MARITIME AFFAIRS Copyright © National Maritime Foundation
Vol. 8 No. 1 Summer 2012, pp. 1–12
Print ISSN: 0973-3159, Online ISSN: 1946-6609, http://dx.doi.org/10.1080/09733159.2012.690287

Routledge
Taylor & Francis Group

National
Maritime
Foundation

Arctic Melt: The Outlook for India

Commander (Retd.) Neil Gadihoke*

The recent accelerated melting of the Arctic ocean does not augur well for the future as its negative implications far outweigh the positive impacts. It is envisaged that given the incessant rate of global warming, such trends in the Arctic may be irreversible. Though geographically distant, India is too large a country and a too important a stakeholder in the global system, to escape its consequences. Need of the hour is for the Indian strategic community to stay engaged with the issue so as to anticipate the evolving dynamics that impinge on India.

Introduction

The present generation of human beings is living in an era of unparalleled scientific research and technological development. Across domains and subjects, mankind has taken colossal strides, powered by a pursuit for discovery. Man has been to the moon. It has sent missions to the fringes of our solar system; revealed new galaxies; and searched persistently for proof of life on other planets. But in a paradox almost too poetic to comprehend, humans seemed to have made little progress in deciphering a curious phenomenon closer home: that of the melting of the isolated, frigid and confounding Arctic, on our very own planet earth.

*Commander (Retd.) Neil Gadihoke can be reached at neilgadihoke@rediffmail.com

Two decades ago, a young scholar Oran Young penned a prescient Article ''The Age of the Arctic,''[1] in which he proclaimed: ''Today, the Arctic is rapidly becoming a focus for defence and development issues that touch on the core interests of each of the superpowers''. Young then believed that the world was ''entering the age of the Arctic, an era in which those concerned with international peace and security will urgently need to know much more about the region and in which policy makers in the Arctic rim states will become increasingly concerned''. At that stage, not many were ready to believe his forecast that soon the Arctic Ocean would to be the modern-day equivalent, of the Mediterranean of ancient times.

The Accelerating Arctic Melt

Various scientific studies project that Arctic ice will be dramatically reduced or possibly disappear during part of the summer as early as 2050. Conservative estimates are calculating that a 12%–40% reduction in summer ice extent has already occurred.[2] The reduction in the polar ice cap would open fabled sea routes to Asia that European explorers had sought in vain for centuries. Commercially viable Arctic sea lanes are anticipated to be opened for part of the year well before 2050, which has the potential to make the Arctic Ocean a major global trade route.[3] Therefore, as envisioned by Oran Young two decades ago, we are on the cusp of the ''Age of the Arctic''. This region is said to hold potentially as much as 25% of remaining undiscovered reserves of oil and gas, with the largest reserves expected to be found in the Russian part. Other minerals and metals are also abundant, such as coal, nickel, copper, tungsten, lead, zinc, gold, silver, diamonds, manganese, chromium and titanium.

The warmer climate, new technologies for the extraction of hydrocarbons and increasing interest for Northern maritime routes are igniting a new great game in the Arctic. These dynamics, in the next few decades, will introduce competition for the secure access to energy, minerals, food and markets on a scale hitherto unknown to the region. Though the Arctic region seems far away from India, the progress of the ''Polar Game'' will certainly have a bearing on India's futuristic strategic and economic environment. This is owing to the fact that India is a fairly large country in geographic terms, the second most populous nation and the second fastest growing economy after China. In sum, it is too large a stakeholder in the international system

to escape the consequences of a rapidly melting Arctic. It may therefore be time for India to start contemplating an Arctic strategy, which encompasses issues much beyond India's ongoing benign activities like scientific and oceanographic research.

The Arctic Shipping Routes

The Arctic highway (also called the Polar sea route) is a centrally placed ''Mediterranean'' ocean that connects the North Atlantic and the Pacific and constitutes, by far, the shortest distance between the two. For centuries explorers had searched for a viable Northern Sea Route between the Atlantic and the Pacific without much success. The sea routes that were finally discovered – the North East Passage, or the Northern Sea Route (NSR) as it is most often called, off the coast of Siberia, and the North West Passage (NWP) between the Canadian Arctic Islands – were only partly open, at best a few short weeks per year, and never came to play any role in transcontinental commercial shipping. The direct route ''over the top'' was hardly even contemplated, even with the advent of the modern ice breakers and nuclear powered submarines, with their ability to cross the ice covered Polar sea safely and with relative ease. The impending ice free Arctic may change this thought process.

Arctic shipping routes represents up to 40% reduction in distance from northern Europe to northeast Asia and the northwest coast of North America, compared to southerly sea routes via Suez or Panama canals. In sum, the Arctic shipping routes could cut the cost of a single voyage by a large container ship by as much as 20%, saving the shipping industry billions of dollars a year.[4] The savings would be even greater for the megaships that are unable to fit through the Panama and Suez Canals and so currently sail around the Cape of Good Hope and Cape Horn. Moreover, these Arctic routes would also allow commercial and military vessels to avoid sailing through politically unstable Middle Eastern waters and the pirate-infested Horn of Africa and the South China Sea.

Arctic Region as a Petroleum Province

Studies indicate that the Arctic could hold the last remaining undiscovered hydrocarbon resources on earth. The US Geological Survey and the Norwegian company Statoil Hydro estimate that the Arctic holds as much as 25% of the world's

remaining undiscovered oil and gas deposits.[5] Some analysts estimate the Arctic hydrocarbon reserve to be as much as 40% of world oil and gas reserves.[6] The Arctic Ocean's long, outstretched continental shelf is another indication of the potential for commercially accessible offshore oil and gas resources. As the global oil prices continue to remain volatile, the commercial exploitation of the Arctic hydrocarbon resources has become technologically and economically feasible. Though environmentalist lobbies may propagate discouragement for oil drilling in the Arctic, however the indigenous people along the Arctic rim would want to see some of the world's wealth come their way.

The advantage in Arctic resource exploitation is the fact that it is situated in a region where conflict and political instability does not threaten secure and reliable delivery. Therefore, the Arctic oil and gas could radically alter energy import patterns, particularly for countries like China, Japan and South Korea that are increasingly dependent on oil and gas from distant and politically volatile regions like the Middle East and Africa.

Without doubt, the Arctic energy reserves have the potential for a substantial impact on India's energy dynamics. Currently the world's 11th largest economy (fourth in terms of purchasing power parity), India could occupy the third slot after the United States and China in 25–30 years, if she manages to sustain her economic growth rate. Since such growth is directly related to energy consumption, India's thriving manufacturing, transport and agricultural sectors, are expected to drive energy demand at an average of 3%–4% annually over the next quarter century. India, at present fifth on the energy consumption ladder, is expected to overtake Japan and Russia to reach the third spot by 2030. Investments worth billions of dollars have been made in overseas hydrocarbon assets extending from Sakhalin in the Russian Far East across Central Asia and Africa to South America.[7] India has also evinced interest in the arctic fossil reserve and the largest Indian oil company, the OVL (Oil and Natural Gas Videsh Limited), has approached Rosneft, a major state run Russian energy company, for exploration in Yamal peninsula in the Russian portion of the Arctic.

China's dependence on imported energy is more acute. By the mid-1990s, China had moved from being a minor and largely self-sufficient energy consumer, to become the world's fastest growing energy importer and a significant player in the global energy market. Until then China's energy demand was met by domestic

sources. In 1993 China's oil production and consumption was approximately 3 mb/d (million barrels/per day). However, while its production increased slightly, reaching just 3.7 mb/d in 2008, its consumption has doubled during the same period. Consequently, the Chinese elites have placed uninterrupted supply of energy as a major factor in the comprehensive national power capability. The Chinese perceive that the narrow stretch of Malacca Strait through which a substantial portion of Chinese oil imports from Middle East and Africa passes, could be interdicted by adversarial naval forces. This concern was echoed in 2003, when President Hu Jintao declared ''certain major powers were bent on controlling the strait, and called for the adoption of new strategies to mitigate the perceived vulnerability''.[8] Since then Chinese officials and media began to portray the Malacca dilemma as a pertinent security concern for China. According to the *China Youth* daily, ''it is no exaggeration to say that whoever controls the Strait of Malacca will also have a stranglehold on the energy route''.[9]

In sum, China, which is vitally dependent on the Strait of Malacca for most of its energy supplies, would be inclined in promoting this emerging alternative route. China is already looking north and engaging with Iceland, which is strategically located on the Atlantic–Arctic route to China. This route assumes more importance in light of China's fast accelerating dependence on oil from countries on the West Coast of Africa – most notably Angola, Nigeria, Gabon and Equatorial Guinea. The vital question, arising out of China's use of the Arctic route in the coming decades to overcome its vulnerability of energy lines through Malacca Straits (aptly termed as China's ''Malacca dilemma''), is of the implications that such a development would have for India. It is well known that India and China fought a border war in 1962 and thus the lingering mistrust of Chinese military expansion is all pervasive in security circles in India.

Experts acknowledge that given the relative geographical location of air bases and army formations on both sides of the India–China border, a military face-off – if it were ever to occur – would be evenly matched and in all likelihood result in a stalemate. The Indian Ocean may, therefore, become the arena wherein maritime forces would play a decisive role. Owing to China's huge energy imports travelling on sea lanes in the Indian Ocean, whether originating from the Middle East or Africa, makes her vulnerable. In this context, there exists a strain of thinking that India needs to be prepared at sea, and must leverage her geographical advantage and exert pressure

on China's energy lines vulnerability. However, were the Chinese vulnerability to lessen due to the Arctic route, then China may get more assertive not only with India, but with other countries in the region, this would impact regional security and attendant geo politics.

Though the potential for resolution of China's Malacca dilemma could be envisaged owing to the Arctic route, however, it will be pertinent to mention that the Malacca dilemma may become the 'Bering Straits' dilemma subject to more focused strategic leverage by the Arctic rim states, with all of whom India enjoys an excellent relationship.

Impact on Sea Levels

The impact of the Arctic melt on the sea level rise across the planet can neither be specifically co-related nor quantified. A brief history of sea levels reveals that over the last 140,000 years, the sea level has varied over a range of more than 120 metres. The most recent major change was an increase of more than 120 metres as the last ice age ended. The sea level stabilised over the last few thousand years and there was little change between about 1 AD and 1800 AD. The sea level began to rise again in the 19th century and accelerated again in the early 20th century.[10] Satellite altimeter measurements show a rate of sea-level rise of about 3 mm per year since the early 1990s. Thermal expansion is producing about half of the current 3 mm per year increase in global sea levels. The contribution of this factor has increased from around 0.5 mm per year over the second half of the 20th century to around 1.6 mm per year over the last 12–14 years.[11]

In the Arctic Circle, the big melting concern is about land-based ice like the Greenland Ice Sheet, which would increase sea levels by a few meters if it completely melts. Insofar as the ice in the Arctic sea is concerned, there is a consensus that this Arctic sea ice, since it is already floating on the ocean, will not raise sea levels when it melts, but this does not also imply that its impact on sea level rise is nil. For one thing, less sea ice means that the ocean absorbs sunlight that the ice would have reflected away. This heats the water, which is most dense at 4 degrees Celsius (its density decreasing both above and below this temperature). So, as the overall temperature of the water increases, it naturally expands making the oceans rise.

Consequently, the sea level rise, presently at an unnoticeable level, could well spiral out of control were any unforeseen ''wild card'' phenomena to manifest itself. Further, the Arctic melt contributes substantially to global warming in another fashion as well. The permafrost (permanently frozen soil), on the land frontiers in the polar region, is shrinking thus releasing large amounts of trapped greenhouse gases (mainly methane) which has aggravated global warming.

Another major contribution to the recent sea level rise is from the melting of glaciers, polar ice cap and the Greenland and the Antarctic ice sheet. This is believed to produce about one-third or more of the current 3 mm per year annual increase in the global sea level. The complete melting of the Greenland ice sheet alone could increase global mean sea levels by around 7 metres. This would probably take about 1000 years but it is believed that melting ice from Greenland could still contribute significantly to sea level rise over the next 50–100 years.[12] Further, global warming is resulting in an atmosphere containing more water vapour, which enhances greenhouse effects and leads to more warming and melting in a self-reinforcing cycle.

Vulnerabilities in the Indian Maritime Neighbourhood

Most nations that are most vulnerable to sea level rise do not have the resources to prepare for it. In South Asia, India, Bangladesh, Pakistan and Sri Lanka have large populations living in 'at-risk' coastal areas. Small island nations such as the Maldives are at severe risk because they do not have enough land at higher elevations to support displaced coastal populations.[13] Another challenge for coastal populations is the danger of losing their fresh-water supplies as rising sea levels push saltwater into their aquifers. For these reasons, those living on several small island nations like the Maldives could be forced to evacuate over the period of the 21st century.

Bangladesh is the world's third most vulnerable country with regard to sea-level rise in terms of the number of people and in the top 10 in terms of percentage of population living in low-lying coastal zones.[14] Currently, almost 40 million people live in the coastal areas of Bangladesh. Loss of coastal land to the sea in this vulnerable zone – currently predicted to reach up to 3% by the 2030s, 6% in the 2050s and 13% by 2080 – is likely to generate a steady flow of displaced people.[15] Owing to the

sealing of the land border with India, a large portion of such displaced population may resort to the sea route for illegal migration.

The British Indian Ocean Territory, the island of Diego Garcia, is a critical staging facility for US and British naval and air forces operating in the Middle East and Central Asia. It sits just a few feet above sea-level at its highest point. According to a 2007 Washington think-tank report (by an eminent panel of 11 retired US admirals and generals), the Diego Garcia base – because of its low average elevation of 1.3 metres above sea-level – is considered the prime example of a "losing place" in the face of global sea level rise over the next three to four decades.[16] When coupled with the Jasmine revolution in the Middle East, especially in Bahrain which is a major US Navy base in the Indian Ocean Region, the search for alternate military bases by the United States has the potential to influence regional geo politics in a substantial fashion.

Arctic Melt and the Emerging Geopolitics

In the second half of the last century, the Arctic was a Cold War border, rimmed by the early warning radars of United States and the erstwhile Soviet Union, and crisscrossed by the undisclosed trails of submarines hiding under the ice, all geared up to launch nuclear missiles. It is in this backdrop of such history that the geopolitical dynamics emanating from the Arctic need to be viewed.

Russia's Arctic land run for over 4000 miles – almost twice the distance between the east and west coast of the United States, and spans 11 time zones. In 2007, a Russian expedition, promoted and blessed personally by Vladimir Putin, planted the tricolour of Russia 4 kilometres under the North Pole. It caused much consternation in the international community and was seen by some strategic analyst as opening move in the great polar game. A primary objective of the Russian expedition was assessed to be the collection of data to support Russia's territorial claims over Lomonosove and Mendeleyev Ridges. Russia has recently begun construction on the first oil rig designed to withstand temperatures up to 50 degrees Celsius below zero.

Just days after Russian explorers planted their flag on the Arctic seabed, the US government launched its own expedition. Not to be left behind, the Canadian government launched a "sovereignty operation" known as Operation Nanook in the

Canadian Arctic. Nanook consisted of two surface ships, a submarine and 700 military personnel performing manoeuvres in Nunavut, Frobisher Bay, Hudson Strait and Davis Strait. The Canadian government's swift reaction to developments in the Arctic reflects the increasing importance of Arctic issues.

In view of the competing territorial claims and the immense potential of untapped energy sources, increased militarisation of the Arctic may be inevitable. The Arctic sovereignty issues may result in diverting of naval forces of concerned countries to the Arctic with consequent diminishing presence in other parts of the globe. If this results in diverting of US Navy from the India Ocean Region (IOR), which regional navies are likely to fill the power vacuum? This is an issue that is likely to preoccupy the thoughts of strategic experts in India. On another level, as the Arctic becomes the geopolitical pivot between great powers, the Arctic hydrocarbon resources will have significant strategic implications for both India and China.

The availability of the Arctic hydrocarbon resources to Europe, North America and East Asia would certainly reduce the geopolitical importance and significance of the Middle East for the Western world. Whether the reduced global focus and loss of oil revenues in the decades ahead would lead to political instability in the region is a major issue which India will have to consider in its strategic calculus. This is owing to the fact that even with the availability of oil in the Arctic, India will continue to be dependent on oil from the Middle East.

Nicholas Spykman once famously said: ''Geography is the most fundamental factor in foreign policy because it is the most permanent''.[17] In the geopolitical discourses in the Western world, the Arctic was seen to play a critical role, only as the northern wall that enclosed the erstwhile Soviet Union and now its successor state of Russia. Were this frontier to gradually diminish and additionally endow the already energy rich Russia with immense reserves, then it would certainly have consequences. Whether this will lead to Russia becoming the ''new Saudi Arabia'', is a question still up in the air. If this ''melt'' does revive the sagging military potential of Russia, then it may conceivably have an impact on the rising Chinese power.

On the other hand, in considering such probabilities, cognisance will have to be taken of the present realities. The counter point to increased militarisation of the Arctic is the fact that passage through the Arctic is hazardous to the hulls and propulsion systems of warships, whose intricate superstructures are more susceptible to icing vis-à-vis merchant vessels, thus jeopardising their stability and sea keeping

qualities. Consequently, the presence of their warships in the Arctic has its challenges. There also exists possibility of the Arctic Saga unfolding into a complementary approach by the Arctic rim states for the Arctic resources, which will permit suitable environment for trans-Arctic trade and also for resource exploitation. How the scenarios play out – only time will tell. The plethora of Arctic imponderables – uncertainties inherent in any "future" – will give rise to many geopolitical questions. At this stage, though they may be left unanswered, the peril will be greater if they were left unasked.

India's Stake in the Arctic

For India, the three most important consequences of the opening-up of the Arctic are potentially shorter shipping routes, the likely improved access to vast energy and mineral resources and the impact of a rising sea level. To assess the likely impact of the emerging Polar sea route on India, a few developments serve to provide an interesting insight. As a consequence of increasing global mercantile traffic, India is according the highest priority to development of its maritime sector, premised on its location, overlooking the dense sea lanes in the Indian Ocean.

To this end, the new Maritime Agenda 2010–2020 (MA 10–20), launched by the Indian Prime Minister Manmohan Singh on January 13, 2011, in New Delhi, with a budgetary allocation of INR 500,000 Crores, is a seminal roadmap. The MA 10–20, in the form of a study and a plan, compares the Indian maritime sector to global standards to highlight the deficiencies in India. It also brings out the trends in international shipping and port infrastructure and makes future projections to identify the specific areas of improvement required in India's maritime sector. Thus, the MA 10–20 provides a roadmap for the development of the maritime sector and sets the targets for the relevant departments to achieve. The key targets of this plan are to create a port capacity of 3200 million tonnes for handling about 2500 million tonnes of cargo, improving port performance on par with the best in the world, increasing tonnage under the Indian flag and increase India's share in global ship building to 5%.

Given such endeavours, the Arctic melt, with its potential to divert the shipping traffic away from the Indian peninsula, will need to get factored into India's long-term maritime development plan. This is owing to the fact that the container volumes

and shipping loads, handled by India's present and future ports, which are astride the main east–west sea transportation lanes in the Indian Ocean Region, may decrease for four months a year.

Conclusion

Studies predict that the entire Arctic Ocean could be ice-free in summer (at least for a short period of time), much sooner than what present calculations suggest. The continuing and rapid decrease in multiyear sea ice in the central Arctic Ocean will improve the possibility of marine navigation in all seasons. A combination of technical and economic feasibility will be decisive in deciding the timing of the opening of the trans-Arctic sea route. The Arctic meltdown's most direct bearing on India is on its maritime domain. The Arctic melting does contribute to the global sea-level rise, the impacts of which can be serious and unforeseen, for a developing third world country like India, which has a long coastline and high population density in its littorals. Further, the melting of the Arctic will also accord exploitation of energy and other natural resources, which will have a direct impact on the global economy.

Clearly, the consequences of the Arctic meltdown are transnational and transoceanic in nature, thus, there is a need to involve major players, even if geographically distant, in the deliberations of the Arctic future. It is imperative to evolve a framework of deliberations that will ensure an orderly and collaborative approach in extracting the untapped energy underneath the ice cap and in managing the shipping through the area. There is a strong case for widening the scope of Arctic Council's charter and increasing its members.

India has the resources and the influence to contribute positively to the evolving Arctic. To this end, it may broaden cooperation with the Arctic nations and establish bilateral dialogues and discussions to understand the evolving politico-strategic developments in the Arctic region, including participation in Arctic resource assessment and exploitation studies. In addition, regular expeditions to the Arctic to consolidate scientific research and developing technological capability to exploit Arctic living and non-living resources need to be engendered. The need of the hour is for the Indian strategic thinking community to stay intellectually engaged with this issue, so as to anticipate the emerging linkages between the Arctic melt and India.

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