

THE CHALLENGES AND RISKS OF THE ARCTIC PASSAGES ON SUEZ CANAL

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ABSTRACT

As a result of global warming and rise in temperature, the Arctic region witnessed melting of ice. The technological development for the extraction of oil and natural gas in the Arctic in addition to political instability and piracy in the Middle East pushed the Nordic countries (Germany, Russia and Canada) to do research, studies and experiments to take advantage of these resources and to exploit the short distance to transfer trade between Western countries (Europe, America and Canada) to the east countries (Japan, China and South Korea). Two German ships succeeded in September 2009 to sail from a port in South Korea to the Dutch Rotterdam port across the North Sea along the northern Russian border Northern Sea Route 2013, (Information Office), followed by the success of the Russian gas tanker «Baltika» to sail from the Russian city of Murmansk in the August 14, 2010, to the Chinese city of Shanghai, accompanied by the nuclear icebreaker "50 years of Victory" across a route inside the territorial waters of the coast of northern Russia from the Arctic Ocean carrying 70 tons of gas condensate to be a substitute for the southern route through the Suez Canal. Projections indicate that the volume of trade passing across the Northern Sea Route NSR in 2015 to be 4 million tons and may reach to 65 million tons per year in 2020 and to 120 million tons in 2030 (Keil, 2014)

In spite of the many alternatives of the Suez Canal such as the Panama Canal, the Cape of Good Hope and also North South land corridors could develop as land bridges from the Persian Gulf via Iran to Russia, the East-West rail corridors, a set of railway lines connecting East Asia and the western part of Russia with the Eastern part of Russia, are becoming more commercially interesting. One of the main arteries is the Trans-Siberian Railway which connects St. Petersburg with the port of Vladivostok

But the NSR corridor may be considered the most rival of all these corridors.

This paper discusses the description of the maritime corridor in north of Russia in the Arctic in terms of positivity for the countries in the region such as benefiting from the wealth of the Arctic and the passage fees and shortening the distance thus reducing the cost of the trip, as well as the difficulties facing this passage such as construction expenses, financing expenses, economic feasibility and climatic conditions and absorptive energy of these corridors for the transport of goods from reducing ships speed and strong design to body of the ships and their need for ice breakers and other difficulties.

The paper also addresses the impact of this new route between the east and the west in regards of the challenges and risks of competitiveness on the Suez Canal and also discusses the importance of speeding up the establishment of transit ports, logistics development, maintenance of transiting ships, deepening and duplication and expansion of the waterway of the canal and re-considering the fees and services, transit and training of human resources in addition to the transport network development of roads, railways, bridges, tunnels, power grids, irrigation, water and sanitation.

All the risks and constraints such as piracy and bureaucracy and routine, must be illuminated and working on taking actions that will make the Suez Canal at the top of the competition, to increase the gap between the Canal and the new competitors and therefore making difficult for them to compete where it is still in the research and studies and experiments phase either have dismissed the creation of this new passages deadline for non-economic feasibility, or at least if they created it the Suez Canal will be the best able to attract global trade.

KEYWORDS: The Northeast Passage - The Northwest Passage - The Suez Canal

INTRODUCTION

The importance of the central location of Egypt to the movement of international trade rose as the trade coming from Europe unloaded its cargo at the ports of Egypt overlooking the Mediterranean Sea, then overland to the Red Sea through the Nile River, And on the other hand transferring trade from Asia to Europe, which contributed to facilitating the movement of sea trade between the East and the West, raising the Mamluk state's economy until the Portuguese discovered the Cape of Good Hope to sail around the continent of Africa. This has negatively affected the economy of the Mamluk State as it lost this important resource at that time. By digging the Suez Canal, the importance of location of Egypt emerged again strongly to shorten the distance and reduce the expenses of the trip in comparison with the road of Cape of Good Hope where the ports of the West African countries lost their role, and consequently lost their source of income to turn out mostly to be ports for hunting because it did not adapt to the changes that have occurred at the time, and did not prepare itself to deal with its natural consequences, and did not develop its policy to accommodate the shifts in the global trade towards the Suez Canal. As the Suez Canal revenues of ships crossing the canal fees become one of the most important sources of national income of Egypt after tourism income and remittances from workers abroad, and as a result of global warming and the rise in temperature that caused the loss of twenty per cent of the ice in the Arctic during the last thirty years, and discovery of wealth's in the Arctic that can be exploited using modern technology, history can be repeated as the North Arctic Passage emerged as a navigational passage after two German ships managed to sail in September 2009 from one of the ports of South Korea to the Dutch port of Rotterdam across the North Sea, along Russia's northern border after obtaining a permit from the Russian authorities, followed by the success of the Russian gas tanker «Baltika» to sail from the Russian city of Murmansk in the August 14, 2010, to the Chinese city of Shanghai, accompanied by the nuclear icebreaker "50 years of Victory" across the territorial waters of the coast of northern Russia from the Arctic Ocean, carrying 70 thousand. In September 2013, the Nordic Orion, which has a length of 225 meters passed from the NSR

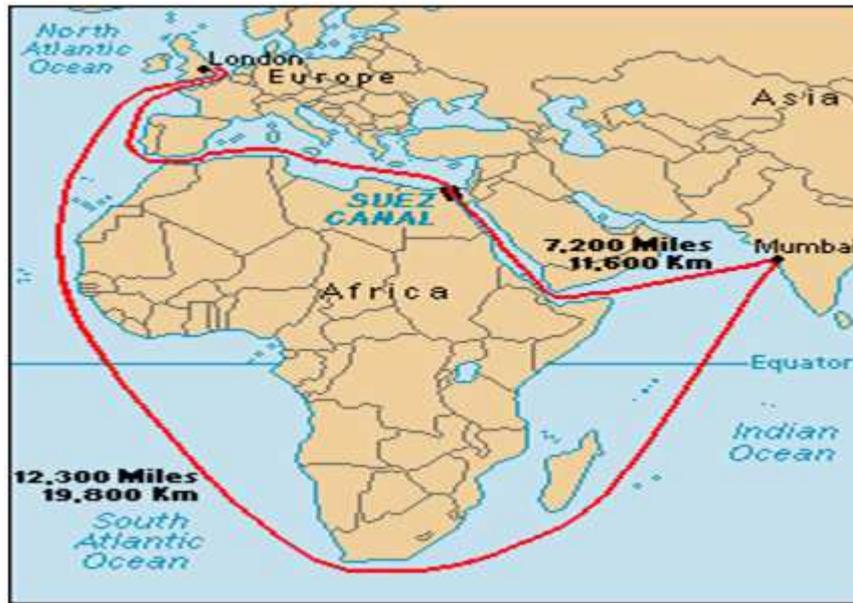


Figure 1: The Navigation Way of the Suez Canal and the Cape of Good Hope



Figure 2: The Navigating Way of the Suez Canal and Passageway of Arctic

The NSR became a strong competitor to the Suez Canal so that the researches and studies centers, magazines and scientific journals showed interest to study the economic feasibility for this passage and the studies adopted a supportive opinion of this passage and an optimistic view of its future and its impact on world trade and on the Suez Canal, and also on the Panama Canal and another opinion reduces its impact so the opinion backing it mainly because of the impact of climate change on the ice mass of the Arctic, which was formed from millions of years ago, as graphs from the National Snow and Ice Data Center showed (NSIDC) the Arctic ice mass declined since 1979 and until 2007 by 20% as a result of global warming, and the emergence of natural resources from mining and oil and natural gas is estimated by 20% to 25% of the world's stock can be extracted with new technologies in the new climatic conditions in addition to the short distance of this passage, which increases the demand for the use of this passage. The other opinion that opposes the passage has its reasons, the most important one is the political differences between the countries bordering on the Arctic regarding the legal sovereignty of this passage as Russia considers the polar eastern passage and Canada considers the polar western passage lies within their sovereignty according to United Nations Convention on the Law of the Sea 1982 "UNCLOS"

While the United States considers this passage an international passage, as well as the difficult climatic conditions that require snowmobiles and ships with strong hull and transit fees by using snowmobiles, and also navigation in the snow risk, which reduces the speed of the ship and increases the insurance fee and thus increase the voyage expenses. What will determine whether the Arctic passage is an alternative or competitor passage to the Suez Canal is the economic feasibility of this corridor and the extent of its reduction for voyage expenses and global demand compared the Suez Canal. The question to be asked is what is the role of the research centers and the administration of the Suez Canal, and what are the proposed solutions to adapt to the changes that have occurred and the development of its policies to accommodate the shifts in global trade to meet these challenges?

MOTIVATION TO CREATE THE ARCTIC PASSAGE

The Predicted of the Melting of the Arctic Ice

Statistics and American industrial satellite images showed that ice cover of the Arctic Ocean shrank to a new low level of less than 5.3 million square km in August 27, 2012, less than half the space that was occupied by those seas during the past four decades, the standard figure (17.4 million sq km) in 2007 had crashed in August 27, 2012. The melting rate has risen since then to more than half a million sq m surpassing the record set since 2007, expecting that the melting continues for some other weeks. The American National Center for Snow and Ice Data declared that the Arctic sea ice fell to 4.1 million sq m which is the least since satellites began measuring the ice in 1979 and it is also, according to published reports by the global environment organizations, and satellite imagery for the American space agency NASA, which indicated that the size of the ice melting of Greenland island amounted to about 19 billion tons, which is the highest average at all yet (NSIDC, 2015)).

Environmental experts predicted using computer simulation programs that the Arctic Ocean will be free of ice during the summer months within the next thirty years. The ice shrinkage in the Arctic arouses negative effects, such as anxiety of scientists and specialists of environmental affairs because the Arctic acts as an air condition to the world and helps moderate World climate, also the sea level will rise and there are some cities threatened to drown in this area of 30 million sq m namely Canada, Denmark, Finland, Iceland, Norway, Russia, Sweden and the United States, as well as some expectations of the sinking of part of the Delta in Egypt as well. One of the positive effects on the Arctic countries of melting snow, is the possibility of trade passage between the West (Europe, America, Canada) and the East (China, Japan and Korea) by the Arctic passage, which is much shorter than the way of the Suez Canal, which reduces the cost of the trip. At the same time, melting ice has led to growing interest in many countries in recent times in Arctic, where competition intensified among Arctic states and economic institutions of various countries in order to control energy resources in this region, and thus adversely affect the Suez Canal income.

The Arctic Ocean is located in the Arctic region and covers an area of 14 million and 56 thousand km² with a maximum depth of 5450 meters) and an average depth of 1038 meters and the length of shores of 45 thousand and 390 km. It is smaller and shallower than the five oceans. Despite the recognition of the International Hydrographic Organization (IHO) with it as an ocean, some oceanographers call it " polar Mediterranean " it is completely surrounded by all of Europe, Asia and North America, covered with ice most of the winter and partly over the year and it is divided into two-lanes namely the north-eastern pole passage that runs through the northern coast of Europe and Asia, linking the Atlantic and Pacific oceans (Albesevik) as in Figure (4) and the second is the North West Pole passage that passes through the Arctic archipelago north of Canada and across the north coast of Alaska and connects the Pacific and Atlantic oceans, as in

Figure (5)

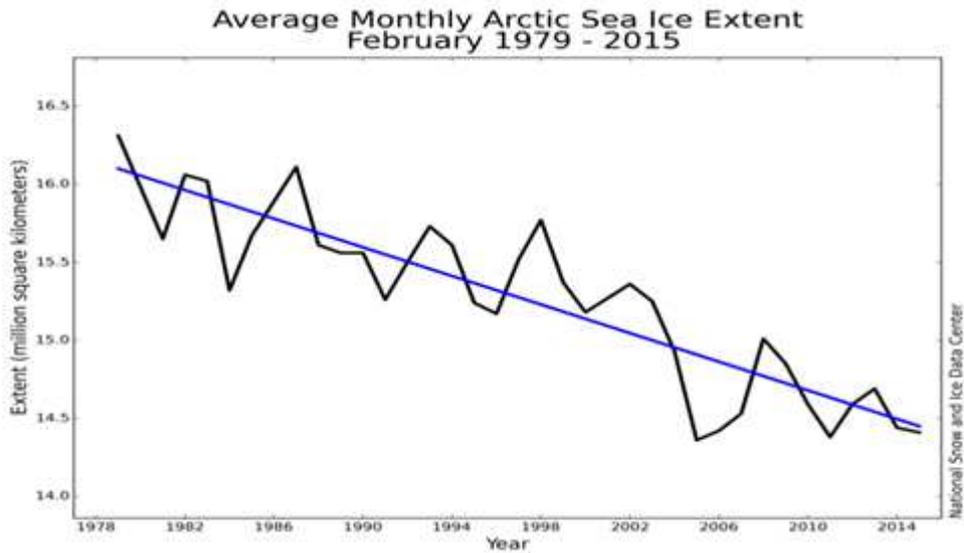


Figure 3: Average Monthly Arctic Sea Ice Extent 1979-2015



Figure 4: The Northeastern Pole Passage



Figure 5: The Northwest Pole Passage

Table 1: A Comparison between the Distance of Several Trips through the Suez Canal and the Passage of the Arctic

	Suez Canal (miles)	NSR (miles)	Distance saving in percentage (%)
Rotterdam-Yokohama	12,894	8,452	34,45
Rotterdam-Shanghai	12,107	9,297	23,2
Rotterdam-Vancouver	10,262	8,032	21,67

On the other hand, a virtual comparison was developed between the cost of transmission of an oil tanker and a cargo carrier through both ways, "North and South" from the port "Kirkins" in Norway to the port "Busan" in South Korea, at the same travel conditions of load and fuel consumption and speed found that the distance to the north route was 6857 nautical miles in 18 days only, while the distance reached by the southern route through the Suez Canal was 10.754 nautical miles in about 28 days, as well as the great savings in fuel consumption through the use of ships for the new maritime passage.

The strong economic growth in East Asia, especially in China, Japan and South Korea, and the increase of the volume of trade exchange between these countries and the European Union made the Maritime passage across the North Pole a vital passage. Also Russia and Canada consider that the polar eastern and western passage is within their sovereignty according to the United Nations Convention on the Law of the Sea 1982 "UNCLOS" so that they demand fees on vessels crossing as in the Suez Canal and Panama Canal.

Shortcut Distances

Although the navigation season for the transit of ships in the NSR begins early in July and lasts until the second half of November and in spite of the lack of specific dates for a period of navigation in this passage, the figures indicates the increase in the number of ships transiting the NSR. Compared to the number of four ships used the passage in 2010 and 34 ship in the year 2011, the number of ships that passed in 2012, reached 46, an increase of 34% and the figure jumped to 71 ships in 2013, and despite the fact that there is no possibility in the near future to use this passage over the year, the classification company DNV expects that the number of ships that will pass it will reach to about 480 ship in 2030, and for this, the NSR may be an important alternative to the Suez Canal on the long run. Especially ships carrying petroleum and gas products and bulk ships. The first LNG tanker "Ob River" has sailed from Hamrfast Norwegian port on November 9, 2013 to reach the Japan port of Topata on November 18, 2013 and has been able to save an estimated time of 20 days if they were to use the Suez Canal passage. Information Handling Services "HIS" believed that NSR needs 20 to 30 year until weather conditions allow it to be available for sailing all year round (Li, 2014)), but China strongly supports the sailing in the NSR.

Table 2: Transits via Russia's Northern Sea Route, 2013

Cargo Type	Number of Vessels	Cargo Volume Eastbound (Metric Tons)	Cargo Volume Westbound (Metric Tons)	Total Volume (Metric Tons)
Liquid	31	588,659	323,208	911,867
Bulk	4	203,439	73,500	276,939
LNG	1	66,868	-	66,868
General	13	36,846	63,377	100,223
Ballast	15	N/A	N/A	N/A
Repositioning	7	N/A	N/A	N/A
Total	71	895,812	460,085	1,355,897

Source Northern Sea Route information office (2014)

Saving such time is a significant threat on the Suez Canal because it shortens the distance to a large extent. For example, the use of NSR provides 22% of the distance between the Chinese port of Shanghai and Rotterdam than using the Suez Canal. It can also save larger rates among other ports. The following table shows the difference in distance between using NSR and Suez Canal.

Table 3: The Distances between Some of the Major Ports Using Different Shipping Lanes

Alternative Shipping Routes to Ports in the Pacific and Atlantic, in nautical miles¹

Shipping routes via:	From Hamburg to:			
	Vancouver	Yokohama	Hong Kong	Singapore
NSR	6635	6920	8370	9730
Suez Canal	15377	11073	9360	8377
Cape of Good Hope	18846	14542	13109	11846
Panama Canal	8741	12420	12920	15208

Source: Yuri Ivanov & Alexander Ushakov (1993): 'The Northern Sea Route – Now Open', *International Challenges*, vol. 12, № 1, p. 19.

Cost

The value of insurance increased on the passing ships in the Red Sea through the Gulf of Aden in 2008 because of the emergence of piracy significantly in this region. Even without counting the increase in insurance and with the consideration that the value of insurance in the NSR is equivalent to three times the value of insurance on the ships passing through the Suez Canal, and ignoring the distance factor that has been discussed previously, this cost is not to be compared with the cost of crossing the Suez Canal because there are two influential factors that should be put into consideration which are the cost of fuel and the tariff of the Suez Canal. A previous study was carried out on two ships, one of them general cargo and the other container ship and the data of each of them is illustrated in the two tables.

Table 4: General Cargo Ship Characteristics

Gross tonnage GRT	9611
Net tonnage NRT	4260
Deadweight ton DWT	12672
Suez Canal Net Tonnage SCNT	12915
Draught in meter	8
Service speed in knots	14
Gram fuel per kwh	190
Power in kw	5400
Ton fuel per day at service speed	24,624

Table 5: Container Ship Characteristics

Gross tonnage GRT	39941
Net tonnage NRT	24458
Deadweight ton DWT	50790
TEU	4253
Suez Canal Net Tonnage SCNT	57387
Draught in meter	12,6
Service speed	23
Gram fuel per kwh	190
Power in kw	36515
Ton fuel per day at service speed	166,5

The following table shows trip cost of general cargo ship from Japanese Yokohama port to German Hamburg in one direction and the fuel prices was calculated according to the prices of fuel purchase in September 2014 from Rotterdam, Netherlands, which is US \$ 465 per tonne for heavy gas and \$ 695 for light gas (source cockett marine oil).

Table 6: General Cargo Ship Yokohama-Hamburg via the NSR (Source Wergeland, 2010)

Distance NSR in nm	2200
Distance outside NSR in nm	5500
Speed in NSR in knots	12
Speed outside NSR in knots	14
Fuel consumption at 12 knots tons/day	15.5
Days in the NSR	9
Days outside NSR	14
Total days	23
Fuel consumption in the NSR in tons	135
Fuel outside NSR in tons	344
Total fuel consumption in tons	479
Fuel consumption reduction in tons	345
Increased insurance costs in \$	10600

The cost of the ship of general cargo has dropped by \$ 160 300 from fuel difference and added to them \$ 51 168 as the tariff of Suez Canal passage for this type of ships so the total difference becomes almost 200 800. Noting that these calculations do not take into account the tariff of ice breaker that is used in the NSR, which if its cost reached \$ 15 per ton the economic feasibility of this trip will be negative.

Table 7: Route Specific Data Yokohama-Hamburg via Suez

Distance in nautical miles (nm)	11430
Journey days at service speed	34
Fuel consumption in tons	838
Suez canal toll in US\$	51168
Hull and machinery insurance \$/day	250
P&I insurance, \$/day	200

Source: Wergeland, 2010

The following table shows a containers ship trip

Table 8: Container Ship Shanghai-Hamburg via the NSR

Distance NSR in nm	2700
Distance outside NSR in nm	5534
Speed in NSR in knots	14
Speed outside NSR in knots	23
Fuel consumption at 14 knots tons/day	37,6
Days in the NSR	8
Days outside NSR	10
Total days	18
Fuel consumption in the NSR in tons	302
Fuel outside NSR in tons	1669
Total fuel consumption in tons	1971
Fuel consumption reduction in tons	1304
Increased insurance costs in \$	20709
Saved Suez canal toll	135145

Source Wergeland, 2010

Table 9: Container Ship Shanghai-Hamburg Via Suez Canal

Distance in nautical miles (nm)	10857
Journey days at service speed	20
Fuel consumption in tons	3275
Suez canal toll in US\$	135145
Hull and machinery insurance \$/day	600
P&I insurance, \$/day	330

Source Wergeland, 2010

The cost for the container ship has dropped by \$ 720 750, or about \$ 169 per container and the following table shows the percentage of fuel saving between NSR and Suez Canal

Table 10: Fuel Consumption Reductions When Using the Arctic Passages

	NEP	NWP
General cargo ship Yokohama-Hamburg	42 %	36 %
Container ship Shanghai-Hamburg	40 %	39 %

The Wealth of the Arctic and Technological Advancement

The experts' report issued by the US Geological Survey guessed that the Arctic, an area of 27 million sq km, contains more than a billion barrels of crude oil (13% of the world's oil reserves that have not been explored yet), and about 3.47 trillion cm of natural gas (30% of the world's gas reserves that have not been explored yet) and about 20% of liquid natural gas. The Russian Ministry of Natural Resources states that Russia can extract more than 586 billion barrels of oil from the depths of the Arctic waters in areas that Russia consider within its territory, such as: Barrentz, Bischora, Kara, eastern Siberia, the Sea of Chukchi, and the Sea of Laptev, as the amount of oil in these areas can reach up to 418 million tons (3 billion barrels), while the gas reserves can reach about 7.7 trillion cm. The ministry also suggests that the unexplored reserve until now is estimated at 24.9 billion tons, 7.67 billion barrels of oil and 3.88 trillion cm of gas. In addition to this, the North Pole contains huge deposits of precious metals and precious stones such as gold, silver, copper, iron, magnesium, hydrocarbon, plutonium, zinc and diamonds, as well as massive fisheries that are untapped yet. Russia considers the polar part of the Arctic Ocean as part of its territory as huge coastal reserves of natural gas were discovered in the Barents and Kara Sea. The Russian Arctic provide currently 11% of the Russian national income, and extracted in

this region account for 90% of nickel, cobalt and 60% copper and 96% of the platinum, and issued its ports located on the North Sea about 22% of all Russian exports, 1/6 production of fish from this area, which also owns the Northern Sea Route. It is the shortest route linking Europe with the Americas and Asia.

Piracy off the Coast of Somalia and Political Instability

The emergence of many cases of piracy in the past ten years off the Somali coast, the Gulf of Aden and the Arabian Sea and the demand of huge ransoms to release the crew and the ship, prompted some western countries, the Russians and the Chinese to send warships to protect and secure commercial vessels for a fee paid by those ships, as well as political instability after the Arab Spring, the internal conflict in Yemen ongoing since late 2014, which could adversely affect the Suez Canal, but those problems can be easily solved if the political will of the international community represented by the United Nations is available and with the help of the region's countries, including Somalia through: through the by establishment of genuine development projects and the fight against poverty.

- Training and rehabilitation of young people and the dissemination of education and the fight against ignorance.
- Industrial and agricultural and trading projects to provide jobs for young people and the fight against unemployment.
- Assisting the countries in the region to take advantage of the natural wealth of their countries and the fight against corruption instead of the monopoly Policy.
- Assisting and training new regimes on the political and economic stability and solving political problems and ethnic disputes by peaceful means and to respect the customs and traditions and religious beliefs of the people of this region.

THE DIFFICULTIES FACING THE ESTABLISHMENT OF THE ARCTIC PASSAGE

Conflict on the Wealth of the Arctic

As stated in the United Nations report in September 2007, that the global warming reveals oil wealth and natural gas fields within the Arctic countries, has always been a matter of dispute. However these countries did not bother to solve this conflict because of the frigid water that stands against taking advantage of these resources. In the light of climate changes that cause the melting of ice in the Arctic, it is no longer hard to access, it is expected that the tension between those countries will be renewed in order to compete on the wealth of the Arctic and new maritime shipping routes. The sovereignty over the Arctic is one of the most vulnerable matters between these countries, that can lead to environmental and political dispute between them and the country's nearby, and there are fears that this emerging issue could pave the way for a new kind of cold war, so this region will witness a conflict between states seeking to control these resources, namely: the United States, Russia, Finland, Iceland, Norway, Sweden, Denmark and Canada, all of which overlook on part of the Arctic Circle area, and demanding the right to benefit from the wealth of Arctic, especially with the oil reserves in the world getting low.

Political Conflict

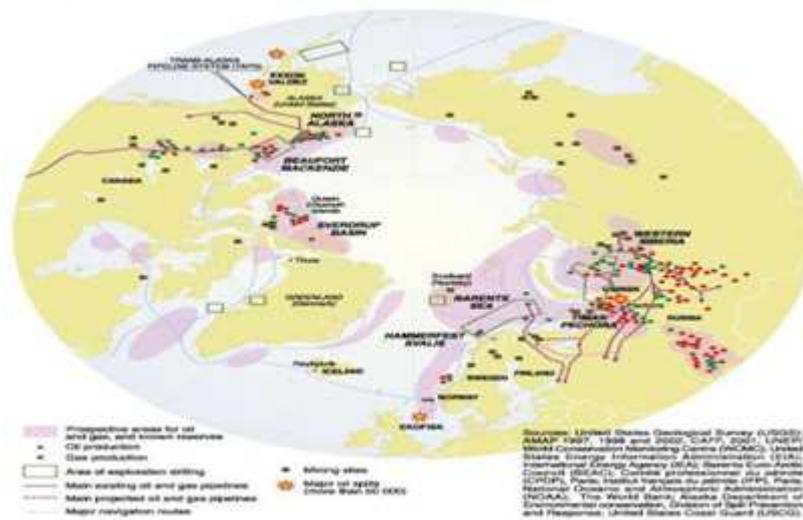
The importance of this region is also due to the possibility of the emergence of new navigational routes between Asia and America, making the region a strategic location that helps to travel in the shortest route. It is difficult to use this passage currently due to its permanent freeze, but scientists have witnessed the melting of large tracts of snow since 2007,

and they expect the disappearance of the snow in the coming years. Same as in the continent of Antarctica, which denied doing any action with political or military nature, the Arctic region applied the United Nations Convention on the Law of the Sea, which is concerned with determining the economic right in the marine wealth of each country with a sea view. According to this law, each state has the right to freely claim the sovereignty on the naval area that extends to 200 nautical miles in front of their coasts. The dispute over the wealth of the Arctic Ocean may begin with Russia claiming the right to the ownership of the massive Lomonosov mountain chain in the Arctic seabed. Russia has warned that the defense infrastructure, including airports and oil storage facilities and strategic oil reserves, may be destroyed completely in the event of permafrost melting, which covers the far north of Russia by 2030. Danes are trying to prove that their side of this mountain chain that is currently separated from their continental cliff was once part of Greenland is owned by Denmark. In this frenetic context, the United States may endorse the convention on the continental shelf extending northward from Alaska. This convention also controls the navigation rights, which is a matter of great interest today after the full opening for «Northwest passage» for the first time in the summer of 2007.

With global warming and the melting of the ice, this passage may become a commercial navigation canal that largely shortens the sailing distance between the Atlantic and the Pacific Ocean. Canada is demanding rights in this passage, which meanders between its northern archipelago. In May 2008, the Canadian government has pledged to strengthen the ability of the Canadian Armed Forces in order to protect the sovereignty of the Arctic and its security. But other countries, especially the United States, insisted on opening this passage for the movement of global navigation, as it is the case in other strategic waterways such as those in the South China Sea.

There are calls today to reach a multilateral diplomatic solution so as not to slip the Arctic region to an armed conflict. The existence of the Russian flag in the North Pole is the best proof of this conflict.

Figure 3 Map showing the Arctic's oil, gas, and mineral development



Source: Arctic Economics (s.d.), *The Arctic's Economic Center of Gravity...*

Decline in Oil and Gas Prices

The rapid and continuous decline in energy prices resulting from the extraction of shale oil from the USA in January and February of 2015, lead to reconsidering the economic feasibility of extracting these materials from the North Pole again. And despite the lack of economic feasibility now, however, it is possible that this will change later on,

especially after the recent turmoil that shatters the producers' country in the Persian Gulf and North Africa region and Yemen, as well as political unrest in north Nigeria.

Cargo Claims

Using NSR may lead to the increased risk of the goods claims as a result of the delaying the arrival of the shipment and in case you cannot sail in the snow in certain circumstances as the goods could be greatly affected by the ice and the very low temperature, in which the ship sails on and despite the fact that the insurance covers the goods claims, the insurance requires the ship owner to prove that he made every effort to keep the goods safe and in good conditions.

RESULTS

Despite the strategic importance of the Suez Canal in the movement of the world trade, it threatened to lose its importance because of the many conflicts in the neighboring countries of the channel, and also the increase in piracy in the Gulf of Aden and the Indian Ocean and the new political conflict in Yemen as it is the state that has the control over the Strait of Bab el Mandeb and thus in the movement of trade up to the Suez Canal from Asia, in addition to the fact that the Suez Canal fees is relatively high. All of these factors led the states which have commercial interests to look for other alternatives cheaper in price and safer in the movement which led to the idea of the Arctic path despite the obstacles which face sailing in it.

RECOMMENDATIONS

- Egyptian state must protect the Strait of Bab el-Mandeb, whether using political or military means.
- Egypt's participation in the protection of ships passing through the Gulf of Aden against piracy.
- Accelerating the establishment of projects affiliated to the Suez Canal to make it a logistics areas and not only a navigational passage. An example of these projects are projects for ships' maintenance and supplying it with fuel and setting up new ports and the establishment of transit zones. The geographical location of Egypt should also be exploited in the establishment of ports of ship recycling to cope with the new requirements of the Treaty of Hong Kong.
- Taking into consideration the value of the Suez Canal transit fees to be suitable to the international trade and the risks the ships face until they reach the Suez Canal.

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