

Greenland's Arctic Role: Trade, Resources & Geopolitics

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Abstract. *Greenland has a significant strategic position in the Arctic as a potential trade route, but the economy is still highly dependent on imports, resource exports and Danish financial support. With climate change reshaping shipping routes in the Arctic, Greenland stands to become a regional trading and logistics hub. However, this move is constrained by infrastructure gaps, investment constraints and a lack of economic diversification. Other Arctic nations have developed extensive trade networks, but Greenland has yet to fully leverage its position for commercial expansion. It employs a mixed-methods approach, where it combines quantitative data analysis, with qualitative assessments for the trade balance, impacts of different sectors, and economic policies and infrastructure capacity in Greenland. The study findings show that Greenland has not yet realized its full potential in relation to its Arctic location's strategic value as a location for trade, with fisheries dominating exports but industrial and logistics sectors underdeveloped. We would like to highlight that the trends in maritime activity indicate limited transit growth and some fluctuations, therefore, require continued strategic investment in port infrastructure and trade facilitation. The study, by covering trade-specific issues and opportunities for Greenland, adds to Arctic economics research and also aims to inform policymakers, economists and stakeholders. Greenland is poised to be a strong supporter, but the fundamental principles of infrastructure will be repurposed in new projects. Infrastructure, economic diversification, and trade policies that regulate the Arctic trade hub will be required to solidify Greenland's strategic advantage as a dominant trade power.*

Keywords: Greenland, Arctic trade, economic sustainability, trade balance, infrastructure development, import dependency, logistics hub.

Introduction

In recent years, Greenland's underlying economic and geopolitical importance in the Arctic has risen, prompted by the worldwide dynamism for new shipping passages, resource exploration and trade expansion. Ice coverage in the Arctic is shriveling up because of climate change, and new maritime passageways that would allow for more efficient cross-Arctic transportation can represent a money-making opportunity for Greenland's economy, especially in logistics, fisheries and raw material exports. Despite its strategic position, however, Greenland economic development is still heavily reliant on imports and financial support from Denmark, leading to concerns regarding its long-term economic viability and ability to grow independently. Greenland also has yet to emerge as a significant trade or logistics centre compared to, for instance, other Arctic nations, such as Norway and Iceland, which have rapidly developed their trade networks and infrastructure, making it necessary to evaluate the barriers that still limit Greenland's economic growth.

This study examines Greenland's trade balance, economic dependencies, and infrastructure challenges, evaluating its potential to transition into a more self-sustaining and trade-oriented economy. The research applies a mixed-methods approach, combining quantitative analysis of Greenland's import-export data and sectoral contributions with qualitative assessments of its trade infrastructure and economic policies. The key research question driving this study is: To what extent does Greenland's economic structure support long-term trade growth, and what challenges prevent it from leveraging its strategic Arctic location for expanded trade and investment?

H1: Greenland's heavily imbalanced trade pattern shows its difficulty in creating a self-sufficient Arctic economy, with imports accounting for much of its economy, little industrial diversification, and reliance on external financial aid. H2: Though geographically placed to be an important Arctic trade or logistics hub, Greenland has yet to mature into that role, owing to infrastructural deficits, investment barriers, and a lack of integration in global Arctic trade. This research assesses Greenland's trade potential by analyzing trade patterns and sectoral contributions, as well as Greenland's economic positioning within the Arctic, and identifies key policy measures to increase Greenland's role within the Arctic at the global scale.

Literature review

Greenland is an important area in Arctic geopolitics because of its strategic position, resource wealth and changing political status. As a territory of Denmark with growing autonomy, independence from Denmark could dramatically shift the regional balance of power and Arctic governance. Greenland also has significant deposits of rare earth elements, oil, and gas which have drawn Chinese, U.S., and European investments (Morrison; & Bennett, 2025). Moreover, the Thule Air Base — a pivotal U.S. military installation for missile defense and Arctic security — underscores its geostrategic significance (Brigham, 2022). Chinese investment proposals in Greenland's mining industry over the past decade have raised alarm bells in Washington and Copenhagen (Koivurova & Shibata, 2023) and triggered Western intervention to prevent China from establishing a firm base in the region. As such, Greenland stands at the heart of competitive geopolitical competition between the great powers in the Arctic, their growing economic and strategic interests.

Meanwhile, with climate change hastening the melting of Arctic ice, new maritime trade routes are becoming more accessible — altering global shipping patterns. The Northern Sea Route (NSR) along the Arctic coast of Russia is becoming a realistic alternative to the Suez Canal with reduced transit times between Asia and Europe (Dodds and Rowe, 2021). Russia has invested massively into nuclear-powered icebreakers for year-round navigation, and China has led the “Polar Silk Road” project to incorporate Arctic trade routes into its global Belt and Road Initiative (BRI) (Humrich & Wolf, 2012). Yet, however, in spite of such possibilities, Arctic shipping is logistically complicated due to extreme weather conditions, insufficient infrastructure, as well as geopolitical conflicts involving Russia, NATO, and Arctic parties (Koivurova & Shibata, 2023). Decades from now, the future of global cross-polar shipping will hinge on international rules, economic sustainability, climate mitigation and whether the expected melting occurs.

On the Kola Peninsula, which is home to its Northern Fleet and nuclear submarine bases, Russia has greatly increased its military presence (Rumer et al., 2021). In 2014, Russia formed a new Arctic military command, modernized its air and naval bases, and bolstered its anti-access, area denial (A2/AD) capabilities (Bermudez et al., 2020). Such activities have been a cause of concern for NATO allies resulting in more western military exercises, increased U.S. deploys in Alaska and Norway, and reopening diplomatic posts in Greenland and Tromsø (Brigham, 2022).

The Western policymakers have paid particular attention to China's increasing engagement in Arctic through investments and research (Lanteigne, 2014). While tensions have increased, such dramatic Arctic military conflict remains unlikely due to high logistical costs, along with the mutual nuclear deterrence between Russia and NATO (Young et al., 2022). Still, the growing militarization of the Arctic could sharpen regional competition over trade, resource extraction and security policies in the decades ahead.

According to the recently published BSR Policy Briefing (2024), the collapse of Arctic governance frameworks is evident, particularly in reference to the Barents Euro-Arctic Council and the diminished role of the Arctic Council following the withdrawal of Russia from multilateral engagement (Heikkilä, 2024). This geopolitical transformation is reconfiguring Arctic decision-making, compelling Nordic and Western Arctic countries to seek other avenues of cooperation whereas Russia is leaning more and more on bilateral interactions with China and other non-Arctic countries (Ministry of Foreign Affairs of Russia, 2023). The Arctic Council serves as a primary regional governance body in this sparsely inhabited territory, given the particular importance of indigenous rights, environmental protection, and sustainability to the Arctic region; however, the body has struggled to make concise decisions in the face of the Russian-Ukrainian war, in which decisions need to be unanimous and Russian cooperation cannot be guaranteed and the decision-making processes have become weaker, resulting in uncertainty in the enforcement and implementation of international agreements on resource management, indigenous rights and environmental protections. In contrast to earlier Arctic governance arrangements, which included both shared values and common interests that enabled diplomatic engagement with Russia, current dynamics suggest a longer-term structural shift toward a Western-defined Arctic policy framework, in which Greenland plays a crucial role in new Nordic and NATO-styled initiatives (Arctic Council, 2023).

Greenland's geographical location places it in the spotlight, as Arctic trade routes and economic policies adapt to changing geopolitical dynamics in the region. According to the BSR Policy Briefing (2024), the Nordic region is becoming more integrated into EU economic policies, which is especially manifested in sustainable infrastructure processes such as the Interreg Aurora Initiative that deals with Arctic logistics & transportations, renewable energy, and green shipping routes (Barents Euro-Arctic Council, 2024). The geostrategic location and mineralogical wealth of Greenland fit well with EU efforts to secure access to critical minerals and alternative sources of energy, especially as the EU attempt to reduce dependency on the resources of Russia.

As the Nordic region undergoes the largest shift in terms of security in decades, Greenland's significance as a strategic NATO outpost grows fast. According to The BSR Policy Briefing (2024), Finland and Sweden's membership as full NATO members in 2023-2024 has reconfigured Arctic defense strategies, emphasizing integrated security structures, joint military exercises, and extended surveillance networks (Government of Iceland, 2024). This transition augments the strategic importance of Greenland for Arctic security, given that its airspace, maritime zones and intelligence installations are relevant for the surveillance of Russian and Chinese operations (Brigham, 2022). It also puts Greenland's modernization of military infrastructure, particularly the role of Thule Air Base in early warning systems and missile defense, at the center of NATO's Arctic deterrence strategy (Nilsen, 2024). Whereas Arctic security in earlier decades was driven by diplomatic engagement, the region now finds itself in a transition to a posture of military preparedness and defense integration — with Greenland emerging as a centerpiece of NATO's evolving stratagem in the Arctic.

According to the 2024 U.S. Department of Defense Arctic Strategy, the Arctic will be a critical area for U.S. national security, requiring countering Russian military expansion, tracking Chinese increasing influence, and adapting to climate-driven challenges. The strategy cites Russia's militarization of the Kola Peninsula, increased hypersonic missile deployments, and expanded Northern Fleet operations along the Northern Sea Route (NSR) as key threats. China, in turn, is seeking to establish economic and strategic footholds in the Arctic under its own "Polar Silk Road" initiative, posing questions over Sino-Russian cooperation on Arctic issues. The strategy also highlights the increasing role of NATO in the Arctic, especially after Finland and Sweden have become members, strengthening the alliance's security posture in the north. This will boost joint exercises, intelligence-sharing and transatlantic defense co-operation, thus strengthening Arctic deterrence and raising regional pressure on Moscow (DoD, 2024).

In response, the DoD identifies a "monitor-and-respond" strategy, emphasizing increased capabilities in the Arctic, strengthened partnerships with allies, and a sustained military footprint in the region. They range from modernizing surveillance capabilities and area awareness to upgrading Cold War-era Arctic bases and bolstering offensive missile defense infrastructure. Also, the U.S. will work to strengthen NORAD and NATO Arctic cooperation, and enhance joint training programs and more Arctic war games like ARCTIC EDGE and Operation ICE CAMP. Climate change is another complicating factor, with melting ice making Arctic waters increasingly accessible and spurring greater geopolitical competition for resources and trade routes. As the Arctic shifts from a region with little strategic competition to one marked by growing geopolitical disputes, the DoD highlights those ongoing investments in defense infrastructure, defense technology, and multilateral security arrangements will be vital to protecting U.S. interests and maintaining peace and security in the region (DoD, 2024).

Greenland's geopolitical importance has increased as Arctic security has become more contested with growing Russian military power, U.S. strategic priorities and Chinese economic ambitions. The Pituffik Space Base (previously Thule Air Base) is still vital for US missile defense, Arctic surveillance, and monitoring Russian naval activity in the GIUK Gap (Greenland-Iceland-United Kingdom corridor). As ice in the Arctic thaws, Greenland's position on potential future trans-Arctic shipping routes—the Northwest Passage and the Transpolar Sea Route—enhances its importance in the management of Arctic commerce. Moreover, Greenland's wealth of rare earth elements (REEs), fisheries, and freshwater has made it an arena of great power competition over resources. Western nations see Greenland's mineral riches as a means to lessen dependence on China, but the inhospitable environment, high extraction costs and political opposition to uranium mining have hindered development. Meanwhile, Russia has dramatically ramped up military activity in the Arctic, strengthening its Northern Fleet and expanding Arctic bases, and NATO has responded by stepping up military coordination, with Greenland a critical piece of transatlantic defense (Spence & Hanlon, 2025).

Amid escalating competition for Arctic influence, as Greenland grapples with pressures from major powers while asserting its sovereignty Russia's increasing militarization in the Arctic, involving deployments of hypersonic missiles and enhanced naval operations, has also raised NATO's security interest in Greenland. Greenland is seen as crucial for the U.S. to counter Russian and Chinese influence, which has led some American policymakers to revitalizing ideas to purchase the territory — something that leaders in both Greenland and Denmark fiercely opposed. China's failed efforts to invest in Greenland's mining and infrastructure industries highlight both the U.S.'s successful defensive maneuvers as well as Greenland's own hesitancy to be manipulated by foreign powers. Although Greenland has trade ties with China, it has sought to

avoid entanglement in Beijing's geopolitical ambitions, strengthening its ties instead with NATO, Denmark and the European Union. Greenland sets out its Foreign Policy Strategy in which it propounds the importance of sovereignty and self-determination when it comes to external partnerships for the Kingdom of Denmark and the way that they would ultimately benefit other nations as well (Spence & Hanlon, 2025).

The literature review highlights Greenland's changing status from a geopolitical and military asset to a more strategic economic one in the context of growing Arctic competition. Located in the strategic GIUK Gap and future trans-Arctic shipping routes, it plays a pivotal role in global trade, NATO security, and military surveillance. The Pituffik Space Base (formerly Thule Air Base) continues to be a linchpin of U.S. and NATO Arctic defense, missile early warning, and space monitoring. Climate change has been opening the Arctic, and Greenland's wealth of rare earth elements (REEs) as well as fish and freshwater positions it in the middle of the West's drive to secure resources — especially because China has a near monopoly on the world's supply of critical minerals. Following Finland and Sweden's membership, at the same time as Russian military operations are expanding in the Arctic where NATO

states had been previously reluctant to carry out military operations in the Arctic, NATO Arctic defense cooperation is being sharpened. Although China has tried to make inroads into Greenland through infrastructure and mining investments, these projects have failed due to strong local political resistance (due to fear of over-reliance on Chinese companies) combined with U.S. assistance to block projects. Simultaneously, Greenland's efforts to distance itself from Dominance, as expressed in the 2024 Foreign Policy Strategy, mirror its increasing attempts to exercise its sovereignty while balancing competing international interests. With Arctic security, trade, and resource competition on the rise, the role of Greenland in international affairs will play a key role in laying the groundwork for the future of Arctic governance, transatlantic security, and economic sustainability.

Methodology

Utilizing a mixed-methods strategy, combining quantitative economic analysis with qualitative analysis of trade and infrastructure we examine Greenland's trade imbalances, economic development challenges, and its unrealized promise as an Arctic trade corridor. The quantitative element provides answers for Greenland's trade balance, primary exports/imports, and economic sustainability, and the qualitative element analyses its capacity to utilize its Arctic location for expanding trade and logistics. The trade imbalance reflects its inability to build up an autonomous Arctic economy is the core of this analysis. Although rich in natural resources and strategically situated, Greenland is very import-dependent and has a small industrial base. This study examines through import-export ratios, sectoral trade composition, and long-term trade balance trends, whether Greenland's economic structure contributes to long-term sustainability or rather renders Greenland vulnerable to external dependencies.

Besides trade imbalances, the study also looks into how despite its strategic Arctic location, Greenland has yet to be developed as a significant Arctic trade or logistics hub. Despite its location on emerging Arctic trade routes, Greenland's economy is based on resource extraction and fishing rather than transit trade or logistical services that could amplify its global commercial influence.

Statistical methods are then employed in the economic analysis to identify indicators that can provide a more nuanced picture of Greenland's trade patterns, financial dependencies and industrial capabilities. Data from Greenland's official report 2024 on GDP composition, labor

market conditions, and sectoral growth are then used for the analysis. Furthermore, the dataset also shows the import-export flows trade deficit. Statistical software such as Microsoft Excel and Python are used for processing and visualization of data, which allows a clearer interpretation of Greenland's trade dependencies, economic vulnerabilities and potential for industrial development.

With the exception of security concerns raised by China in the Arctic, the trade and infrastructure assessment seeks to understand how Greenland is poised economically in terms of Arctic commerce and development of regional trade. The study assesses Greenland's economic potential in Arctic shipping networks, the feasibility of Greenland's participation in trans-Arctic logistics, and barriers to the expansion of trade based on official government reports and trade balance statistics. This research employs content analysis of economic reports, comparative assessments of Arctic trade hubs and discourse analysis of official government statements, to ensure a balanced analysis. Greenland's economic and trade policies are analyzed in comparison to other Arctic countries that have leveraged their geographical locations effectively. This study also explores why Greenland's economic policies have not yet led to wider trade and investment opportunities. As a result, this study provides a comprehensive assessment of the state of play — and room for maneuver for Greenland as an Arctic commercial hub by integrating both economic and trade perspectives.

Results and discussions

In this paper, three subsections are dedicated in analyzing elements such as Greenland's trade balance, economic sustainability, and the potential of Greenland as an Arctic trade hub. The results show that Greenland's economy is very dependent on imports (fisheries being the largest export industry) yet industries like manufacturing, logistics, and value-added production are underdeveloped. This model of trade highlights the vulnerabilities in the country's economy, as a dependence on international markets for vital material goods, equipment, and infrastructure, restricting Greenland's path to financial autonomy. While it is geographically well-placed along Arctic trade routes, Greenland's existing economic activity does not suggest a burgeoning role in global logistics or transit trade without additional investments.

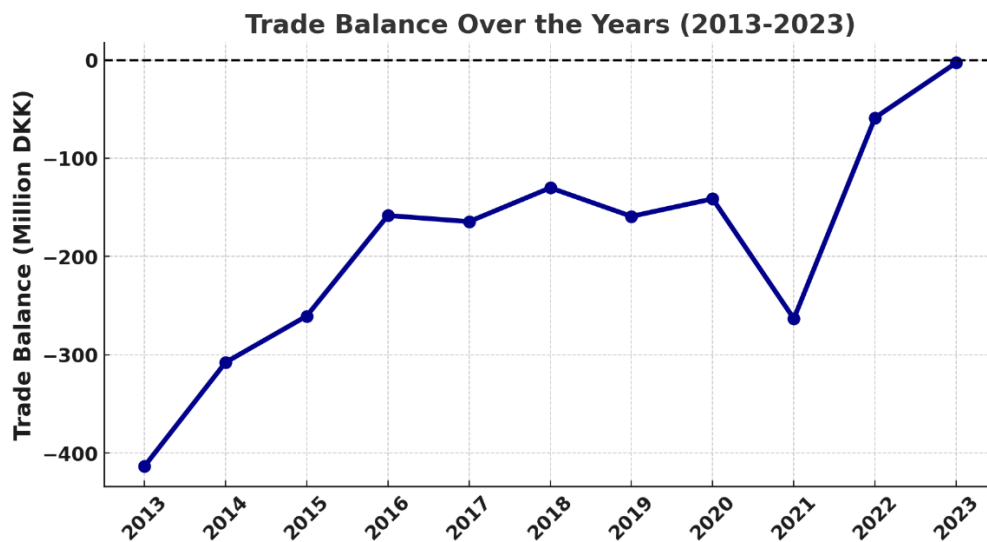


Figure 1. Trade balance over years (2013-2023)

Source: Authors' own elaboration, Greenland in Figures (2024)

Between 2013 – 2023, the trade balance data shows how much has changed during this time interval as Greenland’s economy is improving, its trade deficit has gotten smaller and smaller over the decade. During the initial years (2013-2016), Greenland experienced a large trade imbalance with a deficit of more than -400 million DKK in 2013, indicating a heavy reliance on imports and weak economic diversification. Nonetheless, starting in 2017, the deficit began to decrease gradually, moving to -58.74 million DKK in 2022, and to a near balance of -2.85 million DKK in 2023. This implies better export performance, potential decreases in import dependency, or positive adjustments in trade policies. Yet, even with this advancement, ups-and-downs like the temporary spike in the deficit (-263.25 million DKK) in 2021 signal that Greenland’s economy is still susceptible to external factors (e.g., global market conditions, changes in trade policy). Economic sustainability is uncertain as the fisheries sector continues to dominate the export sector, resulting in significant exposure to price volatility, environmental changes, and regulatory restrictions. At the same time, Greenland’s potential for long-term advantages from its strategic location in the Arctic in the form of trade is also limited by the absence of any major industrial expansion and development of trade infrastructure. This must then be complemented by other industries, which can reduce dependence on imports by producing locally and investing in infrastructure that enables further development of trade so that the economy will become resilient and capable of sustaining the overall growth.

Table 1. Greenland Economic Overview

Indicator	Value
GDP (2023, Million DKK)	18240
Government Block Grant from Denmark (Million DKK)	3900
Unemployment Rate (2023)	7.5%
Average Annual Income (DKK)	290000
Tourism Revenue (2023, Million DKK)	800

Source: Authors’ own elaboration, Greenland in Figures (2024)

However, with Greenland’s GDP in 2023 amounting to only 18,240 million DKK and a considerable part of the government revenue coming from the Danish block grant (3,900 million DKK), it evidently still depends on finances from Denmark. With unemployment at 7.5%, this points to structural challenges in the labor market, rather than unemployment due to a wider downturn; tourism revenue (800 million DKK) is only a small part of the overall economy. 290,000 DKK is low overall average annual income, but given the high cost of living, average income often represents real earnings. It reflects a pressing need for stronger domestic industry growth to offset reliance on external sources of finance.

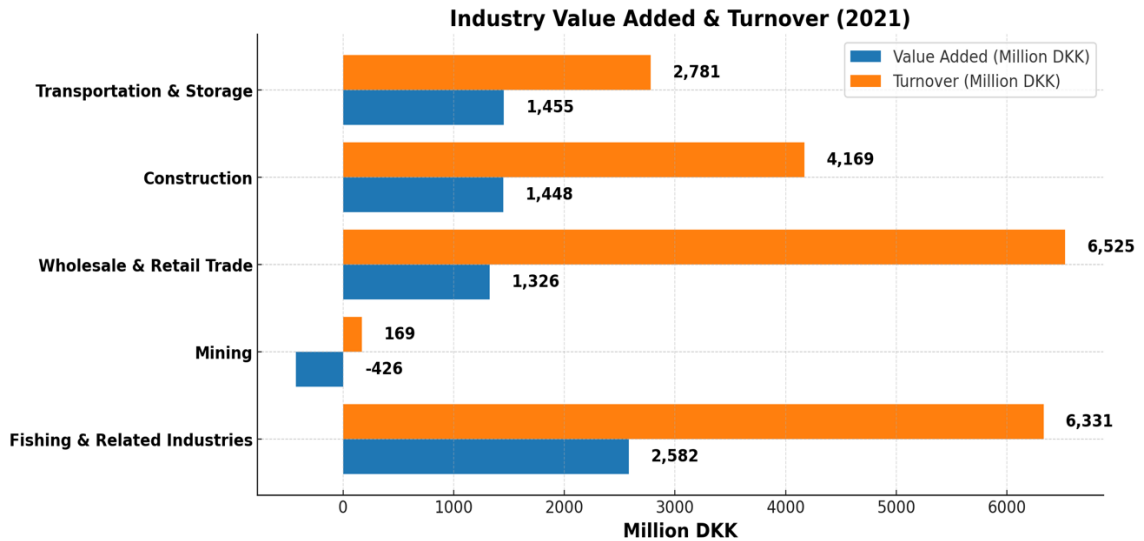


Figure 2. Industry Value Added & Turnover (2021)

Source: Authors' own elaboration, Greenland in Figures (2024)

As shown in Figure 2, the predominant role of fishing for Greenland's economy was reflected in 2021 - with a turnover of 6,331 million DKK (the second highest turnover of all industry sectors) and the highest value-added contribution (2,582 million DKK) – and it continued to be the main driver of the economy. Mining had a negative value added (–426 million DKK), even though it produced a turnover of 169 million DKK, showing that either operational costs are higher than turnover, there is little extraction activity, or that the sector incurs financial losses. The wholesale and retail trade sector showed large turnover (6,525 million DKK) but moderate value-added contribution (1,326 million DKK), indicating high import dependence and lower profit margins in the domestic economy. On the contrary, construction (1,448 million DKK) and transportation & storage (1,455 million DKK) contributed more to value added relative to their turnover, as they are instrumental sectors in infrastructure and logistics. These numbers further underscore Greenland's ongoing reliance on fisheries, underperformance of the mining sector, and a services sector very reliant on import and external market conditions.

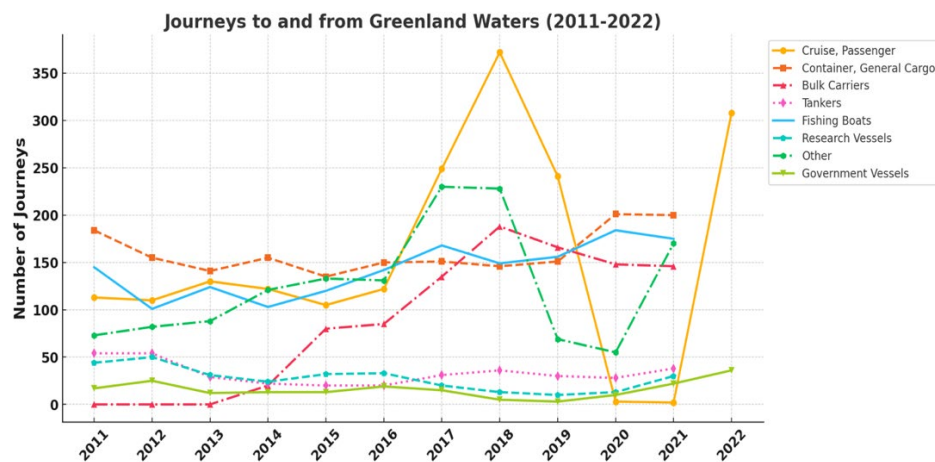


Figure 3. Journeys to and from Greenland Waters

Source: Authors' own elaboration, OPSA (2024)

This growth in government vessel activity over a few days in 2022 has broader implications in relation to Greenland's geopolitical and economic context. This increase likely indicates a demand for greater government and military interest in the Arctic, driven by growing international competition over shipping routes, natural resources and regional security. As global powers — most notably the U.S., Russia and China — broaden their Arctic policies, the geographic position of Greenland has grown significantly. Government vessels may be linked to enhanced maritime security operations, fisheries regulation, or environmental monitoring, consolidating Greenland as an increasingly contested space for geopolitical influence. Given the Arctic's growing importance to global trade and security, this growth may also mean tighter observance of shipping and resource development, as climate change drives more rapid ice melt and new navigation channels.

Although this analysis deals mainly with the economic and trade aspects of Greenland, there is a defense consideration behind it, given the strategic potential of the region. Greenland's location in the Arctic has made it a geopolitical prize for global powers, especially because of its proximity to key Arctic shipping lanes and airspace. The Pituffik Space Base (formerly Thule Air Base), which is operated by the United States, is a military installation that serves this broader strategic function of Arctic defense and surveillance. Military activities do not directly affect Greenland's trade balance or economic sustainability, but they are relevant to international interest in the region and future infrastructure developments.

The data also corroborates the hypothesis H1 referring to Greenland's trade deficit and limited economic diversification, as its economy, exports and imports depend still heavily on fish and other imports from the Danish subsidies. In addition, it has not become a major trade or logistics hub, despite its strategic Arctic location, supporting H2. The limited growth of cargo shipments in bulk carriers and transit trade, compounded with inadequate port infrastructure and logistical investments, means that Greenland cannot exploit its geographic position to capitalize on Arctic trade. Although government vessels activity has increased, probably indicating that more resources are dedicated to regulation and the security of Greenlandic waters, the economic gain from Greenland's strategic position is not yet fully optimized, highlighting the need for infrastructure investment alongside incentives for trade and industrial development in order to reach the goal of economic self-sustainability.

Conclusion

The significant opportunities that Greenland's strategic location, in the middle of the Arctic can offer in terms of economic expansion end up being a disadvantage because its structural limitations have already created in the past a generic sense of powerlessness, as the findings underscore. The ongoing trade imbalance and dependence on fisheries suggest an underdeveloped economy, and Greenland is extremely vulnerable to international market fluctuations. The absence of significant port, transit trade, or foreign investment in logistics further underscores the findings of this research, namely that Greenland is not currently functioning as an Arctic trade hub. Overcoming these challenges calls for policy-oriented initiatives to upgrade trade infrastructure, promote industrial diversification and attract foreign direct investment that both strengthens Greenland's position in world trade and expands its integration into the world economy. Enhancing local production capabilities and decreasing dependence on imports could make Greenland's economy more resilient and sustainable in the long run.

Aside from economic aspects, Greenland's geopolitical significance is increasing, as shown by the growing number of government vessels and the rise of international interest in Arctic

affairs. However, when balancing economic development with security implications, Greenland's sovereign interests must be considered in discussions on cooperation for sustainable trade development. Further studies should examine comparative trade policy in other applicably Arctic nations to identify best practices, and should integrate a stakeholder lens of practitioner policymakers and industry leaders to develop economic strategies. The potential consequences of new Arctic trade routes and climate-related changes for Greenland's economic future also need further study. By analysing these, Greenland can move away from an economy based on extraction and commodification, to one where it facilitates trade in the Arctic and strengthens its own position economically, securing its independence well into the future.

Despite the comprehensive nature of this approach, certain limitations exist. Some trade agreements and infrastructure investment plans may not be fully disclosed, restricting access to real-time strategic developments. This study also relies on published statistical data rather than direct stakeholder interviews, which may limit insights into Greenland's internal economic strategies and policymaking decisions. However, by combining quantitative trade analysis with qualitative assessments of Greenland's economic positioning, this methodology ensures a robust, data-driven evaluation of Greenland's Arctic trade potential and its path toward economic sustainability.

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