributes to internal resilience and security by providing a secure means for importing and distributing both military and civilian resources during crises.

A second fixed link facilitates allied support, enabling secure transport corridors for Swedish or allied assistance to flow south to the continent or into Sweden from ports in Germany and beyond to Norway or Finland. This aligns with NATO's collective responsibility for logistics in support of operations, and Sweden, as the Host Nation, plays a pivotal role in providing logistical support, infrastructure access, security, and force protection.

The project also harmonizes with EU initiatives on critical infrastructure and dual-use capabilities, supporting both civilian and military needs. The integration of military requirements into the planning and development of trans-European transport networks, including railways, resonates with the broader European Defence Fund and the Military Mobility Action Plan.

In conclusion, the project stands as a strategic imperative, addressing the challenges posed by the dynamic geopolitical landscape. Enhancing rail infrastructure, not only strengthens military logistics but also contributes significantly to national and regional security priorities, embodying the collective commitment of NATO member states to navigate crises, resist armed attacks, and contribute to overall alliance collective security.

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